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1 What's New

09-Jul-18 New Features in LiteDAC 3.3:

- Lazarus 1.8.4 is supported
- Performance of batch operations is improved
- Demo projects for IntraWeb 14 are added
- WAL in the Direct Mode for non-Windows platforms is supported
- Memory leak in NEXTGEN is fixed

18-Jan-18 New Features in LiteDAC 3.2:

- Direct Mode in Lazarus is supported
- Lazarus 1.8 and FPC 3.0.4 are supported
- BIT type is supported
- Support for custom constraints is added
- The UseBlankValues property for the Loader component is added
- The TLiteDataSetOptions.UnknownAsString property that allows mapping fields of unknown type as ftString instead of ftMemo is added
- The TLiteDataSetOptions.AdvancedTypeDetection property that allows describing columns having data of different types is added

19-Sep-17 New Features in LiteDAC 3.1:

- Now the Direct mode is based on the SQLite engine version 3.20.0
- Custom SQL aggregate functions are supported

05-Apr-17 New Features in LiteDAC 3.0:

- RAD Studio 10.2 Tokyo is supported
- Linux in RAD Studio 10.2 Tokyo is supported
- Lazarus 1.6.4 and Free Pascal 3.0.2 is supported
- Now the Direct mode is based on the SQLite engine version 3.17.0

25-Apr-16 New Features in LiteDAC 2.7:

- RAD Studio 10.1 Berlin is supported
- Lazarus 1.6 and FPC 3.0.0 is supported
- Support for the BETWEEN statement in TDADataSet.Filter is added
- Now the Direct mode is based on the SQLite engine version 3.12.0

- Support for URI filenames is added
- Data Type Mapping performance is improved
- Performance of TDALoader on loading data from TDataSet is improved

07-Sep-15 New Features in LiteDAC 2.6:

- RAD Studio 10 Seattle is supported
- INSERT, UPDATE and DELETE batch operations are supported
- Now Trial for Win64 is a fully functional Professional Edition
- Now at automatic refresh of Detail dataset the OnBeforeOpen event is not called
- Now the Direct mode is based on the SQLite engine version 3.8.11.1
- The EnableSharedCache option of the Connection component for non-Windows platforms is added

14-Apr-15 New Features in LiteDAC 2.5:

- RAD Studio XE8 is supported
- AppMethod is supported
- Direct mode for Mac OS X, iOS and Android platforms is supported
- Database encryption for Mac OS X, iOS and Android platforms is supported
- Now the Direct mode is based on the SQLite engine version 3.8.9
- The TLiteConnection.Options.ConnectMode property is added
- The TLiteConnection.ReleaseDatabaseMemory method is added
- The TLiteConnection.IsDatabaseReadOnly method is added
- Converter from liteNull data formats to ftExtended is added

15-Sep-14 New Features in LiteDAC 2.4:

- RAD Studio XE7 is supported
- Lazarus 1.2.4 is supported
- Demo projects for FastReport 5 are added
- The TCustomDADataSet.GetKeyFieldNames method is added
- The ConstraintColumns metadata kind for the TDAMetadata component is added
- Now the Direct mode is based on the SQLite engine version 3.8.6
- TLiteBackup component is added

29-Apr-14 New Features in LiteDAC 2.3:

- RAD Studio XE6 is supported
- Android in C++Builder XE6 is supported

- Lazarus 1.2.2 and FPC 2.6.4 is supported
- SmartFetch mode for TDataSet descendants is added
- The TLiteDataSetOptions.MasterFieldsNullable property is added
- Now the Direct mode is based on the SQLite engine version 3.8.4.3
- The EnableLoadExtension option is added for the Connection component
- Now update queries inside TDataSet descendants have correct owner

25-Dec-13 New Features in LiteDAC 2.2:

- iOS in C++Builder XE5 is supported
- Direct mode for x64 platform is supported
- Now the Direct mode is based on the SQLite engine version 3.8.2
- RAD Studio XE5 Update 2 is now required
- Now .obj and .o files are supplied for C++Builder
- Compatibility of migrating floating-point fields from other components is improved

18-Sep-13 New Features in LiteDAC 2.1:

- RAD Studio XE5 is supported
- Application development for Android is supported
- Lazarus 1.0.12 is supported
- Performance is improved
- Automatic checking for new versions is added
- Flexible management of conditions in the WHERE clause is added
- The possibility to use conditions is added
- Now the Direct mode is based on the SQLite engine version 3.8.0.2
- The TLiteUserCollation component is added
- Support of the IN keyword in the TDataSet.Filter property is added
- Like operator behaviour when used in the Filter property is now similar to TClientDataSet
- The possibility to use ranges is added
- The Ping method for the Connection component is added
- The AllowImplicitConnect option for the Connection component is added
- The SQLRecCount property for the Query and StoredProc components is added
- The ScanParams property for the Script component is added
- The RowsAffected property for the Script component is added
- The 'True' Boolean value is now saved in the database as 1
- Conversion from the liteText type to all the supported types is added.

25-Apr-13 New Features in LiteDAC 2.0:

- Rad Studio XE4 is supported
- NEXTGEN compiler is supported
- Application development for iOS is supported
- FPC 2.6.2 and Lazarus 1.0.8 are supported
- Connection string support is added
- Possibility to encrypt entire tables and datasets is added
- Possibility to determine if data in a field is encrypted is added
- Support of TimeStamp, Single and Extended fields in VirtualTable is added
- Now the Direct mode is based on the SQLite engine version 3.7.16.2
- Now SQLite string data type without length is mapped as ftMemo instead of ftString
- Converter from Unix and Julian date formats to ftDateTime is added

12-Dec-12 New Features in LiteDAC 1.6:

- Rad Studio XE3 Update 1 is now required
- C++Builder 64-bit for Windows is supported
- LastInsertId property for TLiteSQL and TLiteQuery is added

05-Sep-12 New Features in LiteDAC 1.5:

- Rad Studio XE3 is supported
- Windows 8 is supported
- Now the Direct mode is based on the SQLite engine version 3.7.13
- Extended error codes support is added
- Components for FastReport 4.0 are added

01-Aug-12 New Features in SQLite Data Access Components 1.0.1:

- First release of LiteDAC

2 General Information

This section contains general information about SQLite Data Access Components

- Overview
- Features
- Requirements

2.1 Overview

SQLite Data Access Components (LiteDAC) is a library of components that provides direct access to SQLite databases from Delphi, C++Builder and Lazarus (FPC). LiteDAC directly uses SQLite client software to connect to database. LiteDAC is designed to help programmers develop really lightweight, faster and cleaner SQLite database applications The LiteDAC library is actively developed and supported by the Devart Team. If you have questions about LiteDAC, email the developers at litedac@devart.com or visit LiteDAC online at https://www.devart.com/litedac/.

Advantages of LiteDAC Technology

LiteDAC is a direct connectivity database wrapper built specifically for SQLite. LiteDAC offers wide coverage of the SQLite feature set and emphasizes optimized data access strategies.

Wide Coverage of SQLite Features

By providing access to the most advanced database functionality, LiteDAC allows developers to harness the full capabilities of SQLite and optimize their database applications. Get a full list of supported SQLitefeatures in the Features topic.

Native Connection Options

LiteDAC provides direct access to SQLite databases without envolving SQLite client software that heightens its performance. LiteDAC-based database applications are easy to deploy, do not require installation of other data provider layers (such as BDE), and tend to be faster than those that use standard data connectivity solutions.

Optimized Code

The goal of LiteDAC is to enable developers to write efficient and flexible database applications. The LiteDAC library is implemented using advanced data access algorithms and optimization techniques. Classes and components undergo comprehensive performance tests and are designed to help you write high-performance, lightweight data access layers.

Compatibility with other Connectivity Methods

The LiteDAC interface retains compatibility with standard VCL data access components, like BDE.

Development and Support

LiteDAC is a SQLite connectivity solution that is actively developed and supported. LiteDAC comes with full documentation, demo projects, and fast (usually within two business days) technical support by the LiteDAC development team. Find out more about getting help or submitting feedback and suggestions to LiteDAC Development Team in the Getting Support topic.
A description of the LiteDAC components is provided in the Component List.

Key Features

The following list describes the main features of SQLite Data Access Components.

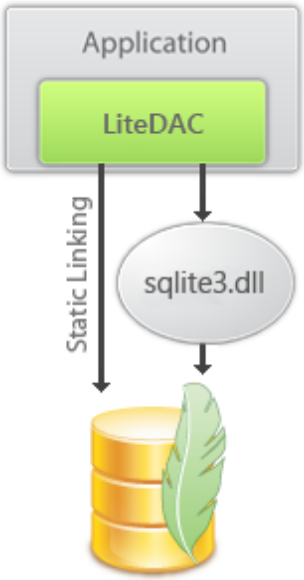
- Direct access to database data without using client library. Does not require installation of other data provider layers (such as BDE and ODBC)
- Full support of the latest versions of SQLite
- Support for all SQLite data types
- Disconnected Model with automatic connection control for working with data offline
- All types of local sorting and filtering, including by calculated and lookup fields
- Automatic data updating with TLiteQuery and TLiteTable components.
- Unicode and national charset support.
- Supports many SQLite-specific features, such as user-defined functions.
- Advanced script execution functionality with the TLiteScript component.
- Support for using macros in SQL
- Lets you use Professional Edition of Delphi and C++Builder to develop client/server applications.
- Includes annual LiteDAC Subscription with Priority Support.
- Licensed royalty-free per developer, per team, or per site

The full list of LiteDAC features can be found in the Features topic.

How does LiteDAC work?

LiteDAC connects to SQLite either using SQLite client software, or directly without using client software.
In comparison, the Borland Database Engine (BDE) uses several layers to access SQLite,

and requires additional data access software to be installed on client machines.
LiteDAC works directly through native SQLite interface. It allows to avoid using BDE or ODBC:



2.2 Features

In this topic you will find the complete LiteDAC feature list sorted by categories.

General usability

- Direct access to database. Does not require installation of other data provider layers (such as BDE and ODBC)
- Interface compatible with standard data access methods, such as BDE and ADO
- VCL, FMX, LCL development platforms are available
- Separated run-time and GUI specific parts allow you to create pure console applications such as CGI
- Unicode and national charset support

Network and connectivity

- In Direct mode does not require the SQLite client software (it will be linked in an application statically) and works with a database directly
- Disconnected Model with automatic connection control for working with data offline
- Local Failover for detecting connection loss and implicitly reexecuting certain operations

Compatibility

- Full support of the latest versions of SQLite
- Direct mode support for Windows x32 and x64, MacOS, iOS and Android
- Support for all SQLite data types
- Support for Unix and Julian date and time formats
- Compatible with all IDE versions starting with Delphi 6, C++Builder 6, except Delphi 8, and with Free Pascal
- Includes provider for UniDAC Express Edition
- Wide reporting component support, including support for InfoPower, ReportBuilder, FastReport
- Support of all standard and third-party visual data-aware controls
- Allows you to use Professional Edition of Delphi and C++Builder to develop client/server applications

SQLite technology support

- SQLite database encryption in Direct mode using different encryption algorithms
- Data Type Mapping
- Support for automatic database creation on connect
- Support for Shared-Cache mode
- Support for SQLite user-defined functions
- Support for SQLite user-defined collations
- Support for SQLite extensions loaing
- Support for SQLite R*Tree module
- Support for SQLite FTS3 and FTS4 extensions
- Support for autoincrement fields
- Support for multi-SQL statements executing
- Fast record insertion with the TLiteLoader component
- Support for database backup using SQLite Online Backup API with the TLiteBackup component

Performance

- High overall performance
- Fast controlled fetch of large data blocks
- Optimized string data storing
- Advanced connection pooling
- High performance of applying cached updates with batches
- Caching of calculated and lookup fields

- Fast Locate in a sorted DataSet
- Preparing of user-defined update statements

Local data storage operations

- Database-independent data storage with TVirtualTable component
- CachedUpdates operation mode
- Local sorting and filtering, including by calculated and lookup fields
- Local master/detail relationship
- Master/detail relationship in CachedUpdates mode

Data access and data management automation

- Automatic data updating with TLiteQuery and TLiteTable components
- Automatic record refreshing
- Automatic query preparing
- Support for ftWideMemo field type in Delphi 2006 and higher

Extended data access functionality

- Data Encryption in a client application
- Separate component for executing SQL statements
- Simplified access to table data with TLiteTable component
- Ability to retrieve metadata information with TLiteMetaData component
- Support for using macros in SQL
- FmtBCD fields support
- Ability to customize update commands by attaching external components to TLiteUpdateSQL objects
- Automatic retrieval of default field values
- Deferred detail DataSet refresh in master/detail relationships
- LiteDataAdapter component for WinForms and ASP.NET applications

Data exchange

- Transferring data between all types of TDataSet descendants with TCRBatchMove component
- Data export and import to/from XML (ADO format)
- Ability to synchronize positions in different DataSets
- Extended data management with TLiteDump components

Script execution

- Advanced script execution features with TLiteScript component
- Support for executing individual statements in scripts
- Support for executing huge scripts stored in files with dynamic loading

SQL Execution monitoring

- Extended SQL tracing capabilities provided by TLiteSQLMonitor component and dbMonitor
- Borland SQL Monitor support
- Ability to send messages to dbMonitor from any point in your program
- Ability to retrieve information about the last query execution

Visual extensions

- Includes source code of enhanced TCRDBGrid data-aware grid control
- Customizable connection dialog
- Cursor changes during non-blocking execution

Design-time enhancements

- DataSet Manager tool to control DataSet instances in the project
- Advanced design-time component and property editors
- Automatic design-time component linking
- More convenient data source setup with the TLiteDataSource component
- Syntax highlighting in design-time editors

Product clarity

- Complete documentation sets
- Printable documentation in PDF format
- A large amount of helpful demo projects

Licensing and support

- Included annual LiteDAC Subscription with Priority Support
- Licensed royalty-free per developer, per team, or per site

2.3 Requirements

LiteDAC supports two different ways of work with SQLite databases. When the TLiteConnection.Options.Direct property is set to False, an application based on LiteDAC

requires the SQLite client library. LiteDAC dynamically loads SQLite client DLL (sqlite3.dll) available on user systems. To locate DLL you can set the TIBCConnection.ClientLibrary property with the path to the client library. By default LiteDAC searches client DLL (sqlite3.dll) in directories specified in the PATH environment variable. When the TLiteConnection.Options.Direct property is set to True, then no additional files for the application are needed.

2.4 Compatibility

IDE Compatibility

LiteDAC is compatible with the following IDEs:

- Embarcadero RAD Studio 10.2 Tokyo
  - Embarcadero Delphi 10.2 Tokyo for Windows 32-bit & 64-bit
  - Embarcadero Delphi 10.2 Tokyo for macOS
  - Embarcadero Delphi 10.2 Tokyo for Linux 64-bit
  - Embarcadero Delphi 10.2 Tokyo for iOS 32-bit & 64-bit
  - Embarcadero Delphi 10.2 Tokyo for Android
  - Embarcadero C++Builder 10.2 Tokyo for Windows 32-bit & 64-bit
  - Embarcadero C++Builder 10.2 Tokyo for macOS
  - Embarcadero C++Builder 10.2 Tokyo for iOS 32-bit & 64-bit
  - Embarcadero C++Builder 10.2 Tokyo for Android
- Embarcadero RAD Studio 10.1 Berlin
  - Embarcadero Delphi 10.1 Berlin for Windows 32-bit & 64-bit
  - Embarcadero Delphi 10.1 Berlin for macOS
  - Embarcadero Delphi 10.1 Berlin for iOS 32-bit & 64-bit
  - Embarcadero Delphi 10.1 Berlin for Android
  - Embarcadero C++Builder 10.1 Berlin for Windows 32-bit & 64-bit
  - Embarcadero C++Builder 10.1 Berlin for macOS
  - Embarcadero C++Builder 10.1 Berlin for iOS 32-bit & 64-bit
  - Embarcadero C++Builder 10.1 Berlin for Android
- Embarcadero RAD Studio 10 Seattle
  - Embarcadero Delphi 10 Seattle for Windows 32-bit & 64-bit
  - Embarcadero Delphi 10 Seattle for macOS
  - Embarcadero Delphi 10 Seattle for iOS 32-bit & 64-bit
  - Embarcadero Delphi 10 Seattle for Android
  - Embarcadero C++Builder 10 Seattle for Windows 32-bit & 64-bit
  - Embarcadero C++Builder 10 Seattle for macOS

  - Embarcadero C++Builder 10 Seattle for iOS 32-bit & 64-bit
  - Embarcadero C++Builder 10 Seattle for Android
- Embarcadero RAD Studio XE8
  - Embarcadero Delphi XE8 for Windows 32-bit & 64-bit
  - Embarcadero Delphi XE8 for macOS
  - Embarcadero Delphi XE8 for iOS 32-bit & 64-bit
  - Embarcadero Delphi XE8 for Android
  - Embarcadero C++Builder XE8 for Windows 32-bit & 64-bit
  - Embarcadero C++Builder XE8 for macOS
  - Embarcadero C++Builder XE8 for iOS 32-bit & 64-bit
  - Embarcadero C++Builder XE8 for Android
- Embarcadero RAD Studio XE7
  - Embarcadero Delphi XE7 for Windows 32-bit & 64-bit
  - Embarcadero Delphi XE7 for macOS
  - Embarcadero Delphi XE7 for iOS
  - Embarcadero Delphi XE7 for Android
  - Embarcadero C++Builder XE7 for Windows 32-bit & 64-bit
  - Embarcadero C++Builder XE7 for macOS
  - Embarcadero C++Builder XE7 for iOS
  - Embarcadero C++Builder XE7 for Android
- Embarcadero RAD Studio XE6
  - Embarcadero Delphi XE6 for Windows 32-bit & 64-bit
  - Embarcadero Delphi XE6 for macOS
  - Embarcadero Delphi XE6 for iOS
  - Embarcadero Delphi XE6 for Android
  - Embarcadero C++Builder XE6 for Windows 32-bit & 64-bit
  - Embarcadero C++Builder XE6 for macOS
  - Embarcadero C++Builder XE6 for iOS
  - Embarcadero C++Builder XE6 for Android
- Embarcadero RAD Studio XE5 (Requires Update 2)
  - Embarcadero Delphi XE5 for Windows 32-bit & 64-bit
  - Embarcadero Delphi XE5 for macOS
  - Embarcadero Delphi XE5 for iOS
  - Embarcadero Delphi XE5 for Android
  - Embarcadero C++Builder XE5 for Windows 32-bit & 64-bit
  - Embarcadero C++Builder XE5 for macOS
  - Embarcadero C++Builder XE5 for iOS

- Embarcadero RAD Studio XE4
  - Embarcadero Delphi XE4 for Windows 32-bit & 64-bit
  - Embarcadero Delphi XE4 for macOS
  - Embarcadero Delphi XE4 for iOS
  - Embarcadero C++Builder XE4 for Windows 32-bit & 64-bit
  - Embarcadero C++Builder XE4 for macOS
- Embarcadero RAD Studio XE3 (Requires Update 2)
  - Embarcadero Delphi XE3 for Windows 32-bit & 64-bit
  - Embarcadero Delphi XE3 for macOS
  - Embarcadero C++Builder XE3 for Windows 32-bit & 64-bit
  - Embarcadero C++Builder XE3 for macOS
- Embarcadero RAD Studio XE2 (Requires Update 4 Hotfix 1)
  - Embarcadero Delphi XE2 for Windows 32-bit & 64-bit
  - Embarcadero Delphi XE2 for macOS
  - Embarcadero C++Builder XE2 for Windows 32-bit
  - Embarcadero C++Builder XE2 for macOS
- Embarcadero RAD Studio XE
  - Embarcadero Delphi XE
  - Embarcadero C++Builder XE
- Embarcadero RAD Studio 2010
  - Embarcadero Delphi 2010
  - Embarcadero C++Builder 2010
- CodeGear RAD Studio 2009 (Requires Update 3)
  - CodeGear Delphi 2009
  - CodeGear C++Builder 2009
- CodeGear RAD Studio 2007
  - CodeGear Delphi 2007
  - CodeGear C++Builder 2007
- CodeGear RAD Studio 2006
  - CodeGear Delphi 2006
  - CodeGear C++Builder 2006
- Borland Delphi 7
- Borland Delphi 6 (Requires Update Pack 2 – Delphi 6 Build 6.240)
- Borland C++Builder 6 (Requires Update Pack 4 – C++Builder 6 Build 10.166)
- Lazarus 1.8.4 and Free Pascal 3.0.4 for Windows, Linux, macOS, FreeBSD for 32-bit and 64-bit platforms

Only Architect, Enterprise, and Professional IDE editions are supported. For Delphi/C++Builder XE and higher LiteDAC additionally supports Starter Edition.

Lazarus and Free Pascal are supported only in Trial Edition and Professional Edition with source code.

Supported Target Platforms

- Windows, 32-bit and 64-bit
- macOS
- Linux, 32-bit (only in Lazarus and Free Pascal) and 64-bit
- iOS, 32-bit and 64-bit
- Android
- FreeBSD (only in Lazarus and Free Pascal) 32-bit and 64-bit

Note that support for 64-bit Windows and macOS was introduced in RAD Studio XE2, and is not available in older versions of RAD Studio. Support for iOS is available since RAD Studio XE4, but support for iOS 64-bit is available since RAD Studio XE8. Support for Android is available since RAD Studio XE5. Support for Linux 64-bit is available since RAD Studio 10.2 Tokyo.

Devart Data Access Components Compatibility

All DAC products are compatible with each other.
But, to install several DAC products to the same IDE, it is necessary to make sure that all DAC products have the same common engine (BPL files) version. The latest versions of DAC products or versions with the same release date always have the same version of the common engine and can be installed to the same IDE.

2.5 Using Several DAC Products in One IDE

UniDAC, ODAC, SDAC, MyDAC, IBDAC, PgDAC, LiteDAC and VirtualDAC components use common base packages listed below:
Packages:

- dacXX.bpl
- dacvclXX.bpl
- dcldacXX.bpl

Note that product compatibility is provided for the current build only. In other words, if you

upgrade one of the installed products, it may conflict with older builds of other products. In order to continue using the products simultaneously, you should upgrade all of them at the same time.

2.6 Component List

This topic presents a brief description of the components included in the SQLite Data Access Components library. Click on the name of each component for more information. These components are added to the LiteDAC page of the Component palette except for TCRBatchMove and TVirtualTable components. TCRBatchMove and TVirtualTable components are added to the Data Access page of the Component palette. Basic LiteDAC components are included in all LiteDAC editions. LiteDAC Professional Edition components are not included in LiteDAC Standard Edition.

Basic LiteDAC components

	TLiteConnection	Represents an open connection to a SQLite database.
	TLiteQuery	Executes queries and Operates record sets. It also provides flexible way to update data.
	TLiteSQL	Executes SQL statements, which do not return rowsets.
	TLiteTable	Lets you retrieve and update data in a single table without writing SQL statements.
	TLiteUpdateSQL	Lets you tune update operations for the DataSet component.
	TLiteDataSource	Provides an interface between LiteDAC dataset components and data-aware controls on a form.
	TLiteScript	Executes sequences of SQL statements.
	TLiteSQLMonitor	Interface for monitoring dynamic SQL execution in LiteDAC-based applications.
	TLiteConnectDialog	Used to build custom prompts for the database name and encryption key.
	TVirtualTable	Dataset that stores data in memory. This component is placed on the Data Access page of the Component palette.

	TVirtualDataSet	Dataset that processes arbitrary non-tabular data.

LiteDAC Professional Edition components

	TLiteUserCollation	Provides functionality for working with user-defined collations
	TLiteUserFunction	Provides functionality to define custom functions for future use in SQL-statements
	TLiteLoader	Provides quick loading of external data into the database
	TLiteDump	Serves to store a database or its parts as a script and also to restore database from received script.
	TLiteBackup	Implements SQLite Online Backup API functionality
	TLiteMetaData	Retrieves metadata on specified SQL object.
	TLiteEncryptor	Represents data encryption and decryption in client application.
	TCRBatchMove	Retrieves metadata on database objects from the server.

See Also

- Hierarchy chart

2.7 Hierarchy Chart

Many LiteDAC classes are inherited from standard VCL/LCL classes. The inheritance hierarchy chart for LiteDAC is shown below. The LiteDAC classes are represented by hyperlinks that point to their description in this documentation. A description of the standard classes can be found in the documentation of your IDE.

```
TObject
  |—TPersistent
  |—TComponent
      |—TCustomConnection
      |   |—TCustomDAConnection
```

```
|       |—TLiteConnection
|—TDataSet
|   |—TMemDataSet
|       |—TCustomDADataSet
|       |   |—TCustomLiteDataSet
|       |       |—TLiteQuery
|       |       |—TCustomLiteTable
|       |           |—TLiteTable
|       |—TDAMetaData
|           |—TLiteMetaData
|       |—TVirtualTable
|—TDataSource
|   |—TCRDataSource
|       |—TLiteDataSource
|—TCRBatchMove
|—TCustomConnectDialog
|   |—TLiteConnectDialog
|—TCustomLiteUserFunction
|   |—TLiteUserFunction
|—TCustomDASQL
|   |—TLiteSQL
|—TCustomDASQLMonitor
|   |—TLiteSQLMonitor
|—TDALoader
|   |—TLiteLoader
|—TDAScript
|   |—TLiteScript
|—TDADump
|   |—TLiteDump
|—TCREncryptor
    |—TLiteEncryptor
```

2.8 Editions

SQLite Data Access Components comes in three editions: LiteDAC Standard Edition, LiteDAC Professional Edition, and LiteDAC Trial Edition.

LiteDAC Standard Edition includes the LiteDAC basic connectivity components. LiteDAC Standard Edition is a cost-effective solution for database application developers who are

looking for overall high performance connectivity to SQLite.
LiteDAC Professional Edition shows off the full power of LiteDAC, enhancing LiteDAC Standard Edition with support for SQLite-specific functionality and advanced dataset management features.
LiteDAC Trial Edition is the evaluation version of LiteDAC. It includes all the functionality of LiteDAC Professional Edition with a trial limitation of 60 days. C++Builder has additional trial limitations.
You can get **Source Access** to the LiteDAC Standard and LiteDAC Professional Editions by purchasing the special LiteDAC Standard Edition with Source Code or LiteDAC Professional Edition with Source Code. The Standard and Professional editions include the source code for all component classes. The source code of DataSet Manager is not distributed.
FreePascal support is available in Editions with **Source Code** and **Trial Edition**.

LiteDAC Edition Matrix

Feature	Standard	Professional
Direct Mode		
Direct access to SQLite by static linking of the SQLite library	✗	✓
Desktop Application Development		
Windows	✓	✓
macOS	✓	✓
Linux	✗	✓
Mobile Application Development		
iOS	✗	✓
Android	✗	✓
Database Encryption		

SQLite database encryption in Direct mode	✗	✓
Data Access Components		
Base Components: TLiteConnection TLiteQuery TLiteSQL TLiteTable TLiteUpdateSQL TLiteDataSource	✓	✓
Script executing TLiteScript	✗	✓
Fast data loading into the server TLiteLoader	✗	✓
SQLite Specific Components		
Working with user-defined collations TLiteUserCollation	✗	✓
Declaration and execution of user-defined functions TLiteUserFunction	✗	✓
Obtaining metainformation about database objects TLiteMetaData	✗	✓
Storing a database as a script TLiteDump	✗	✓
Implements SQLite Online Backup API functionality TLiteBackup	✗	✓
DataBase Activity Monitoring		
Monitoring of per-component SQL execution TLiteSQLMonitor	✓	✓
Additional components		
Advanced connection dialog TLiteConnectDialog	✓	✓
Data encryption and decryption TLiteEncryptor	✗	✓

Data storing in memory table TVirtualTable	✔	✔	
Advanced DBGrid with extended functionality TCRDBGrid	✘	✔	
Records transferring between datasets TCRBatchMove	✘	✔	
Design-Time Features			
Enhanced component and property editors	✔	✔	
DataSet Manager	✘	✔	
Cross IDE Support			
Lazarus and Free Pascal Support *	✘	✔	

* Available only in editions with source code.

2.9 Licensing

PLEASE READ THIS LICENSE AGREEMENT CAREFULLY. BY INSTALLING OR USING THIS SOFTWARE, YOU INDICATE ACCEPTANCE OF AND AGREE TO BECOME BOUND BY THE TERMS AND CONDITIONS OF THIS LICENSE. IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, DO NOT INSTALL OR USE THIS SOFTWARE AND PROMPTLY RETURN IT TO DEVART.

INTRODUCTION

This Devart end-user license agreement ("Agreement") is a legal agreement between you (either an individual person or a single legal entity) and Devart, for the use of LiteDAC software application, source code, demos, intermediate files, printed materials, and online or electronic documentation contained in this installation file. For the purpose of this Agreement, the software program(s) and supporting documentation will be referred to as the "Software".

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2.10 Getting Support

This page lists several ways you can find help with using LiteDAC and describes the LiteDAC Priority Support program.

Support Options

There are a number of resources for finding help on installing and using LiteDAC.

- You can find out more about LiteDAC installation or licensing by consulting the Licensing and FAQ sections.
- You can get community assistance and technical support on the LiteDAC Community Forum.

- You can get advanced technical assistance by LiteDAC developers through the **LiteDAC Priority Support** program.

If you have a question about ordering LiteDAC or any other Devart product, please contact sales@devart.com.

LiteDAC Priority Support

LiteDAC Priority Support is an advanced product support service for getting expedited individual assistance with LiteDAC-related questions from the LiteDAC developers themselves. Priority Support is carried out over email and has two business days response policy. Priority Support is available for users with an active LiteDAC Subscription.
To get help through the LiteDAC Priority Support program, please send an email to support@devart.com describing the problem you are having. Make sure to include the following information in your message:

- The version of Delphi, C++Builder you are using.
- Your LiteDAC Registration number.
- Full LiteDAC edition name and version number. You can find both of these from the LiteDAC | LiteDAC About menu in the IDE.
- Versions of the SQLite and client you are using.
- A detailed problem description.
- If possible, a small test project that reproduces the problem. Please include definitions for all and avoid using third-party components.

2.11 Frequently Asked Questions

This page contains a list of Frequently Asked Questions for SQLite Data Access Components.
If you have encounter a question with using LiteDAC, please browse through this list first. If this page does not answer your question, refer to the Getting Support topic in LiteDAC help

Installation and Deployment

1. I am having a problem installing LiteDAC or compiling LiteDAC-based projects...

You may be having a compatibility issue that shows up in one or more of the following forms:

- Get a "Setup has detected already installed DAC packages which are incompatible with current version" message during LiteDAC installation.
- Get a "Procedure entry point ... not found in ... " message when starting IDE.
- Get a "Unit ... was compiled with a different version of ..." message on compilation.

You can have such problems if you installed incompatible LiteDAC, IBDAC, SDAC, ODAC, PgDAC or MyDAC versions. All these products use common base packages. The easiest way to avoid the problem is to uninstall all installed DAC products and then download from our site and install the last builds.

2. What software should be installed on a client computer for LiteDAC-based applications to work?

The minimal configuration of client installation includes the following:

- Copy the SQLite client library file *sqlite3.dll* to the folder available for executable unit of your program. For example, to the folder with your executable file, or to the Windows system folder. For more information, see description of the *LoadLibrary* function and the environment variable *PATH*.

Licensing and Subscriptions

1. Am I entitled to distribute applications written with LiteDAC?

If you have purchased a full version of LiteDAC, you are entitled to distribute pre-compiled programs created with its use. You are not entitled to propagate any components inherited from LiteDAC or using LiteDAC source code. For more information see the *License.rtf* file in your LiteDAC installation directory.

2. Can I create components using LiteDAC?

You can create your own components that are inherited from LiteDAC or that use the LiteDAC source code. You are entitled to sell and distribute compiled application executables that use such components, but not their source code and not the components themselves.

3. I have a registered version of LiteDAC. Will I need to pay to upgrade to future versions?

All upgrades to future versions are free to users with an active LiteDAC Subscription.

4. What are the benefits of the LiteDAC Subscription Program?

The **LiteDAC Subscription Program** is an annual maintenance and support service for LiteDAC users.

Users with a valid LiteDAC Subscription get the following benefits:

- Access to new versions of LiteDAC when they are released
- Access to all LiteDAC updates and bug fixes
- Product support through the LiteDAC Priority Support program
- Notification of new product versions

Priority Support is an advanced product support program which offers you expedited

individual assistance with LiteDAC-related questions from the LiteDAC developers themselves. Priority Support is carried out over email and has a two business day response policy.

The LiteDAC Subscription Program is available for registered users of LiteDAC.

5. Can I use my version of LiteDAC after my Subscription expires?

Yes, you can. LiteDAC version licenses are perpetual.

6. I want a LiteDAC Subscription! How can I get one?

An annual LiteDAC Subscription is included when ordering or upgrading to any registered (non-Trial) edition of LiteDAC.

You can renew your LiteDAC Subscription on the LiteDAC Ordering Page. For more information, please contact sales@devart.com.

How To

1. How can I determine which version of LiteDAC I am using?

You can determine your LiteDAC version number in several ways:

- During installation of LiteDAC, consult the LiteDAC Installer screen.
- After installation, see the *history.html* file in your LiteDAC installation directiory.
- At design-time, select LiteDAC | About LiteDAC from the main menu of your IDE.

2. How can I execute a query saved in the SQLInsert, SQLUpdate, SQLDelete, or SQLRefresh properties of a LiteDAC dataset?

The values of these properties are templates for query statements, and they cannot be manually executed. Usually there is no need to fill these properties because the text of the query is generated automatically.

In special cases, you can set these properties to perform more complicated processing during a query. These properties are automatically processed by LiteDAC during the execution of the Post, Delete, or RefreshRecord methods, and are used to construct the query to the server. Their values can contain parameters with names of fields in the underlying data source, which will be later replaced by appropriate data values.

For example, you can use the SQLInsert template to insert a row into a query instance as follows.

- Fill the SQLInsert property with the parametrized query template you want to use.
- Call Insert.
- Initialize field values of the row to insert.
- Call Post.

The value of the SQLInsert property will then be used by LiteDAC to perform the last step.

Setting these properties is optional and allows you to automatically execute additional SQL statements, add calls to stored procedures and functions, check input parameters, and/or store comments during query execution. If these properties are not set, the LiteDAC dataset object will generate the query itself using the appropriate insert, update, delete, or refresh record syntax.

3. Some questions about the visual part of LiteDAC

The following questions usually arise from the same problem:

- I set the Debug property to True but nothing happens!
- While executing a query, the screen cursor does not change to an hour-glass.
- Even if I have LoginPromp set to True, the connect dialog does not appear.

To fix this problem, you should add the LiteDacVcl unit to the uses clause of your project.

General Questions

1. I would like to develop an application that works with SQLite databases. Which should I use - LiteDAC or dbExpress?

dbExpress technology serves for providing a more or less uniform way to access different servers (SQL Server, MySQL, Oracle and so on). It is based on drivers that include server-specific features. Like any universal tool, in many specialized cases dbExpress providers lose some functionality. For example, the dbExpress design-time is quite poor and cannot be expanded.

LiteDAC is a specialized set of components to access SQLite databases with advanced design-time and component interface similar to BDE.

We tried to implement maximal SQLite support in LiteDAC. dbExpress technology puts severe restrictions. For example, Unicode fields cannot be passed from the driver to dbExpress.

In some cases dbExpress is slower because data undergoes additional conversion to correspond to dbExpress standards.

To summarise, if it is important for you to be able to quickly adapt your application to a database server other than InterBase, it is probably better to use dbExpress. In other cases, especially when migrating from BDE or ADO, you should use LiteDAC.

2. When editing a DataSet, I get an exception with the message 'Update failed. Found %d records.' or 'Refresh failed. Found %d records.'

This error occurs when the database is unable to determine which record to modify or delete.

In other words, there are either more than one record or no records that suit the UPDATE criteria. Such situation can happen when you omit the unique field in a SELECT statement (TCustomDADataSet.SQL) or when another user modifies the table simultaneously. This exception can be suppressed. Refer to TCustomDADataSet.Options topic in LiteDAC help for more information.

3. I cannot use INT64 fields as key fields in master-detail relationship.

Fields of this type are represented in Delphi by TLargeIntField objects. In some versions of Delphi, you cannot access these fields through the Value property (see the protected method TLargeintField.SetVarValue in the DB unit for details). To avoid this problem, you can change the field type to INTEGER, which is usually sufficient for key fields. Alternatively, you can avoid using Value.

4. Can LiteDAC and BDE functions be used side-by-side in a single application?

Yes. There is no problem with using both LiteDAC and BDE functions in the same application.

3 Getting Started

This page contains a quick introduction to setting up and using the SQLite Data Access Components library. It gives a walkthrough for each part of the LiteDAC usage process and points out the most relevant related topics in the documentation.

- What is LiteDAC?
- Installing LiteDAC.
- Working with the LiteDAC demo projects.
- Compiling and deploying your LiteDAC project.
- Using the LiteDAC documentation.
- How to get help with LiteDAC.

What is LiteDAC?

SQLite Data Access Components (LiteDAC) is a component library which provides direct connectivity to SQLite for Delphi, C++Builder and Lazarus (FPC), and helps you develop fast SQLite-based database applications with these environments.

Many LiteDAC classes are based on VCL, LCL and FMX classes and interfaces. LiteDAC is a replacement for the Borland Database Engine, it provides native database connectivity, and is specifically designed as an interface to the SQLite database.
An introduction to LiteDAC is provided in the Overview section.
A list of the LiteDAC features you may find useful is listed in the Features section.
An overview of the LiteDAC component classes is provided in the Components List section.

Installing LiteDAC

To install LiteDAC, complete the following steps.

1. Choose and download the version of the LiteDAC installation program that is compatible with your IDE. For instance, if you are installing LiteDAC 1.00, you should use the following files:

   For BDS 2006 and Turbo - **litedac100d10*.exe**
   For Delphi 7 - **litedac100d7*.exe**

For more information, visit the LiteDAC download page.

2. Close all running Borland applications.
3. Launch the LiteDAC installation program you downloaded in the first step and follow the instructions to install LiteDAC.

By default, the LiteDAC installation program should install compiled LiteDAC libraries automatically on all IDEs.
To check if LiteDAC has been installed properly, launch your IDE and make sure that the LiteDAC page has been added to the Component palette and that a LiteDAC menu was added to the Menu bar.
If you have bought LiteDAC Professional Edition with Source Code, you will be able to download both the compiled version of LiteDAC and the LiteDAC source code. The installation process for the compiled version is standard, as described above.The LiteDAC source code must be compiled and installed manually. Consult the supplied *ReadmeSrc.html* file for more details.
To find out what gets installed with LiteDAC or to troubleshoot your LiteDAC installation, visit the Installation topic.

Working with the LiteDAC demo projects

The LiteDAC installation package includes a number of demo projects that demonstrate LiteDAC capabilities and use patterns. The LiteDAC demo projects are automatically installed in the LiteDAC installation folder.
To quickly get started working with LiteDAC, launch and explore the introductory LiteDAC

demo project, *LiteDACDemo*, from your IDE. This demo project is a collection of demos that show how LiteDAC can be used. The project creates a form which contains an explorer panel for browsing the included demos and a view panel for launching and viewing the selected demo.

LiteDACDemo Walkthrough

1. Launch your IDE.
2. Choose File | Open Project from the menu bar
3. Find the LiteDAC directory and open the *LiteDACDemo* project. This project should be located in the Demos\LiteDACDemo folder.

For example, if you are using Borland Developer Studio 2006, the demo project may be found at

\Program Files\Devart\LiteDAC for Delphi 2006\Demos\Win32\LiteDACDemo \LiteDACDemo.bdsproj

4. Select Run | Run or press F9 to compile and launch the demo project. *LiteDACDemo* should start, and a full-screen LiteDAC Demo window with a toolbar, an explorer panel, and a view panel will open. The explorer panel will contain the list of all demo sub-projects included in *LiteDACDemo,* and the view panel will contain an overview of each included demo.

At this point, you will be able to browse through the available demos, read their descriptions, view their source code, and see the functionality provided by each demo for interacting with SQLite. However, you will not be able to actually retrieve data from SQLite or execute commands until you connect to the database.

5. Click on the "Connect" button on the *LiteDACDemo* toolbar. A Connect dialog box will open. Enter the connection parameters you use to connect to your SQLite database and click "Connect" in the dialog box.

Now you have a fully functional interface to your SQLite database. You will be able to go through the different demos, to browse tables, create and drop objects, and execute SQL commands.

Warning! All changes you make to the database you are connected to, including creating and dropping objects used by the demo, will be permanent. Make sure you specify a test database in the connection step.

6. Click on the "Create" button to create all objects that will be used by *LiteDACDemo*. If some of these objects already exist in the database you have connected to, the following error message will appear.

An error has occurred:
#42S01Table 'dept' already exists

You can manually create objects required for demo by using the following file: %LiteDAC%\Demos\InstallDemoObjects.sql
%LiteDAC% is the LiteDAC installation path on your computer.
Ignore this exception?

This is a standard warning from the object execution script. Click "Yes to All" to ignore this message. *LiteDACDemo* will create the *LiteDACDemo* objects in the database you have connected to.

7. Choose a demo that demonstrates an aspect of working with SQLite that you are interested in, and play with the demo frame in the view window on the right. For example, to find out more about how to work with SQLite tables, select the Table demo from the "Working with Components" folder. A simple SQLite table browser will open in the view panel which will let you open a table in your database by specifying its name and clicking on the Open button.
8. Click on the "Demo source" button in the *LiteDACDemo* toolbar to find out how the demo you selected was implemented. The source code behind the demo project will appear in the view panel. Try to find the places where LiteDAC components are used to connect to the database.
9. Click on the "Form as text" button in the *LiteDACDemo* toolbar to view the code behind the interface to the demo. Try to find the places where LiteDAC components are created on the demo form.
10. Repeat these steps for other demos listed in the explorer window. The available demos are organized in three folders.

Working with components
A collection of projects that show how to work with basic LiteDAC components.
General demos
A collection of projects that show off the LiteDAC technology and demonstrate some ways of working with data.
SQLite-specific demos
A collection of projects that demonstrate how to incorporate SQLite features in database applications.

11. When you are finished working with the project, click on the "Drop" button in the *LiteDACDemo* toolbar to remove all schema objects added in Step 6.

Other LiteDAC demo projects

LiteDAC is accompanied by a number of other demo projects. A description of all LiteDAC demos is located in the Demo Projects topic.

Compiling and deploying your LiteDAC project

Compiling LiteDAC-based projects

By default, to compile a project that uses LiteDAC classes, your IDE compiler needs to have access to the LiteDAC dcu (obj) files. If you are compiling with runtime packages, the compiler will also need to have access to the LiteDAC bpl files. **All the appropriate settings for both these scenarios should take place automatically during installation of LiteDAC.** You should only need to modify your environment manually if you are using the LiteDAC edition that comes with source code - LiteDAC Professional Edition with Source Code.

You can check that your environment is properly configured by trying to compile one of the LiteDAC demo projects. If you have no problems compiling and launching the LiteDAC demos, your environment has been properly configured.

For more information about which library files and environment changes are needed for compiling LiteDAC-based projects, consult the Installation topic.

Deploying LiteDAC-based projects

To deploy an application that uses LiteDAC, you will need to make sure the target workstation has access to the following files.

- The SQLite client library, if connecting using SQLite client.
- The LiteDAC bpl files, if compiling with runtime packages.

If you are evaluating deploying projects with LiteDAC Trial Edition, you will also need to deploy some additional bpl files with your application even if you are compiling without runtime packages. As another trial limitation for C++Builder, applications written with LiteDAC Trial Edition for C++Builder will only work if the C++Builder IDE is launched. More information about LiteDAC Trial Edition limitations is provided here.

A list of the files which may need to be deployed with LiteDAC-based applications is included in the Deployment topic.

Using the LiteDAC documentation

The LiteDAC documentation describes how to install and configure LiteDAC, how to use LiteDAC Demo Projects, and how to use the LiteDAC libraries.

The LiteDAC documentation includes a detailed reference of all LiteDAC components and classes. Many of the LiteDAC components and classes inherit or implement members from other VCL, LCL and FMX classes and interfaces. The product documentation also includes a summary of all members within each of these classes. To view a detailed description of a particular component, look it up in the Components List section. To find out more about a specific standard VCL/LCL class a LiteDAC component is inherited from, see the

corresponding topic in your IDE documentation.
At install time, the LiteDAC documentation is integrated into your IDE. It can be invoked from the LiteDAC menu added to the Menu Bar, or by pressing F1 in an object inspector or on a selected code segment.

How to get help with LiteDAC

There are a number of resources for finding help on using LiteDAC classes in your project.

- If you have a question about LiteDAC installation or licensing, consult the Licensing and FAQ sections.
- You can get community assistance and LiteDAC technical support on the LiteDAC Support Forum.
- To get help through the LiteDAC Priority Support program, send an email to the LiteDAC development team at litedac@devart.com.
- If you have a question about ordering LiteDAC or any other Devart product, contact sales@devart.com.

For more information, consult the Getting Support topic.

3.1 Installation

This topic contains the environment changes made by the LiteDAC installer. If you are having problems using LiteDAC or compiling LiteDAC-based products, check this list to make sure your system is properly configured.
Compiled versions of LiteDAC are installed automatically by LiteDAC Installer for all supported IDEs except for Lazarus. Version of LiteDAC with Source Code must be installed manually. Installation of LiteDAC from sources is described in the supplied *ReadmeSrc.html* file.

Before installing LiteDAC ...

Two versions of LiteDAC cannot be installed in parallel for the same IDE, and, since the Devart Data Access Components products have some shared bpl files, newer versions of LiteDAC may be incompatible with older versions of ODAC, IBDAC, SDAC, MyDAC, PgDAC and UniDAC.
So before installing a new version of LiteDAC, uninstall all previous versions of LiteDAC you may have, and check if your new install is compatible with other Devart Data Access Components products you have installed. For more information please see Using several products in one IDE. If you run into problems or have any compatibility questions, please email litedac@devart.com

Note: You can avoid performing LiteDAC uninstallation manually when upgrading to a new

version by directing the LiteDAC installation program to overwrite previous versions. To do this, execute the installation program from the command line with a /force parameter (Start | Run and type litedacXX.exe /force, specifying the full path to the appropriate version of the installation program).

Installed packages

Note: %LiteDAC% denotes the path to your LiteDAC installation directory.

Delphi/C++Builder Win32 project packages

Name	*Description*	*Location*
dacXX.bpl	DAC run-time package	Windows\System32
dcldacXX.bpl	DAC design-time package	Delphi\Bin
dacvclXX.bpl	DAC VCL support package	Delphi\Bin
litedacXX.bpl	LiteDAC run-time package	Windows\System32
dcllitedacXX.bpl	LiteDAC design-time package	Delphi\Bin
litedacvclXX.bpl	VCL support package	Delphi\Bin
crcontrolsXX.bpl	TCRDBGrid component	Delphi\Bin

Additional packages for using LiteDAC managers and wizards

Name	*Description*	*Location*
datasetmanagerXX.bpl	DataSet Manager package	Delphi\Bin

Environment Changes

To compile LiteDAC-based applications, your environment must be configured to have access to the LiteDAC libraries. Environment changes are IDE-dependent.
For all instructions, replace %LiteDAC% with the path to your LiteDAC installation directory

Delphi

- %LiteDAC%\Lib should be included in the Library Path accessible from Tools | Enviroment options | Library.

The LiteDAC Installer performs Delphi environment changes automatically for compiled versions of LiteDAC.

C++Builder

C++Builder 6:

- $(BCB)\LiteDAC\Lib should be included in the Library Path of the Default Project Options accessible from Project | Options | Directories/Conditionals.
- $(BCB)\LiteDAC\Include should be included in the Include Path of the Default Project Options accessible from Project | Options | Directories/Conditionals.

C++Builder 2006, 2007:

- $(BCB)\LiteDAC\Lib should be included in the Library search path of the Default Project Options accessible from Project | Default Options | C++Builder | Linker | Paths and Defines.
- $(BCB)\LiteDAC\Include should be included in the Include search path of the Default Project Options accessible from Project | Default Options | C++Builder | C++ Compiler | Paths and Defines.

The LiteDAC Installer performs C++Builder environment changes automatically for compiled versions of LiteDAC.

Lazarus

The LiteDAC installation program only copies LiteDAC files. You need to install LiteDAC packages to the Lazarus IDE manually. Open %LiteDAC%\Source\Lazarus1\dcllitedac10.lpk (for Trial version %LiteDAC%\Packages\dcllitedac10.lpk) file in Lazarus and press the Install button. After that Lazarus IDE will be rebuilded with LiteDAC packages.
Do not press the the Compile button for the package. Compiling will fail because there are no LiteDAC sources.
To check that your environment has been properly configured, try to compile one of the demo projects included with LiteDAC. The LiteDAC demo projects are located in %LiteDAC%/Demos.

DBMonitor

DBMonitor is an easy-to-use tool to provide visual monitoring of your database applications. It is provided as an alternative to Borland SQL Monitor which is also supported by LiteDAC. DBMonitor is intended to hamper application being monitored as little as possible. For more information, visit the DBMonitor page online.

3.2 Connecting To SQLite Database

This tutorial describes how to connect to SQLite Database.

Requirements

LiteDAC supports 2 modes of working with SQLite database:

1. Direct Mode - no additional client libraries required;
2. Using sqlite3.dll(.o,.dylib) client library - requires a corresponding client library on a particular PC or device. The library must be located either in the application folder or in the folder specified in the environmental variables.

General information

SQLite works with 3 database types: real DB file, temp DB file, and DB in memory.
To use different DB types, a corresponding value must be set in the TLiteConnection.Database proeprty. To work with a DB file,you have to specify the full, relative or UNC path to the DB file. To work with a database in memory, the ':memory:' value must be set. To work with a temporary database, the property value should be empty.
To switch modes of work with the database, the TLiteConnectionOptions.Direct property is used. The property is set to False by default (client library mode). To use the Direct mode, the proeprty must be set to True.
When connecting to a database file, if it doesn't exist, the file can be created automatically. For this, the TLiteConnectionOptions.ForceCreateDatabase property must be set to True. Its default value is False. On an attempt to connect to a non-existing DB file with disabled ForceCreateDatabase, an error message will be displayed saying that such a file doesn't exist.

Note: this option doesn't apply to working with a temp database and an in-memory database.

Note: when working with client library, its bitness must match the application bitness, i.e. a 32-bit application can work with a 32-bit library version only, and 64-bit - only with 64-bit.

Creating connection

Design time creation

The following assumes that you have IDE running, and you are currently focused on a form designer.

1. Open the Component palette and find the TLiteConnection component in the LiteDAC category.

2. Double-click the component.

Note: a new object appears on the form. If this is the first time you create TLiteConnection in this application, it is named LiteConnection1.

After you have done these steps, you should set up the newly created LiteConnection1 component. You can do this in two ways:

Using TLiteConnection Editor

1. Double-click on the LiteConnection1 object.
2. In the Database edit box specify the database name (for example, test.db3). If Database is not specified, the temporary database is used.
3. If a client library with suppport for encryption or Direct Mode is used, then you can specify the key to the database file in the Encryption Key edit box.
4. If Direct Mode is used, then you can select an encryption algorithm in the Encription Algorithm ComboBox. When using a client library, the standard algorithm built into the library is used.
5. You can specify a particular SQLite3 library in the Client Library edit box.
6. To enable Direct Mode, the Direct CheckBox must be checked.

Using Object Inspector

1. Click on the LiteConnection1 object and press F11 to focus on object's properties.
2. In the Database property specify the database name (for example,test.db3). If Database is not specified, the temporary database is used.
3. If a client library with suppport for encryption or Direct Mode is used, then you can specify the key to the database file in the EncryptionKey poperty.
4. If Direct Mode is used, then you can select an encryption algorithm in the Options.EncriptionAlgorithm proeprty. When using a client library, the standard algorithm built into the library is used.
5. You can specify a particular SQLite3 library in the ClientLibrary property.
6. To enable Direct Mode, the Options.Direct property must be set to True.

Run time creation

Same operations performed in runtime look as follows:

[Delphi]

```
var
  LiteConnection: TLiteConnection;
begin
  LiteConnection := TLiteConnection.Create(nil);
  try
    LiteConnection.Database := 'test.db3';
```

```
    LiteConnection.Options.ForceCreateDatabase := True;
    LiteConnection.Options.Direct := True;
    LiteConnection.EncryptionKey := '123';
    LiteConnection.Options.EncryptionAlgorithm := leAES256;
    LiteConnection.LoginPrompt := False; //to prevent showing of the connect
    LiteConnection.Connect;
  finally
    LiteConnection.Free;
  end;
end.
```

Note: To run this code, you have to add the LiteAccess and LiteCall units to the USES clause of your unit.

[C++Builder]

```
{
  TLiteConnection* LiteConnection = new TLiteConnection(NULL);
  try
  {
    LiteConnection->Database = "test.db3";
    LiteConnection->Options->ForceCreateDatabase = True;
    LiteConnection->Options->Direct = True;
    LiteConnection->EncryptionKey = '123';
    LiteConnection->Options->EncryptionAlgorithm = leAES256;
    LiteConnection->LoginPrompt = False; //to prevent showing of the connect
    LiteConnection->Connect();
  }
  __finally
  {
    LiteConnection->Free();
  }
}
```

Note: To run this code, you have to include the LiteAccess.hpp and LiteCall.hpp header files to your unit.

And using the ConnectString property:

[Delphi]

```
var
  LiteConnection: TLiteConnection;
begin
  LiteConnection := TLiteConnection.Create(nil);
  try
    LiteConnection.ConnectString := 'Database=test.db3;ForceCreateDatabase=T
    LiteConnection.Connect;
  finally
    LiteConnection.Free;
  end;
end.
```

Note: To run this code, you have to add the LiteAccess and LiteCall units to the USES clause

of your unit.

[C++Builder]

```
{
  TLiteConnection* LiteConnection = new TLiteConnection(NULL);
  try
  {
    LiteConnection->ConnectString = "Database=test.db3;ForceCreateDatabase=T
    LiteConnection->Connect();
  }
  __finally
  {
    LiteConnection->Free();
  }
}
```

Note: To run this code, you have to include the LiteAccess.hpp and LiteCall.hpp header files to your unit.

Opening connection

As you can see above, opening a connection at run-time is as simple as calling of the Connect method:

[Delphi]

```
LiteConnection.Connect;
```

[C++Builder]

```
LiteConnection->Connect();
```

Another way to open a connection at run-time is to set the Connected property to True:

[Delphi]

```
LiteConnection.Connected := True;
```

[C++Builder]

```
LiteConnection->Connected = True;
```

This way can be used at design-time as well. Of course, LiteConnection1 must have valid connection options assigned earlier. When you call Connect, LiteDAC tries to find the database file and connect to it. If any problem occurs, it raises an exception with brief explanation on what is wrong. If no problem is encountered, LiteDAC tries to establish the connection. Finally, when connection is established, the Connect method returns and the Connected property is changed to True.

Closing connection

To close a connection, call its Disconnect method, or set its Connected property to False:
[Delphi]

```
LiteConnection.Close;
```

[C++Builder]

```
LiteConnection.Close();
```

, or
[Delphi]

```
LiteConnection.Connected := False;
```

[C++Builder]

```
LiteConnection.Connected = False;
```

Modifying connection

You can modify connection by changing properties of TLiteConnection object. Keep in mind that while some of the properties can be altered freely, most of them close connection when the new value is assigned. For example, if you change Database property, it gets closed immediately, and you have to reopen it manually.

3.3 Creating Database Objects

This tutorial describes how to create tables, stored procedures and other objects in SQLite Database.

Requirements

In order to create database objects, you have to connect to SQLite DB. This process is described in details in the tutorial Connecting To SQLite Database.

General information

Database objects are created using Data Definition Language (DDL), which is a part of SQL. There are two ways to create database objects. You can build DDL statements manually and execute them using the component like TLiteSQL. Another way is to use console utility sqlite3.exe This topic covers the first way - using components.
There are two ways of executing DDL statements in components like TLiteSQL, in design-time and in run-time. Both these ways are described below.

Note: the following assumes that you have the IDE running, you are currently focused on the form designer, and you have already set up the TLiteConnection on the form.

Creating tables

To create tables, the TLiteSQL component is used here.

Design time creation

- Open the Component palette and find the TLiteSQL component in the LiteDAC.
- Double-click on the component. Note that new object appears on the form. If this is the first time you create TLiteSQL in this application,

it is named LiteSQL1. Note that the LiteSQL1.Connection property is already set to existent (on the form) connection.

- Double-click on the LiteSQL1 object.
- Type the following lines:

```
CREATE TABLE dept (
  deptno INTEGER PRIMARY KEY,
  dname VARCHAR2(14),
  loc VARCHAR2(13)
);
CREATE TABLE emp (
  empno INTEGER PRIMARY KEY,
  ename VARCHAR2(10),
  job VARCHAR2(9),
  mgr INTEGER,
  hiredate DATE,
  sal FLOAT,
  comm FLOAT,
  deptno INTEGER
);
```

- Press the Execute button. This will create two tables we will use for tutorial purposes.

Run time creation

The same operations performed in runtime look as follows:

[Delphi]

```
var
  LiteSQL: TLiteSQL;
begin
  LiteSQL:= TLiteSQL.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteSQL.Connection := LiteConnection;
    // set SQL script for creating tables
    LiteSQL.SQL.Clear;
    LiteSQL.SQL.Add('CREATE TABLE dept (');
    LiteSQL.SQL.Add('  deptno INTEGER,');
    LiteSQL.SQL.Add('  dname VARCHAR2(14),');
    LiteSQL.SQL.Add('  loc VARCHAR2(13)');
```

```
    LiteSQL.SQL.Add(');');
    LiteSQL.SQL.Add('CREATE TABLE emp (');
    LiteSQL.SQL.Add('  empno INTEGER PRIMARY KEY,');
    LiteSQL.SQL.Add('  ename VARCHAR2(10),');
    LiteSQL.SQL.Add('  job VARCHAR2(9),');
    LiteSQL.SQL.Add('  mgr INTEGER,');
    LiteSQL.SQL.Add('  hiredate DATE,');
    LiteSQL.SQL.Add('  sal FLOAT,');
    LiteSQL.SQL.Add('  comm FLOAT,');
    LiteSQL.SQL.Add('  deptno INTEGER');
    LiteSQL.SQL.Add(');');
    // execute script
    LiteSQL.Execute;
  finally
    LiteSQL.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteSQL* LiteSQL= new TLiteSQL(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteSQL->Connection = LiteConnection;
    // set SQL script for creating tables
    LiteSQL->SQL->Clear();
    LiteSQL->SQL->Add("CREATE TABLE dept (");
    LiteSQL->SQL->Add("  deptno INTEGER PRIMARY KEY,");
    LiteSQL->SQL->Add("  dname VARCHAR2(14),");
    LiteSQL->SQL->Add("  loc VARCHAR2(13)");
    LiteSQL->SQL->Add(");");
    LiteSQL->SQL->Add("CREATE TABLE emp (");
    LiteSQL->SQL->Add("  empno INTEGER PRIMARY KEY,");
    LiteSQL->SQL->Add("  ename VARCHAR2(10),");
    LiteSQL->SQL->Add("  job VARCHAR2(9),");
    LiteSQL->SQL->Add("  mgr INTEGER,");
    LiteSQL->SQL->Add("  hiredate DATE,");
    LiteSQL->SQL->Add("  sal FLOAT,");
    LiteSQL->SQL->Add("  comm FLOAT,");
    LiteSQL->SQL->Add("  deptno INTEGER");
    LiteSQL->SQL->Add(");");
    // execute script
    LiteSQL->Execute();
  }
  __finally
  {
    LiteSQL->Free();
  }
}
```

Additional Information

Actually, there are lots of ways to create database objects on server. Any tool or component that is capable of running a SQL query, can be used to manage database objects. For

example, TLiteSQL suits fine for creating objects one by one, while TLiteScript is designed for executing series of DDL/DML statements. For information on DDL statements syntax refer to SQLite documentation.

3.4 Deleting Data

This tutorial describes how to delete data from tables using the TLiteQuery and TLiteTable components.

Requirements

This walkthrough supposes that you know how to connect to server (tutorials "Connecting To SQLite Database"), how to create necessary objects in a database (tutorial "Creating Database Objects"), and how to insert data to created tables (tutorial "Inserting Data Into Tables").

General information

Data in the database can be deleted using Data Manipulation Language (DML), which is a part of SQL. There are two ways to manipulate a database. You can build DML statements manually and run them within some component like TLiteQuery. Another way is to use the dataset functionality (the Delete method) of the TLiteQuery and TLiteTable components. We will discuss both ways. The goal of this tutorial is to delete a record in the table dept.

Using DataSet Functionality

The Delete method of the TLiteQuery and TLiteTable components allows deleting data without using DML statements. DML statements are generated by LiteDAC components internally. The code below demonstrates using this method:

[Delphi]

```
var
  LiteQuery: TLiteQuery;
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // retrieve data
    LiteQuery.SQL.Text := 'SELECT * FROM dept';
    LiteQuery.Open;
    // delete the current record
    LiteQuery.Delete;
  finally
    LiteQuery.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteQuery->Connection = LiteConnection;
    // retrieve data
    LiteQuery->SQL->Text = "SELECT * FROM dept";
    LiteQuery->Open();
    // delete the current record
    LiteQuery->Delete();
  }
  __finally
  {
    LiteQuery->Free();
  }
}
```

Building DML Statements Manually

DML Statements can contain plain text and text with parameters. This section describes both ways.

DML Statements With Parameters

[Delphi]

```
var
  LiteQuery: TLiteQuery;
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // set SQL query for delete record
    LiteQuery.SQL.Clear;
    LiteQuery.SQL.Add('DELETE FROM dept WHERE deptno = :deptno;');
    // set parameters
    LiteQuery.ParamByName('deptno').AsInteger := 10;
    // execute query
    LiteQuery.Execute;
  finally
    LiteQuery.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
```

```
    LiteQuery->Connection = LiteConnection;
    // set SQL query for delete record
    LiteQuery->SQL->Clear();
    LiteQuery->SQL->Add("DELETE FROM dept WHERE deptno = :deptno;");
    // set parameters
    LiteQuery->ParamByName("deptno")->AsInteger = 10;
    // execute query
    LiteQuery->Execute();
  }
  __finally
  {
    LiteQuery->Free();
  }
}
```

DML Statements As Plain Text

[Delphi]

```
var
  LiteQuery: TLiteQuery;
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // set SQL query for delete record
    LiteQuery.SQL.Clear;
    LiteQuery.SQL.Add('DELETE FROM dept WHERE deptno = 10;');
    // execute query
    LiteQuery.Execute;
  finally
    LiteQuery.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // con is either TLiteConnection already set up
    LiteQuery->Connection = con;
    // set SQL query for delete record
    LiteQuery->SQL->Clear();
    LiteQuery->SQL->Add("DELETE FROM dept WHERE deptno = 10;");
    // execute query
    LiteQuery->Execute();
  }
  __finally
  {
    LiteQuery->Free();
  }
}
```

3.5 Inserting Data Into Tables

This tutorial describes how to insert data into tables using the TLiteQuery and TLiteTable components.

Requirements

This walkthrough supposes that you know how to connect to server (tutorials "Connecting To SQLite Database") and that necessary objects are already created in the database (tutorial "Creating Database Objects").

General information

Data on server can be inserted using Data Manipulation Language (DML), which is a part of SQL. DML statements can be executed on server by an account that has necessary privileges. There are two ways to manipulate a database. You can build DML statements manually and run them within some component like TLiteQuery. Another way is to use the dataset functionality (the Insert, Append, and Post methods) of the TLiteQuery and TLiteTable components. We will discuss both ways.
The goal of this tutorial is to insert the following data into tables dept and emp:
Table dept

deptno	dname	loc
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

Table emp

ename	job	mgr	hiredate	sal	comm	deptno
SMITH	CLERK	7902	17.12.1980	800	NULL	20
ALLEN	SALESMAN	7698	20.02.1981	1600	300	30
WARD	SALESMAN	7698	22.02.1981	1250	500	30
JONES	MANAGER	7839	02.04.1981	2975	NULL	20
MARTIN	SALESMAN	7698	28.09.1981	1250	1400	30
BLAKE	MANAGER	7839	01.05.1981	2850	NULL	30
CLARK	MANAGER	7839	09.06.1981	2450	NULL	10
SCOTT	ANALYST	7566	13.07.1987	3000	NULL	20

KING	PRESIDENT	NULL	17.11.1981	5000	NULL	10
TURNER	SALESMAN	7698	08.09.1981	1500	0	30
ADAMS	CLERK	7788	13.07.1987	1100	NULL	20
JAMES	CLERK	7698	03.12.1981	950	NULL	30
FORD	ANALYST	7566	03.12.1981	3000	NULL	20
MILLER	CLERK	7782	23.01.1982	1300	NULL	10

Note: The empno field of the emp table is an IDENTITY(1,1) (i.e. autoincrement) field, so its value is filled automatically by the server.

Design time

- Open the Component palette and find the TLiteQuery component in the LiteDAC category.
- Double-click on the component. Note that a new object appears on the form. If this is the first time you create TLiteQuery in this application, it is named MSQuery1. Note that the LiteQuery1.Connection property is already set to an existent (on the form) connection.
- Double-click on the MSQuery1 object.
- Type the following lines:

```
INSERT INTO dept VALUES (10,'ACCOUNTING','NEW YORK');
```

- Press the Execute button.

Performing these steps adds a new record to the dept table.

Run time

Using DataSet Functionality

The Insert, Append, and Post methods of the TLiteQuery and TLiteTable components allow inserting data not using DML statements. DML statements are generated by LiteDAC components internally. The difference between the Append and Insert methods is that Append creates a new empty record in the end of a dataset, when Insert creates it in the position of the current record of a dataset. The code below demonstrates using these methods:
[Delphi]

```
var
  LiteQuery: TLiteQuery;
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
```

```
    // LiteConnection is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // retrieve data
    LiteQuery.SQL.Text := 'SELECT * FROM dept';
    LiteQuery.Open;
    // append record
    LiteQuery.Append;
    LiteQuery.FieldByName('deptno').AsInteger := 10;
    LiteQuery.FieldByName('dname').AsString := 'ACCOUNTING';
    LiteQuery.FieldByName('loc').AsString := 'NEW YORK';
    LiteQuery.Post;
    // insert record
    LiteQuery.Insert;
    LiteQuery.FieldByName('deptno').AsInteger := 20;
    LiteQuery.FieldByName('dname').AsString := 'RESEARCH';
    LiteQuery.FieldByName('loc').AsString := 'DALLAS';
    LiteQuery.Post;
  finally
    LiteQuery.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteQuery->Connection = LiteConnection;
    // retrieve data
    LiteQuery->SQL->Text = "SELECT * FROM dept";
    LiteQuery->Open();
    // append record
    LiteQuery->Append();
    LiteQuery->FieldByName("deptno")->AsInteger = 10;
    LiteQuery->FieldByName("dname")->AsString = "ACCOUNTING";
    LiteQuery->FieldByName("loc")->AsString = "NEW YORK";
    LiteQuery->Post();
    // insert record
    LiteQuery->Insert();
    LiteQuery->FieldByName("deptno")->AsInteger = 20;
    LiteQuery->FieldByName("dname")->AsString = "RESEARCH";
    LiteQuery->FieldByName("loc")->AsString = "DALLAS";
    LiteQuery->Post();
  }
  __finally
  {
    q->Free();
  }
}
```

Building DML Statements Manually

DML Statements can contain plain text and text with parameters. This section describes both ways.

DML Statements With Parameters

[Delphi]

```
var
  LiteQuery: TLiteQuery;
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // set SQL query for insert record
    LiteQuery.SQL.Clear;
    LiteQuery.SQL.Add('INSERT INTO dept(deptno, dname, loc) VALUES (:deptno,
    // set parameters
    LiteQuery.ParamByName('deptno').AsInteger := 10;
    LiteQuery.ParamByName('dname').AsString := 'ACCOUNTING';
    LiteQuery.ParamByName('loc').AsString := 'NEW YORK';
    // execute query
    LiteQuery.Execute;
  finally
    LiteQuery.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteQuery->Connection = LiteConnection;
    // set SQL query for insert record
    LiteQuery->SQL->Clear();
    LiteQuery->SQL->Add("INSERT INTO dept(deptno, dname, loc) VALUES (:deptn
    // set parameters
    LiteQuery->ParamByName("deptno")->AsInteger = 10;
    LiteQuery->ParamByName("dname")->AsString = "ACCOUNTING";
    LiteQuery->ParamByName("loc")->AsString = "NEW YORK";
    // execute query
    LiteQuery->Execute();
  }
  __finally
  {
    LiteQuery->Free();
  }
}
```

DML Statements As Plain Text

[Delphi]

```
vvar
  LiteQuery: TLiteQuery;
```

```
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // set SQL query for insert record
    LiteQuery.SQL.Clear;
    LiteQuery.SQL.Add('INSERT INTO dept(deptno, dname, loc) VALUES (10,''ACC
    // execute query
    LiteQuery.Execute;
  finally
    LiteQuery.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteQuery->Connection = LiteConnection; // con is either TLiteConnection
    // set SQL query for insert record
    LiteQuery->SQL->Clear();
    LiteQuery->SQL->Add("INSERT INTO dept(deptno, dname, loc) VALUES (10,'AC
    // execute query
    LiteQuery->Execute();
  }
  __finally
  {
    LiteQuery->Free();
  }
}
```

Additional Information

Actually, there are lots of ways to insert data into tables. Any tool or component that is capable of running a SQL query, can be used to manage data. Some components are best for performing certain tasks. For example, TLiteLoader is the fastest way to insert data, TLiteScript is designed for executing series of statements one by one.

3.6 Retrieving Data

This tutorial describes how to retrieve data from tables using the TLiteQuery and TLiteTable components.

Requirements

This walkthrough supposes that you know how to connect to server (tutorials "Connecting To SQLite Database"), how to create necessary objects on the server (tutorial "Creating

Database Objects"), and how to insert data to created tables (tutorial "Inserting Data Into Tables").

General information

As we know, an original function of any database application is establishing connection to a data source and working with data contained in it. LiteDAC provides several components that can be used for data retrieving, such as TLiteQuery and TLiteTable. We will discuss data retrieving using these components.
The goal of this tutorial is to retrieve data from a table dept.

TLiteQuery

The following code demonstrates retrieving of data from the dept table using the TLiteQuery component:

[Delphi]

```
var
  LiteQuery: TLiteQuery;
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // retrieve data
    LiteQuery.SQL.Text := 'SELECT * FROM dept';
    LiteQuery.Open;
    // shows the number of records obtained from the server
    ShowMessage(IntToStr(LiteQuery.RecordCount));
  finally
    LiteQuery.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteQuery->Connection = LiteConnection;
    // retrieve data
    LiteQuery->SQL->Text = "SELECT * FROM dept";
    LiteQuery->Open();
    // shows the number of records obtained from the server
    ShowMessage(IntToStr(LiteQuery->RecordCount));
  }
  __finally
  {
    LiteQuery->Free();
  }
```

```
}
```

TMyTable

The following code demonstrates retrieving of data from the dept table using the TLiteTable component:

[Delphi]

```
var
  LiteTable: TLiteTable;
begin
  LiteTable := TLiteTable.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteTable.Connection := LiteConnection;
    // retrieve data
    LiteTable.TableName := 'dept';
    LiteTable.Open;
    // shows the number of records obtained from the server
    ShowMessage(IntToStr(LiteTable.RecordCount));
  finally
    LiteTable.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteTable* LiteTable = new TLiteTable(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteTable->Connection = LiteConnection;
    // retrieve data
    LiteTable->TableName = "dept";
    LiteTable->Open();
    // shows the number of records obtained from the server
    ShowMessage(IntToStr(LiteTable->RecordCount));
  }
  __finally
  {
    LiteTable->Free();
  }
}
```

3.7 Modifying Data

This tutorial describes how to modify data in tables using the TLiteQuery and TLiteTable components.

Requirements

This walkthrough supposes that you know how to connect to server (tutorials "Connecting To

SQLite Database"), how to create necessary objects on the server (tutorial "Creating Database Objects"), and how to insert data to created tables (tutorial "Inserting Data Into Tables").

General information

Data on server can be modified using Data Manipulation Language (DML), which is a part of SQL. DML statements can be executed on server by an account that has necessary privileges. There are two ways to manipulate a database. You can build DML statements manually and run them within some component like TLiteQuery. Another way is to use the dataset functionality (the Edit and Post methods) of the TLiteQuery and TLiteTable components. We will discuss both ways. The goal of this tutorial is to modify the following record of the table dept:

10	ACCOUNTING	NEW YORK

to make it look as follows:

10	RESEARCH	LOS ANGELES

Using DataSet Functionality

The Edit and Post methods of the TLiteQuery and TLiteTable components allow deleting data without using DML statements. DML statements are generated by LiteDAC components internally. The code below demonstrates using these methods:

[Delphi]

```
var
  LiteQuery: TLiteQuery;
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // retrieve data
    LiteQuery.SQL.Text := 'SELECT * FROM dept';
    LiteQuery.Open;
    // to make the record with deptno=10 the current record
    LiteQuery.FindKey([10]);
    // modify record
    LiteQuery.Edit;
    LiteQuery.FieldByName('dname').AsString := 'RESEARCH';
    LiteQuery.FieldByName('loc').AsString := 'LOS ANGELES';
    LiteQuery.Post;
  finally
    LiteQuery.Free;
  end;
```

```
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteQuery->Connection = LiteConnection;
    // retrieve data
    LiteQuery->SQL->Text = "SELECT * FROM dept";
    LiteQuery->Open();
    // to make the record with deptno=10 the current record
    LiteQuery->FindKey(ARRAYOFCONST((10)));
    // modify record
    LiteQuery->Edit();
    LiteQuery->FieldByName("dname")->AsString = "RESEARCH";
    LiteQuery->FieldByName("loc")->AsString = "LOS ANGELES";
    LiteQuery->Post();
  }
  __finally
  {
    LiteQuery->Free();
  }
}
```

Building DML Statements Manually

DML Statements can contain plain text and text with parameters. This section describes both ways.

DML Statements With Parameters

[Delphi]

```
var
  LiteQuery: TLiteQuery;
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
    // LiteConnection is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // set SQL query for update record
    LiteQuery.SQL.Clear;
    LiteQuery.SQL.Add('UPDATE dept SET dname = :dname, loc = :loc WHERE dept
    // set parameters
    LiteQuery.ParamByName('deptno').AsInteger := 10;
    LiteQuery.ParamByName('dname').AsString := 'RESEARCH';
    LiteQuery.ParamByName('loc').AsString := 'LOS ANGELES';
    // execute query
    q.Execute;
  finally
    q.Free;
  end;
```

```
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteQuery->Connection = LiteConnection;
    // set SQL query for update record
    LiteQuery->SQL->Clear();
    LiteQuery->SQL->Add("UPDATE dept SET dname = :dname, loc = :loc WHERE de
    // set parameters
    LiteQuery->ParamByName("deptno")->AsInteger = 10;
    LiteQuery->ParamByName("dname")->AsString = "RESEARCH";
    LiteQuery->ParamByName("loc")->AsString = "LOS ANGELES";
    // execute query
    LiteQuery->Execute();
  }
  __finally
  {
    LiteQuery->Free();
  }
}
```

DML Statements As Plain Text

[Delphi]

```
var
  LiteQuery: TLiteQuery;
begin
  LiteQuery := TLiteQuery.Create(nil);
  try
    // LiteConnecton is either TLiteConnection already set up
    LiteQuery.Connection := LiteConnection;
    // set SQL query for update record
    LiteQuery.SQL.Clear;
    LiteQuery.SQL.Add('UPDATE dept SET dname = ''RESEARCH'', loc = ''LOS ANG
    // execute query
    LiteQuery.Execute;
  finally
    LiteQuery.Free;
  end;
end;
```

[C++Builder]

```
{
  TLiteQuery* LiteQuery = new TLiteQuery(NULL);
  try
  {
    // LiteConnection is either TLiteConnection already set up
    LiteQuery->Connection = LiteConnection;
    // set SQL query for update record
    LiteQuery->SQL->Clear();
```

```
    LiteQuery->SQL->Add("UPDATE dept SET dname = 'RESEARCH', loc = 'LOS ANGE
    // execute query
    LiteQuery->Execute();
  }
  __finally
  {
    LiteQuery->Free();
  }
}
```

3.8 Demo Projects

LiteDAC includes a number of demo projects that show off the main LiteDAC functionality and development patterns.
The LiteDAC demo projects consist of one large project called LiteDACDemo with demos for all main LiteDAC components, use cases, and data access technologies, and a number of smaller projects on how to use LiteDAC in different IDEs and how to integrate LiteDAC with third-party components.
Most demo projects are built for Delphi and Borland Developer Studio. There are only two LiteDAC demos for C++Builder. However, the C++Builder distribution includes source code for all the other demo projects as well.

Where are the LiteDAC demo projects located?

In most cases all the LiteDAC demo projects are located in "%LiteDAC%\Demos\".
In Delphi 2007 for Win32 under Windows Vista all the LiteDAC demo projects are located in "My Documents\Devart\LiteDAC for Delphi 2007\Demos", for example "C:\Documents and Settings\All Users\Documents\Devart\LiteDAC for Delphi 2007\Demos\".
The structure of the demo project directory depends on the IDE version you are using.
For most new IDEs the structure will be as follows.

```
Demos
  |—LiteDACDemo [The main LiteDAC demo project]
  |—ThirdParty
  |   |— [A collection of demo projects on integration with third-
  party components]
  |—Miscellaneous
     |— [Some other demo projects on design technologies]
```

LiteDACDemo is the main demo project that shows off all the LiteDAC functionality. The other directories contain a number of supplementary demo projects that describe special use cases. A list of all the samples in the LiteDAC demo project and a description for the supplementary projects is provided in the following section.

Note: This documentation describes ALL the LiteDAC demo projects. The actual demo projects you will have installed on your computer depends on your LiteDAC version, LiteDAC edition, and the IDE version you are using. The integration demos may require installation of third-party components to compile and work properly.

Instructions for using the LiteDAC demo projects

To explore a LiteDAC demo project,

1. Launch your IDE.
2. In your IDE, choose File | Open Project from the menu bar.
3. Find the directory you installed LiteDAC to and open the Demos folder.
4. Browse through the demo project folders located here and open the project file of the demo you would like to use.
5. Compile and launch the demo. If it exists, consult the *ReadMe.txt* file for more details.

The included sample applications are fully functional. To use the demos, you have to first set up a connection to SQLite. You can do so by clicking on the "Connect" button.
Many demos may also use some database objects. If so, they will have two object manipulation buttons, "Create" and "Drop". If your demo requires additional objects, click "Create" to create the necessary database objects. When you are done with a demo, click "Drop" to remove all the objects used for the demo from your database.

Note: The LiteDAC demo directory includes two sample SQL scripts for creating and dropping all the test schema objects used in the LiteDAC demos. You can modify and execute this script manually, if you would like. This will not change the behavior of the demos.

You can find a complete walkthrough for the main LiteDAC demo project in the Getting Started topic. The other LiteDAC demo projects include a *ReadMe.txt* file with individual building and launching instructions.

Demo project descriptions

LiteDACDemo

LiteDACDemo is one large project which includes three collections of demos.

Working with components

A collection of samples that show how to work with the basic LiteDAC components.

General demos

A collection of samples that show off the LiteDAC technology and demonstrate some

ways to work with data.

SQLite-specific demos

A collection of samples that demonstrate how to incorporate SQLite features in database applications.

LiteDACDemo can be opened from %LiteDAC%\Demos\LiteDACDemo\LiteDACDemo.dpr (.bdsproj). The following table describes all demos contained in this project.

Working with Components

Name	Description
ConnectDialog	Demonstrates how to customize the LiteDAC connect dialog. Changes the standard LiteDAC connect dialog to a custom connect dialog. The customized sample dialog is inherited from the TForm class. CRDBGrid Demonstrates how to work with the TCRDBGrid component. Shows off the main TCRDBGrid features, like filtering, searching, stretching, using compound headers, and more.
CRDBGrid	Demonstrates how to work with the TCRDBGrid component. Shows off the main TCRDBGrid features, like filtering, searching, stretching, using compound headers, and more.
Dump	Demonstrates how to backup data from tables with the TLiteDump component. Shows how to use scripts created during back up to restore table data. This demo lets you back up a table either by specifying the table name or by writing a SELECT query.
Loader	Uses the TLiteLoader component to quickly load data into a server table. This demo also compares the two TLiteLoader data loading handlers: GetColumnData and PutData.
Query	Demonstrates working with TLiteQuery, which is one of the most useful LiteDAC components. Includes many TLiteQuery usage scenarios. Demonstrates how to execute queries in both standard and NonBlocking mode and how to edit data and export it to XML files. **Note:** This is a very good introductory demo. We recommend starting here when first becoming familiar with LiteDAC.
Sql	Uses TLiteSQL to execute SQL statements. Demonstrates how to work in a separate thread, in standard mode, in NonBlocking mode, and how to break long-duration query execution.
Table	Demonstrates how to use TLiteTable to work with data from a single table on the server without writing any SQL queries manually. Performs server-side data sorting and filtering and retrieves results for browsing and editing.
UpdateSQL	Demonstrates using the TLiteUpdateSQL component to customize update commands. Lets you optionally use

	T:Devart.SQLiteDAC.TLiteCommand and TLiteQuery objects for carrying out insert, delete, query, and update commands.
VirtualTable	Demonstrates working with the TVirtualTable component. This sample shows how to fill virtual dataset with data from other datasets, filter data by a given criteria, locate specified records, perform file operations, and change data and table structure.

General Demos

Name	Description
CachedUpdates	Demonstrates how to perform the most important tasks of working with data in CachedUpdates mode, including highlighting uncommitted changes, managing transactions, and committing changes in a batch.
FilterAndIndex	Demonstrates LiteDAC's local storage functionality. This sample shows how to perform local filtering, sorting and locating by multiple fields, including by calculated and lookup fields.
MasterDetail	Uses LiteDAC functionality to work with master/detail relationships. This sample shows how to use local master/detail functionality. Demonstrates different kinds of master/detail linking, including linking by SQL, by simple fields, and by calculated fields.
Lock	Demonstrates the recommended approach for managing transactions with the TLiteConnection component. The TLiteConnection interface provides a wrapper for SQLite server commands like START TRANSACTION, COMMIT, ROLLBACK.

SQLite-specific Demos

Name	Description
Pictures	Uses LiteDAC functionality to work with graphics. The sample demonstrates how to retrieve binary data from PgSQL server database and display it on visual components. Sample also shows how to load and save pictures to files and to the database.
Text	Uses LiteDAC functionality to work with text. The sample demonstrates how to retrieve text data from SQL Server database and display it on visual components. Sample also shows how to load and save text to files and to the database.
Functions	Functions Uses LiteDAC functionality to work with SQLite functions. The sample demonstrates how to define custom functions for future use in SQL-statements, how to overload user-defined functions and how to override built-in SQLite functions.

Supplementary Demo Projects

LiteDAC also includes a number of additional demo projects that describe some special use cases, show how to use LiteDAC in different IDEs and give examples of how to integrate it with third-party components. These supplementary LiteDAC demo projects are sorted into subfolders in the %LiteDAC%\Demos\ directory.

Location	Name	Description
Miscellaneous	**Dll**	Demonstrates creating and loading DLLs for LiteDAC-based projects. This demo project consists of two parts - an Pg_Dll project that creates a DLL of a form that sends a query to the server and displays its results, and an Pg_Exe project that can be executed to display a form for loading and running this DLL. Allows you to build a dll for one LiteDAC-based project and load and test it from a separate application.
LiteDACDemo	***LiteDACDemo***	*[Win32 version of the main LiteDAC demo project - see above]*

3.9 Deployment

LiteDAC applications can be built and deployed with or without run-time libraries. Using run-time libraries is managed with the "Build with runtime packages" check box in the Project Options dialog box.

Deploying Windows applications built without run-time packages

You do not need to deploy any files with LiteDAC-based applications built without run-time packages, provided you are using a registered version of LiteDAC.
You can check if your application does not require run-time packages by making sure the "Build with runtime packages" check box is not selected in the Project Options dialog box.

Trial Limitation Warning

If you are evaluating deploying Windows applications with LiteDAC Trial Edition, you will need to deploy the following DAC BPL files:

dacXX.bpl	always

litedacXX.bpl	always

and their dependencies (required IDE BPL files) with your application, even if it is built without run-time packages:

rtlXX.bpl	always
dbrtlXX.bpl	always
vcldbXXX.bpl	always

Deploying Windows applications built with run-time packages

You can set your application to be built with run-time packages by selecting the "Build with runtime packages" check box in the Project Options dialog box before compiling your application.
In this case, you will also need to deploy the following BPL files with your Windows application:

dacXX.bpl	always
litedacXX.bpl	always
dacvclXX.bpl	if your application uses the LiteDACVcl unit
litedacvclXX.bpl	if your application uses the LiteDACVcl unit
crcontrolsXX.bpl	if your application uses the CRDBGrid component

4 Using LiteDAC

This section describes basics of using SQLite Data Access Components

- Connecting in Direct Mode
- Disabling Direct Mode
- Updating Data with LiteDAC Dataset Components
- Master/Detail Relationships
- Data Type Mapping
- Data Encryption
- Database File Encryption
- Disconnected Mode
- Increasing Performance
- Working in an Unstable Network
- Macros
- DataSet Manager

- DBMonitor
- Writing GUI Applications with LiteDAC
- Connection Pooling
- 64-bit Development with Embarcadero RAD Studio XE2
- Database Specific Aspects of 64-bit Development
- Demo Projects
- Deployment

4.1 Connecting in Direct Mode

LiteDAC Professional Edition allows to connect to SQLite in two ways: with using SQLite client library, or in Direct mode by linking SQLite library statically in an application. The chosen connection mode is regulated by the TLiteConnection.Options.Direct property.

LiteDAC connection modes

By default, LiteDAC, like most applications that work with SQLite, uses the SQLite client library (sqlite3.dll for Windows, libsqlite3.dylib for MacOS and libsqlite3.so for Linux) to connect to a SQLite database. This is referred to as connecting in Client mode, and it is the usual way to develop SQLite applications with a third-generation language. All SQLite API routines are stored in external library, so the executables for applications, that work using SQLite client, are a bit smaller. However, working in Client mode requires SQLite client library to be present on target workstations. It's either may cause compatibility issues of your application and the existent SQLite library, or causes a need to deploy a compatible version of the SQLite client library with your application.
LiteDAC Professional Edition includes an option to connect to SQLite directly, using the embedded SQLite3 engine. This is referred to as connecting in Direct mode. Connecting in Direct mode does not require SQLite client software to be present on target machines and saves your application from compatibility problems. Furthermore, our embedded SQLite3 engine supports built-in database encryption, that gives an ability to work with encrypted databases in Direct mode. The only inconvenience is that the application size increases slightly (about 350 KB).

Setting up Direct mode connections

To connect to SQLite database using Direct mode, set up your Direct property to True. This is all you need to do to enable Direct mode connections in your application. You do not have to rewrite other parts of your code.
To return to working through SQLite client software, just set the Direct property to False.

Note: Direct mode is available in LiteDAC Professional Edition, and can be evaluated with LiteDAC Trial Edition. Direct mode is not supported in LiteDAC for Lazarus. Attempting to set the Direct property to True in these LiteDAC editions will generate a "Feature is not supported" error.

Advantages of using Direct mode

- Using SQLite client software is not required.
- Application compatibility problems are eliminated.
- Built-in database encryption support.

Connecting in Direct mode is managed transparently by the TLiteConnection object, and you can easily return to connecting via SQLite client library in Client mode at any time, if the restrictions above become critical for you.

Disabling Direct Mode

If you don't plan to use Direct Mode in your application, you can permanently disable it.

4.2 Disabling Direct Mode

Disabling Direct Mode

As described in the Connecting in Direct Mode article, Direct Mode usage leads to increased size of the application executable file. If you don't plan to use Direct Mode in your application, you can permanently disable it, i.e., the SQLite engine will not be embedded into the executable file. For this, open the Project -> Options menu in the IDE, select the Delphi Compiler node in the options list, and add a NOSTATIC value in the Conditional defines property. Also, add path to the [LiteDAC installation folder]\Source folder in the Search path property. Then build the project.
On disabling Direct Mode, the executable file size decreases. The application will be able to work with SQLite using the client library only. On attempt to set the TLiteConnectionOptions.Direct property to True, an exception will be raised: 'Direct Mode disabled'

4.3 Updating Data with LiteDAC Dataset Components

LiteDAC dataset components which descend from TCustomDADataSet provide different ways for reflecting local changes on the database.
The first approach is to use automatic generation of update SQL statements. When using this approach you should specify Key Fields (the KeyFields property) to avoid requesting KeyFields from the database. When SELECT statement uses multiple tables, you can use the UpdatingTable property to specify which table will be updated. If UpdatingTable is blank, the first table of the FROM clause will be used. In the most cases LiteDAC needs an additional information about updating objects. So LiteDAC executes additional queries to the database. This helps to generate correct updating SQL statements but may result in performance decrease. To disable these additional queries, set the ExtendedFieldsInfo option to False.
Another approach is to set update SQL statements using SQLInsert, SQLUpdate, and SQLDelete properties. Use them to specify SQL statements that will be used for corresponding data modifications. It is useful when generating data modification statements is not possible or you need to execute some specific statements. You may also assign the TLiteUpdateSQL component to the UpdateObject property. TLiteUpdateSQL component holds all updating SQL statements in one place. You can generate all these SQL statements using LiteDAC design time editors. For more careful customization of data update operations you can use InsertObject, ModifyObject and DeleteObject properties of the TLiteUpdateSQL component.

See Also

- TLiteQuery
- TLiteTable
- TLiteUpdateSQL

4.4 Master/Detail Relationships

Master/detail (MD) relationship between two tables is a very widespread one. So it is very important to provide an easy way for database application developer to work with it. Lets examine how LiteDAC implements this feature.
Suppose we have classic MD relationship between "Department" and "Employee" tables. "Department" table has field Dept_No. Dept_No is a primary key.
"Employee" table has a primary key EmpNo and foreign key Dept_No that binds "Employee" to "Department".
It is necessary to display and edit these tables.
LiteDAC provides two ways to bind tables. First code example shows how to bind two

TCustomLiteDataSet components (TLiteQuery or TLiteTable) into MD relationship via parameters.

```
procedure TForm1.Form1Create(Sender: TObject);
var
  Master, Detail: TLiteQuery;
  MasterSource: TDataSource;
begin
  // create master dataset
  Master := TLiteQuery.Create(Self);
  Master.SQL.Text := 'SELECT * FROM Department';
  // create detail dataset
  Detail := TLiteQuery.Create(Self);
  Detail.SQL.Text := 'SELECT * FROM Employee WHERE Dept_No = :Dept_No';
  // connect detail dataset with master via TDataSource component
  MasterSource := TDataSource.Create(Self);
  MasterSource.DataSet := Master;
  Detail.MasterSource := MasterSource;
  // open master dataset and only then detail dataset
  Master.Open;
  Detail.Open;
end;
```

Pay attention to one thing: parameter name in detail dataset SQL must be equal to the field name in the master dataset that is used as foreign key for detail table. After opening detail dataset always holds records with Dept_No field value equal to the one in the current master dataset record.

There is an additional feature: when inserting new records to detail dataset it automatically fills foreign key fields with values taken from master dataset.

Now suppose that detail table "Department" foreign key field is named DepLink but not Dept_No. In such case detail dataset described in above code example will not autofill DepLink field with current "Department".Dept_No value on insert. This issue is solved in second code example.

```
procedure TForm1.Form1Create(Sender: TObject);
var
  Master, Detail: TLiteQuery;
  MasterSource: TDataSource;
begin
  // create master dataset
  Master := TLiteQuery.Create(Self);
  Master.SQL.Text := 'SELECT * FROM Department';
  // create detail dataset
  Detail := TLiteQuery.Create(Self);
  Detail.SQL.Text := 'SELECT * FROM Employee';
  // setup MD
  Detail.MasterFields := 'Dept_No';   // primary key in Department
  Detail.DetailFields := 'DepLink'; // foreign key in Employee
  // connect detail dataset with master via TDataSource component
  MasterSource := TDataSource.Create(Self);
  MasterSource.DataSet := Master;
  Detail.MasterSource := MasterSource;
  // open master dataset and only then detail dataset
```

```
  Master.Open;
  Detail.Open;
end;
```

In this code example MD relationship is set up using MasterFields and DetailFields properties. Also note that there are no WHERE clause in detail dataset SQL.
To defer refreshing of detail dataset while master dataset navigation you can use DetailDelay option.
Such MD relationship can be local and remote, depending on the TCustomDADataSet.Options.LocalMasterDetail option. If this option is set to True, dataset uses local filtering for establishing master-detail relationship and does not refer to the database. Otherwise detail dataset performs query each time when record is selected in master dataset. Using local MD relationship can reduce database calls number and save server resources. It can be useful for slow connection. CachedUpdates mode can be used for detail dataset only for local MD relationship. Using local MD relationship is not recommended when detail table contains too many rows, because in remote MD relationship only records that correspond to the current record in master dataset are fetched. So, this can decrease network traffic in some cases.

See Also

- TCustomDADataSet.Options
- TMemDataSet.CachedUpdates

4.5 Data Type Mapping

Overview

Data Type Mapping is a flexible and easily customizable gear, which allows mapping between DB types and Delphi field types.
In this article there are several examples, which can be used when working with all supported DBs. In order to clearly display the universality of the Data Type Mapping gear, a separate DB will be used for each example.

Data Type Mapping Rules

In versions where Data Type Mapping was not supported, LiteDAC automatically set correspondence between the DB data types and Delphi field types. In versions with Data Type Mapping support the correspondence between the DB data types and Delphi field types can be set manually.
Here is the example with the numeric type in the following table of a SQLite database:

```
CREATE TABLE NUMERIC_TYPES
```

```
(
 ID INTEGER PRIMARY KEY AUTOINCREMENT,
 VALUE1 NUMERIC(4,0),
 VALUE2 NUMERIC(10,0),
 VALUE3 NUMERIC(15,0),
 VALUE4 NUMERIC(5,2),
 VALUE5 NUMERIC(10,4),
 VALUE6 NUMERIC(15,6)
)
```

And Data Type Mapping should be used so that:

- the numeric fields with Scale=0 in Delphi would be mapped to one of the field types: TSmallintField, TIntegerField or TlargeintField, depending on Precision
- to save precision, the numeric fields with Precision>=10 and Scale<= 4 would be mapped to TBCDField
- and the numeric fields with Scale>= 5 would be mapped to TFMTBCDField.

The above in the form of a table:

SQLite data type	Default Delphi field type	Destination Delphi field type
NUMERIC(4,0)	ftFloat	ftSmallint
NUMERIC(10,0)	ftFloat	ftInteger
NUMERIC(15,0)	ftFloat	ftLargeint
NUMERIC(5,2)	ftFloat	ftFloat
NUMERIC(10,4)	ftFloat	ftBCD
NUMERIC(15,6)	ftFloat	ftFMTBCD

To specify that numeric fields with Precision <= 4 and Scale = 0 must be mapped to ftSmallint, such a rule should be set:

```
uses
  LiteDataTypeMap;
...
var
  DBType: Word;
  MinPrecision: Integer;
  MaxPrecision: Integer;
  MinScale: Integer;
  MaxScale: Integer;
  FieldType: TfieldType;
begin
  DBType       := liteNumeric;
  MinPrecision := 0;
  MaxPrecision := 4;
  MinScale     := 0;
  MaxScale     := 0;
  FieldType    := ftSmallint;
  LiteConnection.DataTypeMap.AddDBTypeRule(DBType, MinPrecision, MaxPrecisio
```

```
end;
```

This is an example of the detailed rule setting, and it is made for maximum visualization.Usually, rules are set much shorter, e.g. as follows:

```
// clear existing rules
LiteConnection.DataTypeMap.Clear;
// rule for numeric(4,0)
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumeric, 0,      4, 0,     0, f
// rule for numeric(10,0)
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumeric, 5,     10, 0,     0, f
// rule for numeric(15,0)
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumeric, 11, rlAny, 0,     0, f
// rule for numeric(5,2)
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumeric, 0,      9, 1, rlAny, f
// rule for numeric(10,4)
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumeric, 10, rlAny, 1,     4, f
// rule for numeric(15,6)
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumeric, 10, rlAny, 5, rlAny, f
```

Rules order

When setting rules, there can occur a situation when two or more rules that contradict to each other are set for one type in the database. In this case, only one rule will be applied — the one, which was set first.

For example, there is a table in a SQLite database:

```
CREATE TABLE NUMBER_TYPES
(
 ID INTEGER PRIMARY KEY AUTOINCREMENT,
 VALUE1 NUMBER(5,2),
 VALUE2 NUMBER(10,4),
 VALUE3 NUMBER(15,6)
)
```

TBCDField should be used for NUMBER(10,4), and TFMTBCDField - for NUMBER(15,6) instead of default fields:

SQLite data type	Default Delphi field type	Destination field type
NUMBER(5,2)	ftFloat	ftFloat
NUMBER(10,4)	ftFloat	ftBCD
NUMBER(15,6)	ftFloat	ftFMTBCD

If rules are set in the following way:

```
LiteConnection.DataTypeMap.Clear;
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumber, 0,     9, rlAny, rlAny,
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumber, 0, rlAny,     0,     4,
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumber, 0, rlAny,     0, rlAny,
```

it will lead to the following result:

SQLite data type	Delphi field type
NUMBER(5,2)	ftFloat
NUMBER(10,4)	ftBCD
NUMBER(15,6)	ftFMTBCD

But if rules are set in the following way:

```
LiteConnection.DataTypeMap.Clear;
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumber, 0, rlAny,     0, rlAny,
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumber, 0, rlAny,     0,     4,
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumber, 0,     9, rlAny, rlAny,
```

it will lead to the following result:

SQLite data type	Delphi field type
NUMBER(5,2)	ftFMTBCD
NUMBER(10,4)	ftFMTBCD
NUMBER(15,6)	ftFMTBCD

This happens because the rule

```
LiteConnection.DataTypeMap.AddDBTypeRule(liteNumber, 0, rlAny, 0, rlAny, ftF
```

will be applied for the NUMBER fields, whose Precision is from 0 to infinity, and Scale is from 0 to infinity too. This condition is met by all NUMBER fields with any Precision and Scale.

When using Data Type Mapping, first matching rule is searched for each type, and it is used for mapping. In the second example, the first set rule appears to be the first matching rule for all three types, and therefore the ftFMTBCD type will be used for all fields in Delphi.

If to go back to the first example, the first matching rule for the NUMBER(5,2) type is the first rule, for NUMBER(10,4) - the second rule, and for NUMBER(15,6) - the third rule. So in the first example, the expected result was obtained.

So it should be remembered that if rules for Data Type Mapping are set so that two or more rules that contradict to each other are set for one type in the database, the rules will be applied in the specifed order.

Defining rules for Connection and Dataset

Data Type Mapping allows setting rules for the whole connection as well as for each DataSet in the application.

For example, such table is created in a SQLite database:

```
CREATE TABLE PERSON
(
 ID                 INTEGER PRIMARY KEY AUTOINCREMENT,
 FIRSTNAME          VARCHAR(20),
 LASTNAME           VARCHAR(30),
 GENDER_CODE        VARCHAR(1),
 BIRTH_DTTM         DATETIME
)
```

It is exactly known that the BIRTH_DTTM field contains birth day, and this field should be ftDate in Delphi, and not ftDateTime. If such rule is set:

```
LiteConnection.DataTypeMap.Clear;
LiteConnection.DataTypeMap.AddDBTypeRule(liteDateTime, ftDate);
```

all DATETIME fields in Delphi will have the ftDate type, that is incorrect. The ftDate type was expected to be used for the DATETIME type only when working with the person table. In this case, Data Type Mapping should be set not for the whole connection, but for a particular DataSet:

```
LiteQuery.DataTypeMap.Clear;
LiteQuery.DataTypeMap.AddDBTypeRule(liteDateTime, ftDate);
```

Or the opposite case. For example, DATETIME is used in the application only for date storage, and only one table stores both date and time. In this case, the following rules setting will be correct:

```
LiteConnection.DataTypeMap.Clear;
LiteConnection.DataTypeMap.AddDBTypeRule(liteDateTime, ftDate);
LiteQuery.DataTypeMap.Clear;
LiteQuery.DataTypeMap.AddDBTypeRule(liteDateTime, ftDateTime);
```

In this case, in all DataSets for the DATETIME type fields with the ftDate type will be created, and for LiteQuery - with the ftDateTime type.

The point is that the priority of the rules set for the DataSet is higher than the priority of the rules set for the whole connection. This allows both flexible and convenient setting of Data Type Mapping for the whole application. There is no need to set the same rules for each DataSet, all the general rules can be set once for the whole connection. And if a DataSet with an individual Data Type Mapping is necessary, individual rules can be set for it.

Rules for a particular field

Sometimes there is a need to set a rule not for the whole connection, and not for the whole dataset, but only for a particular field.

e.g. there is such table in a SQLite database:

```
CREATE TABLE ITEM
(
 ID     INTEGER PRIMARY KEY AUTOINCREMENT,
```

```
 NAME    CHAR(50),
 GUID    CHAR(38)
)
```

The GUID field contains a unique identifier. For convenient work, this identifier is expected to be mapped to the TGuidField type in Delphi. But there is one problem, if to set the rule like this:

```
LiteQuery.DataTypeMap.Clear;
LiteQuery.DataTypeMap.AddDBTypeRule(liteChar, ftGuid);
```

then both NAME and GUID fields will have the ftGuid type in Delphi, that does not correspond to what was planned. In this case, the only way is to use Data Type Mapping for a particular field:

```
LiteQuery.DataTypeMap.AddFieldNameRule('GUID', ftGuid);
```

In addition, it is important to remember that setting rules for particular fields has the highest priority. If to set some rule for a particular field, all other rules in the Connection or DataSet will be ignored for this field.

Ignoring conversion errors

Data Type Mapping allows mapping various types, and sometimes there can occur the problem with that the data stored in a DB cannot be converted to the correct data of the Delphi field type specified in rules of Data Type Mapping or vice-versa. In this case, an error will occur, which will inform that the data cannot be mapped to the specified type.

For example:

Database value	Destination field type	Error
'text value'	ftInteger	String cannot be converted to Integer
1000000	ftSmallint	Value is out of range
15,1	ftInteger	Cannot convert float to integer

But when setting rules for Data Type Mapping, there is a possibility to ignore data conversion errors:

```
LiteConnection.DataTypeMap.AddDBTypeRule(ibcVarchar, ftInteger, True);
```

In this case, the correct conversion is impossible. But because of ignoring data conversion errors, Data Type Mapping tries to return values that can be set to the Delphi fields or DB fields depending on the direction of conversion.

Database value	Destination field	Result	Result description

	type		
'text value'	ftInteger	0	0 will be returned if the text cannot be converted to number
1000000	ftSmallint	32767	32767 is the max value that can be assigned to the Smallint data type
15,1	ftInteger	15	15,1 was truncated to an integer value

Therefore ignoring of conversion errors should be used only if the conversion results are expected.

4.6 Data Encryption

LiteDAC has built-in algorithms for data encryption and decryption. To enable encryption, you should attach the TCREncryptor component to the dataset, and specify the encrypted fields. When inserting or updating data in the table, information will be encrypted on the client side in accordance with the specified method. Also when reading data from the database, the components decrypt the data in these fields "on the fly".

For encryption, you should specify the data encryption algorithm (the EncryptionAlgorithm property)and password (the Password property). On the basis of the specified password, the key is generated, which encrypts the data. There is also a possibility to set the key directly using the SetKey method.

When storing the encrypted data, in addition to the initial data, you can also store additional information: the GUID and the hash. (The method is specified in the TCREncryptor.DataHeader property).

If data is stored without additional information, it is impossible to determine whether the data is encrypted or not. In this case, only the encrypted data should be stored in the column, otherwise, there will be confusion because of the inability to distinguish the nature of the data. Also in this way, the similar source data will be equivalent in the encrypted form, that is not good from the point of view of the information protection. The advantage of this method is the size of the initial data equal to the size of the encrypted data.

To avoid these problems, it is recommended to store, along with the data, the appropriate GUID, which is necessary for specifying that the value in the record is encrypted and it must be decrypted when reading data. This allows you to avoid confusion and keep in the same column both the encrypted and decrypted data, which is particularly important when using an existing table. Also, when doing in this way, a random initializing vector is generated before the data encryption, which is used for encryption. This allows you to receive different results

for the same initial data, which significantly increases security.
The most preferable way is to store the hash data along with the GUID and encrypted information to determine the validity of the data and verify its integrity. In this way, if there was an attempt to falsify the data at any stage of the transmission or data storage, when decrypting the data, there will be a corresponding error generated. For calculating the hash the **SHA1** or **MD5** algorithms can be used the HashAlgorithm property).
The disadvantage of the latter two methods - additional memory is required for storage of the auxiliary information.
As the encryption algorithms work with a certain size of the buffer, and when storing the additional information it is necessary to use additional memory, TLiteEncryptor supports encryption of string or binary fields only (*ftString*, *ftWideString*, *ftBytes*, *ftVarBytes*, *ftBlob*, *ftMemo*, *ftWideMemo*). If encryption of string fields is used, firstly, the data is encrypted, and then the obtained binary data is converted into hexadecimal format. In this case, data storage requires two times more space (one byte = 2 characters in hexadecimal).
Therefore, to have the possibility to encrypt other data types (such as date, number, etc.), it is necessary to create a field of the binary or BLOB type in the table, and then convert it into the desired type on the client side with the help of data mapping.
It should be noted that the search and sorting by encrypted fields become impossible on the server side. Data search for these fields can be performed only on the client after decryption of data using the **Locate** and LocateEx methods. Sorting is performed by setting the TMemDataSet.IndexFieldNames property.

Example.
Let's say there is an employee list of an enterprise stored in the table with the following data: full name, date of employment, salary, and photo. We want all these data to be stored in the encrypted form. Write a script for creating the table:

```
CREATE TABLE EMP (
EMPNO    INTEGER PRIMARY KEY AUTOINCREMENT,
ENAME    VARBINARY(2000),
HIREDATE VARBINARY (200),
SAL      VARBINARY (200),
FOTO     VARBINARY
)
```

As we can see, the fields for storage of the textual information, date, and floating-point number are created with the VARBINARY type. This is for the ability to store encrypted information, and in the case of the text field - to improve performance. Write the code to process this information on the client.

```
LiteQuery.SQL.Text := 'SELECT * FROM EMP';
LiteQuery.Encryption.Encryptor : = LiteEncryptor;
LiteQuery.Encryption.Fields : = 'ENAME, HIREDATE, SAL, FOTO';
LiteEncryptor.Password : = '11111';
```

```
LiteQuery.DataTypeMap.AddFieldNameRule('ENAME', ftString);
LiteQuery.DataTypeMap.AddFieldNameRule('HIREDATE', ftDateTime);
LiteQuery.DataTypeMap.AddFieldNameRule('SAL', ftFloat);
LiteQuery.Open;
```

4.7 Database File Encryption

What constitutes Database File Encryption

The SQLite architecture provides the functionality for work with encrypted databases. This means that encoding/decoding is applied to a database file, in the moment of execution of the file read/write operations. This is a low-level encryption "on the fly", it is implemented at the level of the SQLite client library and is completely transparent to the applications working with the database.

But, the fact is that in the client libraries available at the official SQLite website, the algorithms of database file encryption are not implemented. Therefore, usually, to work with encrypted databases one has to either use a custom-built client library with encryption support, or create an own library from the source code, available on the SQLite website.

LiteDAC functionality for Database File Encryption

LiteDAC provides built-in capabilities for Database File Encryption, which becomes available when working in Direct mode. Database File Encryption, built in LiteDAC, allows to:

- encrypt a database;
- create a new encrypted database;
- connect and work with the encrypted database;
- change the encryption key of the encrypted database;
- decryp the encrypted database.

To encrypt/decrypt the database file, one of the following encryption algorithms can be used:

- the Triple DES encryption algorithm;
- the Blowfish encryption algorithm;
- the AES encryption algorithm with a key size of 128 bits;
- the AES encryption algorithm with a key size of 192 bits;
- the AES encryption algorithm with a key size of 256 bits;
- the Cast-128 encryption algorithm;
- the RC4 encryption algorithm.

Important note: there are no strict standardized requirements for implementation of database file encryption in SQLite. Therefore, implementation of Database File Encryption in

LiteDAC is incompatible with other implementations. When using LiteDAC, it is possible to work only with encrypted databases, created with the use of LiteDAC. In turn, no third-party application will be able to work with encrypted databases, created with the use of LiteDAC

The difference between Database File Encryption and Data Encryption.

The functionality of Data Encryption, which is realized with the help of the P:Devart.SQLiteDac.TLiteEncryptor component, allows to encrypt individual fields in database tables. In this case, the database itself is not encrypted. I.e. on the one hand, the information in this database (with the exception of the encrypted fields) is easily accessible for viewing by any SQLite DB-tools. On the other hand, such database is more simple in terms of modification of data structures.

Database File Encryption encrypts all the data file. Both structure and information on such database becomes unavailable for any third-party applications. An indisputable advantage is the increased level of secrecy of information. The disadvantage is that, for making any changes in the structure of the database, developers will have to use only LiteDAC.

Both Database File Encryption and Data Encryption methods are not mutually exclusive and can be used at the same time.

The usage of Database File Encryption in LiteDAC

To control database encryption in LiteDAC, the following properties and methods of the P:Devart.SQLiteDac.TLiteConnection component are used:

- The TLiteConnection.Options.EncryptionAlgorithm property - specifies the encryption algorithm that will be used to connect to an encrypted database, or to create a new encrypted database.
- The TLiteConnection.EncryptionKey property - specifies the encryption key that will be used to connect to an encrypted database, or to create a new encrypted database.
- The TLiteConnection.EncryptDatabase method - is used to change the encryption key in an encrypted database, or to decrypt the database.

Encrypt a database

The following example shows how to encrypt an existing database:

```
LiteConnection.Database := 'C:\sqlite.db3';                 // the name of the
LiteConnection.Options.ForceCreateDatabase := False;        // to check that t
LiteConnection.Options.Direct := True;                      // database file e
LiteConnection.Options.EncryptionAlgorithm := leBlowfish; // the database wi
LiteConnection.EncryptionKey := '';                         // no encryption k
LiteConnection.Open;                                        // connect to the
```

```
LiteConnection.EncryptDatabase ('11111');                    // encrypt the dat
```

Creating of a new encrypted database

The following example shows creating a new encrypted database:

```
LiteConnection.Database := 'C:\sqlite_encoded.db3';        // the name of the
LiteConnection.Options.ForceCreateDatabase := True;        // this will allow
LiteConnection.Options.Direct := True;                     // database file e
LiteConnection.Options.EncryptionAlgorithm := leBlowfish; // the database wi
LiteConnection.EncryptionKey := '11111';                   // the encryption
LiteConnection.Open;                                       // create and conn
```

Connecting to an encrypted database

To connect to an existing encrypted database, the following should be performed:

```
LiteConnection.Database := 'C:\sqlite_encoded.db3';        // the name of the
LiteConnection.Options.ForceCreateDatabase := False;       // to check that t
LiteConnection.Options.Direct := True;                     // database file e
LiteConnection.Options.EncryptionAlgorithm := leBlowfish; // the encryption
LiteConnection.EncryptionKey := '11111';                   // the encryption
LiteConnection.Open;                                       // connect to the
```

Changing the encryption key for the database

To change the encryption key in the encrypted database, you must perform the following:

```
LiteConnection.Database := 'C:\sqlite_encoded.db3';        // the name of the
LiteConnection.Options.ForceCreateDatabase := False;       // to check that t
LiteConnection.Options.Direct := True;                     // database file e
LiteConnection.Options.EncryptionAlgorithm := leBlowfish; // the encryption
LiteConnection.EncryptionKey := '11111';                   // the encryption
LiteConnection.Open;                                       // connect to the
LiteConnection.EncryptDatabase ('22222');                  // change the data
```

After changing the encryption key, the database connection remains open and the further work with the database can continue. However, if disconnected from the database and for subsequent connection, the new value of the encryption key should be assigned to the LiteConnection.EncryptionKey property.

Decryption of the database

The encrypted database can be decrypted, after that it becomes available for viewing and editing in third-party applications. To decrypt the database you must first connect to it, as shown in the examples above, and then execute the LiteConnection.EncryptDatabase('') method, specifying an empty string as a new key.

PRAGMA Encryption

- The PRAGMA ENCRYPTION statement specifies the encryption algorithm that will be used

to encrypt a previously connected unencrypted database. The statement can be executed only after the database is connected. The statement must not be used on databases encrypted with a different encryption algorithm. The pragma values are the same as the EncryptionAlgorithm attribute values.

Example:

```
PRAGMA ENCRYPTION=TripleDES;
```

The statement can be executed from any database tool that uses Devart LiteDAC, or with the SQLExecuteDirect API function.

- The PRAGMA REKEY statement – is used to encrypt unencrypted database, to change the encryption key of an encrypted database or to decrypt a database. The statement can be executed only after the database is connected.

Example of encryption or changing an encryption key:

```
PRAGMA REKEY='mynewkey';
```

Example of decryption:

```
PRAGMA REKEY='';
```

The statements can be executed from any database tool that uses Devart LiteDAC, or with the SQLExecuteDirect API function.

4.8 Disconnected Mode

In disconnected mode a connection opens only when it is required. After performing all database calls connection closes automatically until next server call is required. Datasets remain opened when connection closes. Disconnected Mode may be useful for saving server resources and operating in an unstable or expensive network. Drawback of using disconnected mode is that each connection establishing requires some time for authorization. If connection is often closed and opened it can slow down application work. We recommend to use pooling to solve this problem. For additional information see TCustomDAConnection.Pooling.

To enable disconnected mode set TCustomDAConnection.Options.DisconnectedMode to True.

In disconnected mode a connection is opened for executing requests to the database (if it was not opened already) and is closed automatically if it is not required any more. If the connection was explicitly opened (the Connect method was called or the Connected property is set to False explicitly.

The following settings are recommended to use for working in disconnected mode:

```
TDataSet.CachedUpdates = True
```

```
TCustomDADataSet.FetchAll = True
TCustomDADataSet.Options.LocalMasterDetail = True
```

These settings minimize the number of requests to the database.

Disconnected mode features

If you perform a query with the FetchAll option set to True, connection closes when all data is fetched if it is not used by someone else. If the FetchAll option is set to false, connection does not close until all data blocks are fetched.
If explicit transaction was started, connection does not close until the transaction is committed or rolled back.
If the query was prepared explicitly, connection does not close until the query is unprepared or its SQL text is changed.

See Also

- TCustomDAConnection.Options
- FetchAll
- TLiteQuery.LockMode
- TCustomDAConnection.Pooling
- TCustomDAConnection.Connect
- TCustomDAConnection.Disonnect
- Working in unstable network

4.9 Batch Operations

Data amount processed by modern databases grows steadily. In this regard, there is an acute problem – database performance. Insert, Update and Delete operations have to be performed as fast as possible. Therefore Devart provides several solutions to speed up processing of huge amounts of data. So, for example, insertion of a large portion of data to a DB is supported in the TLiteLoader. Unfortunately, TLiteLoader allows to insert data only – it can't be used for updating and deleting data.
The new version of Devart Delphi Data Access Components introduces the new mechanism for large data processing — Batch Operations. The point is that just one parametrized Modify SQL query is executed. The plurality of changes is due to the fact that parameters of such a query will be not single values, but a full array of values. Such approach increases the speed of data operations dramatically. Moreover, in contrast to using TLiteLoader, Batch operations can be used not only for insertion, but for modification and deletion as well.
Let's have a better look at capabilities of Batch operations with an example of the BATCH_TEST table containing attributes of the most popular data types.

Batch_Test table generating scripts

```
CREATE TABLE BATCH_TEST
(
  ID     INTEGER,
  F_INTEGER  INTEGER,
  F_FLOAT  FLOAT,
  F_STRING  VARCHAR(250),
  F_DATE  DATETIME,
  CONSTRAINT PK_BATCH_TEST PRIMARY KEY (ID)
)
```

Batch operations execution

To insert records into the BATCH_TEST table, we use the following SQL query:

```
 INSERT INTO BATCH_TEST VALUES (:ID, :F_INTEGER, :F_FLOAT, :F_STRING, :F_DAT
```

When a simple insertion operation is used, the query parameter values look as follows:

Parameters				
:ID	:F_INTEGER	:F_FLOAT	:F_STRING	:F_DATE
1	100	2.5	‘String Value 1'	01.09.2015

After the query execution, one record will be inserted into the BATCH_TEST table.
When using Batch operations, the query and its parameters remain unchanged. However, parameter values will be enclosed in an array:

Parameters				
:ID	:F_INTEGER	:F_FLOAT	:F_STRING	:F_DATE
1	100	2.5	‘String Value 1'	01.09.2015
2	200	3.15	‘String Value 2'	01.01.2000
3	300	5.08	‘String Value 3'	09.09.2010
4	400	7.5343	‘String Value 4'	10.10.2015
5	500	0.4555	‘String Value 5'	01.09.2015

Now, 5 records are inserted into the table at a time on query execution.
How to implement a Batch operation in the code?

Batch INSERT operation sample

Let’s try to insert 1000 rows to the BATCH_TEST table using a Batch Insert operation:

```
var
  i: Integer;
begin
  // describe the SQL query
```

```
  LiteQuery1.SQL.Text := 'INSERT INTO BATCH_TEST VALUES (:ID, :F_INTEGER, :F
  // define the parameter types passed to the query :
  LiteQuery1.Params[0].DataType := ftInteger;
  LiteQuery1.Params[1].DataType := ftInteger;
  LiteQuery1.Params[2].DataType := ftFloat;
  LiteQuery1.Params[3].DataType := ftString;
  LiteQuery1.Params[4].DataType := ftDateTime;
  // specify the array dimension:
  LiteQuery1.Params.ValueCount := 1000;
  // populate the array with parameter values:
  for i := 0 to LiteQuery1.Params.ValueCount - 1 do begin
    LiteQuery1.Params[0][i].AsInteger := i + 1;
    LiteQuery1.Params[1][i].AsInteger := i + 2000 + 1;
    LiteQuery1.Params[2][i].AsFloat := (i + 1) / 12;
    LiteQuery1.Params[3][i].AsString := 'Values ' + IntToStr(i + 1);
    LiteQuery1.Params[4][i].AsDateTime := Now;
  end;
  // insert 1000 rows into the BATCH_TEST table
  LiteQuery1.Execute(1000);
end;
```

This command will insert 1000 rows to the table with one SQL query using the prepared array of parameter values. The number of inserted rows is defined in the Iters parameter of the Execute(Iters: integer; Offset: integer = 0) method. In addition, you can pass another parameter – Offset (0 by default) – to the method. The Offset parameter points the array element, which the Batch operation starts from.

We can insert 1000 records into the BATCH_TEST table in 2 ways.

All 1000 rows at a time:

```
LiteQuery1.Execute(1000);
```

2×500 rows:

```
// insert first 500 rows
LiteQuery1.Execute(500, 0);
// insert next 500 rows
LiteQuery1.Execute(500, 500);
```

500 rows, then 300, and finally 200:

```
// insert 500 rows
LiteQuery1.Execute(500, 0);
// insert next 300 rows starting from 500
LiteQuery1.Execute(300, 500);
// insert next 200 rows starting from 800
LiteQuery1.Execute(200, 800);
```

Batch UPDATE operation sample

With Batch operations we can modify all 1000 rows of our BATCH_TEST table just this simple:

```
var
  i: Integer;
begin
```

```
  // describe the SQL query
  LiteQuery1.SQL.Text := 'UPDATE BATCH_TEST SET F_INTEGER=:F_INTEGER, F_FLOA
  // define parameter types passed to the query:
  LiteQuery1.Params[0].DataType := ftInteger;
  LiteQuery1.Params[1].DataType := ftFloat;
  LiteQuery1.Params[2].DataType := ftString;
  LiteQuery1.Params[3].DataType := ftDateTime;
  LiteQuery1.Params[4].DataType := ftInteger;
  // specify the array dimension:
  LiteQuery1.Params.ValueCount := 1000;
  // populate the array with parameter values:
  for i := 0 to 1000 - 1 do begin
    LiteQuery1.Params[0][i].AsInteger := i - 2000 + 1;
    LiteQuery1.Params[1][i].AsFloat := (i + 1) / 100;
    LiteQuery1.Params[2][i].AsString := 'New Values ' + IntToStr(i + 1);
    LiteQuery1.Params[3][i].AsDateTime := Now;
    LiteQuery1.Params[4][i].AsInteger := i + 1;
  end;
  // update 1000 rows in the BATCH_TEST table
  LiteQuery1.Execute(1000);
end;
```

Batch DELETE operation sample

Deleting 1000 rows from the BATCH_TEST table looks like the following operation:

```
var
  i: Integer;
begin
  // describe the SQL query
  LiteQuery1.SQL.Text := 'DELETE FROM BATCH_TEST WHERE ID=:ID';
  // define parameter types passed to the query:
  LiteQuery1.Params[0].DataType := ftInteger;
  // specify the array dimension
  LiteQuery1.Params.ValueCount := 1000;
  // populate the arrays with parameter values
  for i := 0 to 1000 - 1 do
    LiteQuery1.Params[0][i].AsInteger := i + 1;
  // delete 1000 rows from the BATCH_TEST table
  LiteQuery1.Execute(1000);
end;
```

Performance comparison

The example with BATCH_TEST table allows to analyze execution speed of normal operations with a database and Batch operations:

Operation Type	25 000 records	
	Standard Operation (sec.)	Batch Operation (sec.)
Insert	2292	0.92
Update	2535	2.63
Delete	2175	0.44

The less, the better.			

It should be noted, that the retrieved results may differ when modifying the same table on different database servers. This is due to the fact that operations execution speed may differ depending on the settings of a particular server, its current workload, throughput, network connection, etc.

Thing you shouldn't do when accessing parameters in Batch operations!

When populating the array and inserting records, we accessed query parameters by index. It would be more obvious to access parameters by name:

```
for i := 0 to 9999 do begin
  LiteQuery1.Params.ParamByName('ID')[i].AsInteger := i + 1;
  LiteQuery1.Params.ParamByName('F_INTEGER')[i].AsInteger := i + 2000 + 1;
  LiteQuery1.Params.ParamByName('F_FLOAT')[i].AsFloat := (i + 1) / 12;
  LiteQuery1.Params.ParamByName('F_STRING')[i].AsString := 'Values ' + IntTo
  LiteQuery1.Params.ParamByName('F_DATE')[i].AsDateTime := Now;
end;
```

However, the parameter array would be populated slower, since you would have to define the ordinal number of each parameter by its name in each loop iteration. If a loop is executed 10000 times – **performance loss can become quite significant**.

4.10 Increasing Performance

This topic considers basic stages of working with DataSet and ways to increase performance on each of these stages.

Connect

If your application performs Connect/Disconnect operations frequently, additional performance can be gained using pooling mode (TCustomDAConnection.Pooling = True). It reduces connection reopening time greatly (hundreds times). Such situation usually occurs in web applications.

Execute

If your application executes the same query several times, you can use the TCustomDADataSet.Prepare method or set the TDADataSetOptions.AutoPrepare property to increase performance. For example, it can be enabled for Detail dataset in Master/Detail relationship or for update objects in TDAUpdateSQL. The performance gain achieved this way can be anywhere from several percent to several times, depending on the situation.
To execute SQL statements a TLiteSQL component is more preferable than TLiteQuery. It

can give several additional percents performance gain.
If the TCustomDADataSet.Options.StrictUpdate option is set to False, the RowsAffected property is not calculated and becomes equal zero. This can improve performance of query executing, so if you need to execute many data updating statements at once and you don't mind affected rows count, set this option to False.

Fetch

You can also tweak your application performance by using the following properties of TCustomDADataSet descendants:

- FetchRows
- Options.LongStrings
- UniDirectional

See the descriptions of these properties for more details and recommendations.

Navigate

The Locate function works faster when dataset is locally sorted on KeyFields fields. Local dataset sorting can be set with the IndexFieldNames property. Performance gain can be large if the dataset contains a large number of rows.
Lookup fields work faster when lookup dataset is locally sorted on lookup Keys.
Setting the TDADataSetOptions.CacheCalcFields property can improve performance when locally sorting and locating on calculated and lookup fields. It can be also useful when calculated field expressions contain complicated calculations.
Setting the TDADataSetOptions.LocalMasterDetail option can improve performance greatly by avoiding database requests on detail refreshes. Setting the TDADataSetOptions.DetailDelay option can be useful for avoiding detail refreshes when switching master DataSet records frequently.

Update

If your application updates datasets in the CachedUpdates mode, then setting the TCustomDADataSet.Options.UpdateBatchSize option to more than 1 can improve performance several hundred times more by reducing the number of requests to the database.
You can also increase the data sending performance a bit (several percents) by using Dataset.UpdateObject.ModifyObject, Dataset.UpdateObject, etc. Little additional performance improvement can be reached by setting the AutoPrepare property for these objects.

Insert

If you are about to insert a large number of records into a table, you should use the TDevart.SQLiteDac.TLiteLoader component instead of Insert/Post methods, or execution of the INSERT commands multiple times in a cycle. Sometimes usage of TDevart.SQLiteDac.TLiteLoader improves performance several times.

4.11 Working in an Unstable Network

The following settings are recommended for working in an unstable network:

```
TCustomDAConnection.Options.LocalFailover = True
TCustomDAConnection.Options.DisconnectedMode = True
TDataSet.CachedUpdates = True
TCustomDADataSet.FetchAll = True
TCustomDADataSet.Options.LocalMasterDetail = True
```

These settings minimize the number of requests to the database. Using TCustomDAConnection.Options.DisconnectedMode allows DataSet to work without an active connection. It minimizes server resource usage and reduces connection break probability. I. e. in this mode connection automatically closes if it is not required any more. But every explicit operation must be finished explicitly. That means each explicit connect must be followed by explicit disconnect. Read Working with Disconnected Mode topic for more information.
Setting the FetchAll property to True allows to fetch all data after cursor opening and to close connection. If you are using master/detail relationship, we recommend to set the LocalMasterDetail option to True.
It is not recommended to prepare queries explicitly. Use the CachedUpdates mode for DataSet data editing. Use the TCustomDADataSet.Options.UpdateBatchSize property to reduce the number of requests to the database.
If a connection breaks, a fatal error occurs, and the OnConnectionLost event will be raised if the following conditions are fulfilled:

- There are no opened and not fetched datasets;
- There are no explicitly prepared datasets or SQLs.

If the user does not refuse suggested RetryMode parameter value (or does not use the OnConnectionLost event handler), LiteDAC can implicitly perform the following operations:

```
  Connect;
  DataSet.ApplyUpdates;
  DataSet.Open;
```

I.e. when the connection breaks, implicit reconnect is performed and the corresponding operation is reexecuted. We recommend to wrap other operations in transactions and fulfill

their reexecuting yourself.
The using of Pooling in Disconnected Mode allows to speed up most of the operations because of connecting duration reducing.

See Also

- FailOver demo
- Working with Disconnected Mode
- TCustomDAConnection.Options
- TCustomDAConnection.Pooling

4.12 Macros

Macros help you to change SQL statements dynamically. They allow partial replacement of the query statement by user-defined text. Macros are identified by their names which are then referred from SQL statement to replace their occurrences for associated values.
First step is to assign macros with their names and values to a dataset object.
Then modify SQL statement to include macro names into desired insertion points. Prefix each name with & ("at") sign to let LiteDAC discriminate them at parse time. Resolved SQL statement will hold macro values instead of their names but at the right places of their occurrences. For example, having the following statement with the TableName macro name:

```
SELECT * FROM &TableName
```

You may later assign any actual table name to the macro value property leaving your SQL statement intact.

```
Query1.SQL.Text := 'SELECT * FROM &TableName';
Query1.MacroByName('TableName').Value := 'Dept';
Query1.Open;
```

LiteDAC replaces all macro names with their values and sends SQL statement to the database when SQL execution is requested.
Note that there is a difference between using TMacro AsString and Value properties. If you set macro with the AsString property, it will be quoted. For example, the following statements will result in the same result Query1.SQL property value.

```
Query1.MacroByName('StringMacro').Value := '''A string''';
Query1.MacroByName('StringMacro').AsString := 'A string';
```

Macros can be especially useful in scripts that perform similar operations on different objects. You can use macros that will be replaced with an object name. It allows you to have the same script text and to change only macro values.
You may also consider using macros to construct adaptable conditions in WHERE clauses of your statements.

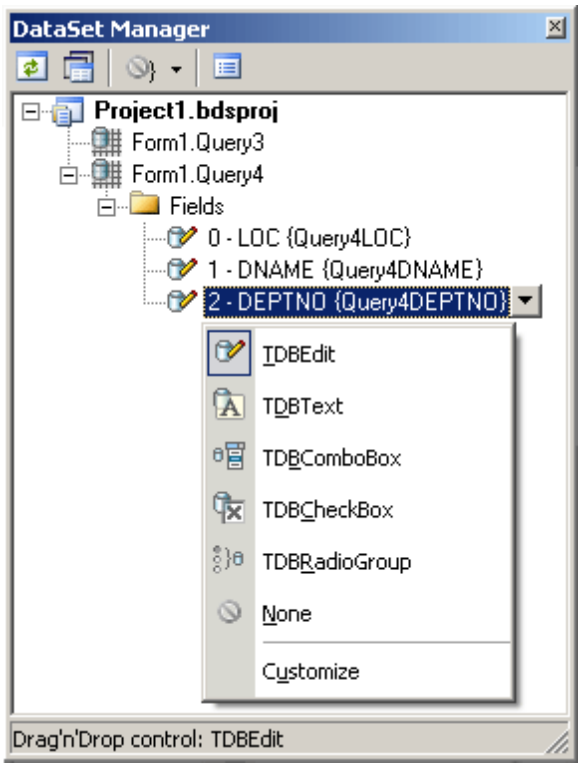
See Also

- TMacro
- TCustomDADataSet.MacroByName
- TCustomDADataSet.Macros

4.13 DataSet Manager

DataSet Manager window

The DataSet Manager window displays the datasets in your project. You can use the DataSet Manager window to create a user interface (consisting of data-bound controls) by dragging items from the window onto forms in your project. Each item has a drop-down control list where you can select the type of control to create prior to dragging it onto a form. You can customize the control list with additional controls, including the controls you have created.



Using the DataSet Manager window, you can:

- Create forms that display data by dragging items from the DataSet Manager window onto forms.
- Customize the list of controls available for each data type in the DataSet Manager window.

- Choose which control should be created when dragging an item onto a form in your Windows application.

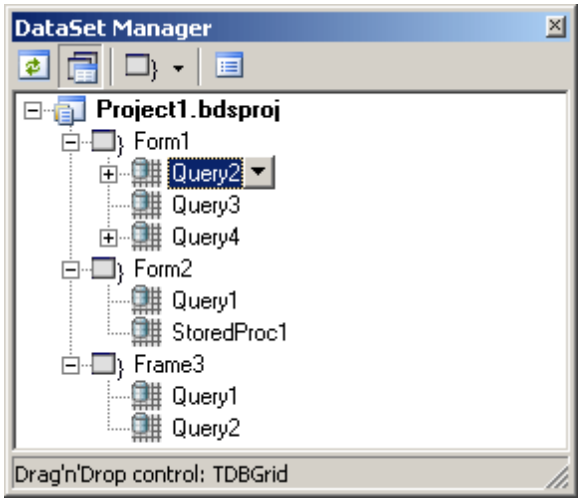
- Create and delete TField objects in the DataSets of your project.

Opening the DataSet Manager window

You can display the DataSet Manager window by clicking DataSet Manager on the Tools menu. You can also use IDE desktop saving/loading to save DataSet Manager window position and restore it during the next IDE loads.

Observing project DataSets in the DataSet Manager Window

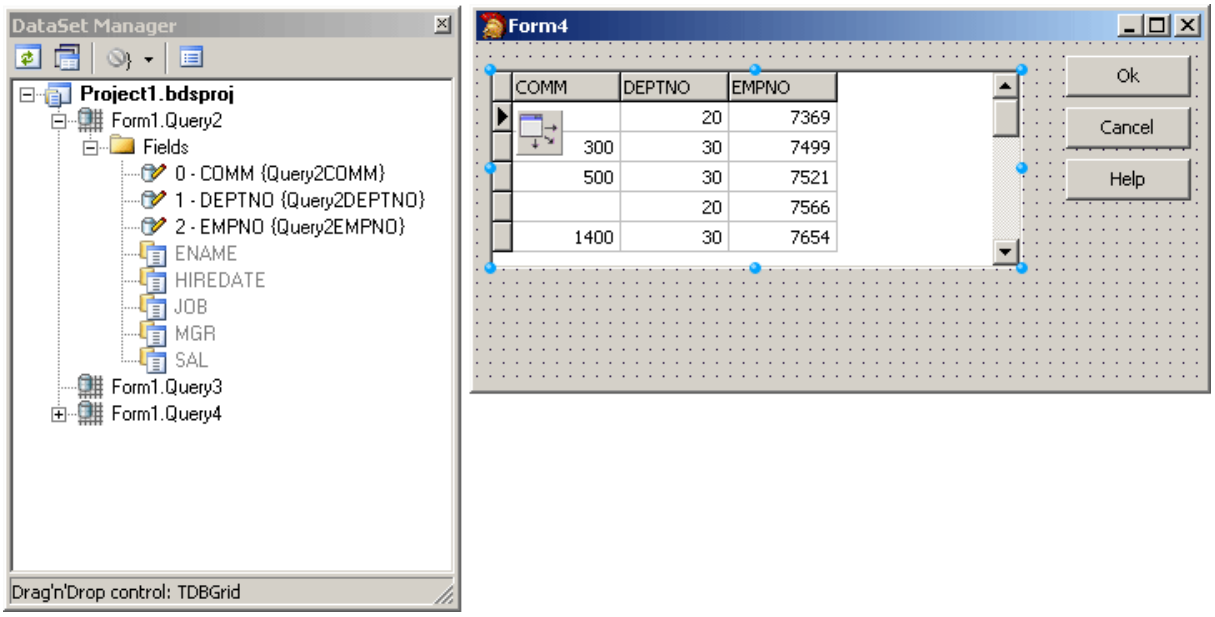
By default DataSet Manager shows DataSets of currently open forms. It can also extract DataSets from all forms in the project. To use this, click *Extract DataSets from all forms in project* button. This settings is remembered. Note, that using this mode can slow down opening of the large projects with plenty of forms and DataSets. Opening of such projects can be very slow in Borland Delphi 2005 and Borland Developer Studio 2006 and can take up to several tens of minutes.
DataSets can be grouped by form or connection. To change DataSet grouping click the *Grouping mode* button or click a down. You can also change grouping mode by selecting required mode from the DataSet Manager window popup menu.



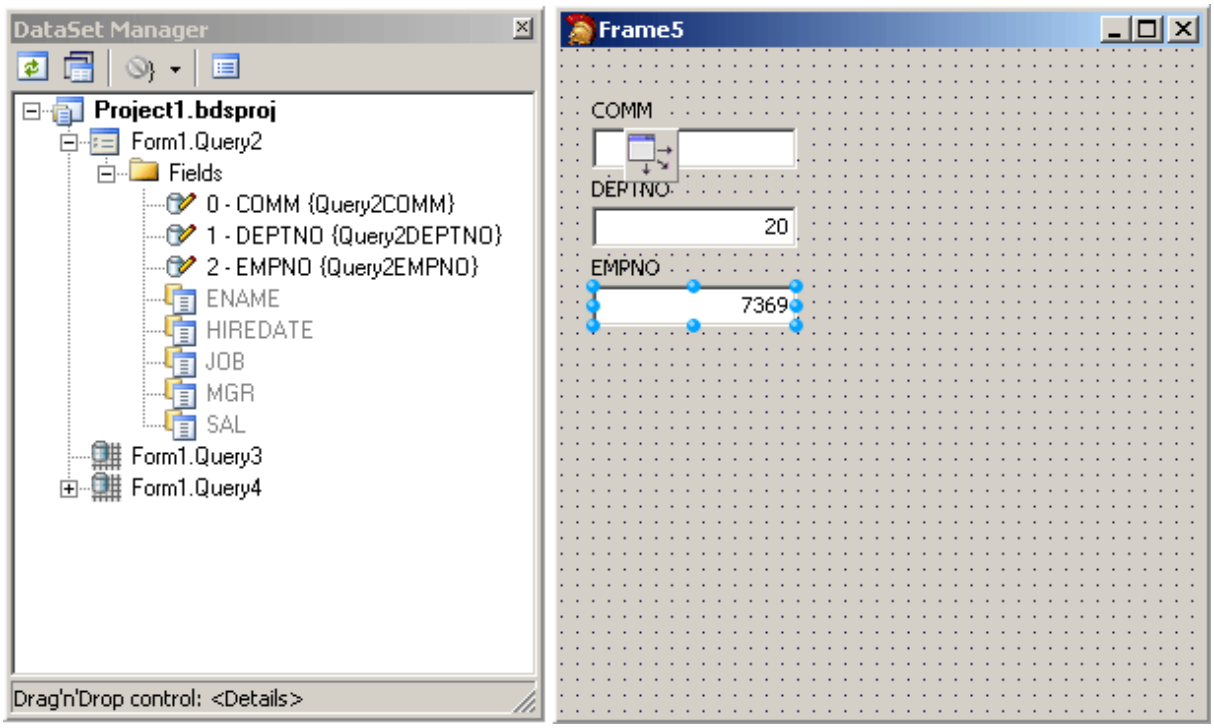
Creating Data-bound Controls

You can drag an item from the DataSet Manager window onto a form to create a new data-

bound control. Each node in the DataSet Manager window allows you to choose the type of control that will be created when you drag it onto a form. You must choose between a Grid layout, where all columns or properties are displayed in a TDataGrid component, or a Details layout, where all columns or properties are displayed in individual controls.
To use grid layout drag the dataset node on the form. By default TDataSource and TDBGrid components are created. You can choose the control to be created prior to dragging by selecting an item in the DataSet Manager window and choosing the control from the item's drop-down control list.

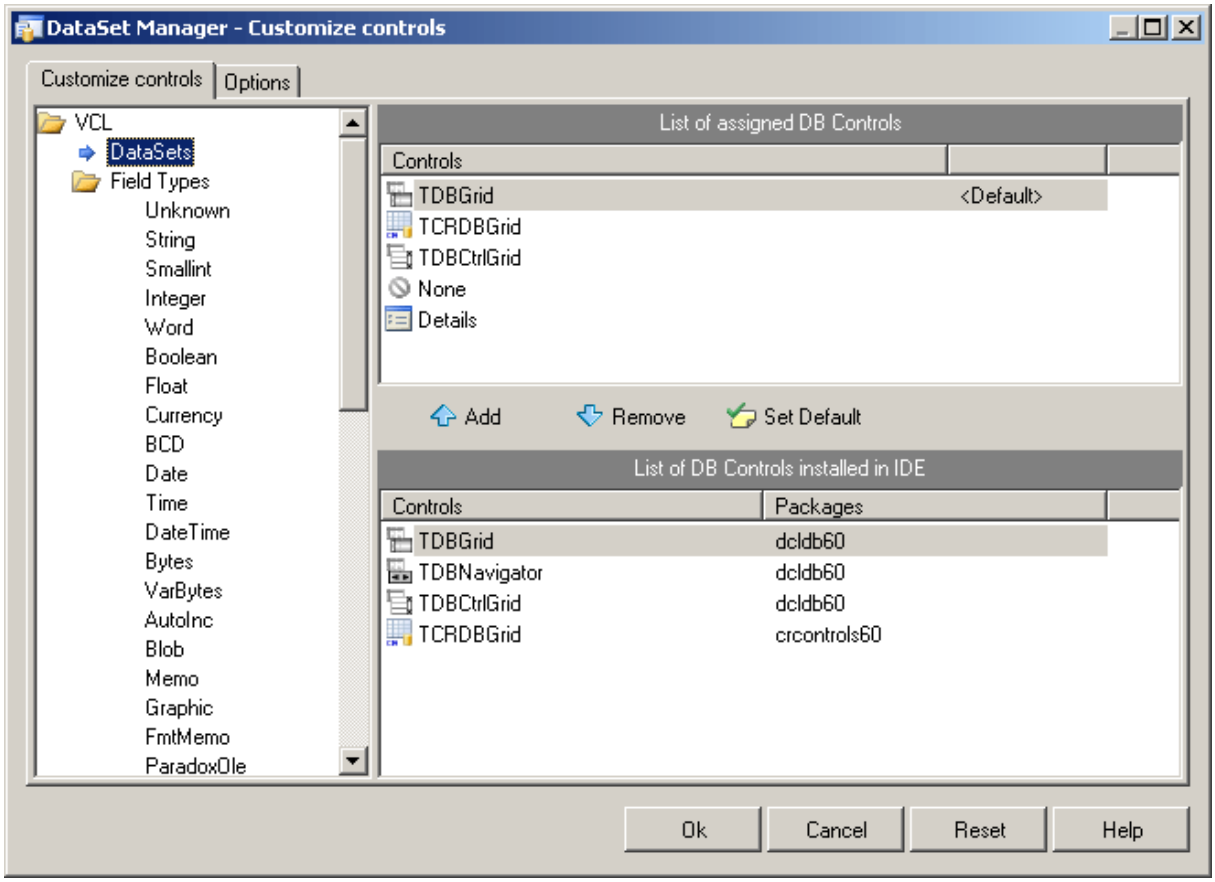


To use Details layout choose Details from the DataSet node drop-down control list in the DataSet Manager window. Then select required controls in the drop-down control list for each DataSet field. DataSet fields must be created. After setting required options you can drag the DataSet to the form from the DataSet wizard. DataSet Manager will create TDataSource component, and a component and a label for each field.



Adding custom controls to the DataSet Manager window

To add custom control to the list click the *Options* button on the DataSet Manager toolbar. A *DataSet Manager - Customize controls* dialog will appear. Using this dialog you can set controls for the DataSets and for the DataSet fields of different types. To do it, click DataSets node or the node of field of required type in *DB objects groups* box and use *Add* and *Remove* buttons to set required control list. You can also set default control by selecting it in the list of assigned DB controls and pressing *Default* button.



The default configuration can easily be restored by pressing Reset button in the *DataSet Manager - Options* dialog.

Working with TField objects

DataSet Manager allows you to create and remove TField objects. DataSet must be active to work with its fields in the DataSet Manager. You can add fields, based on the database table columns, create new fields, remove fields, use drag-n-drop to change fields order.

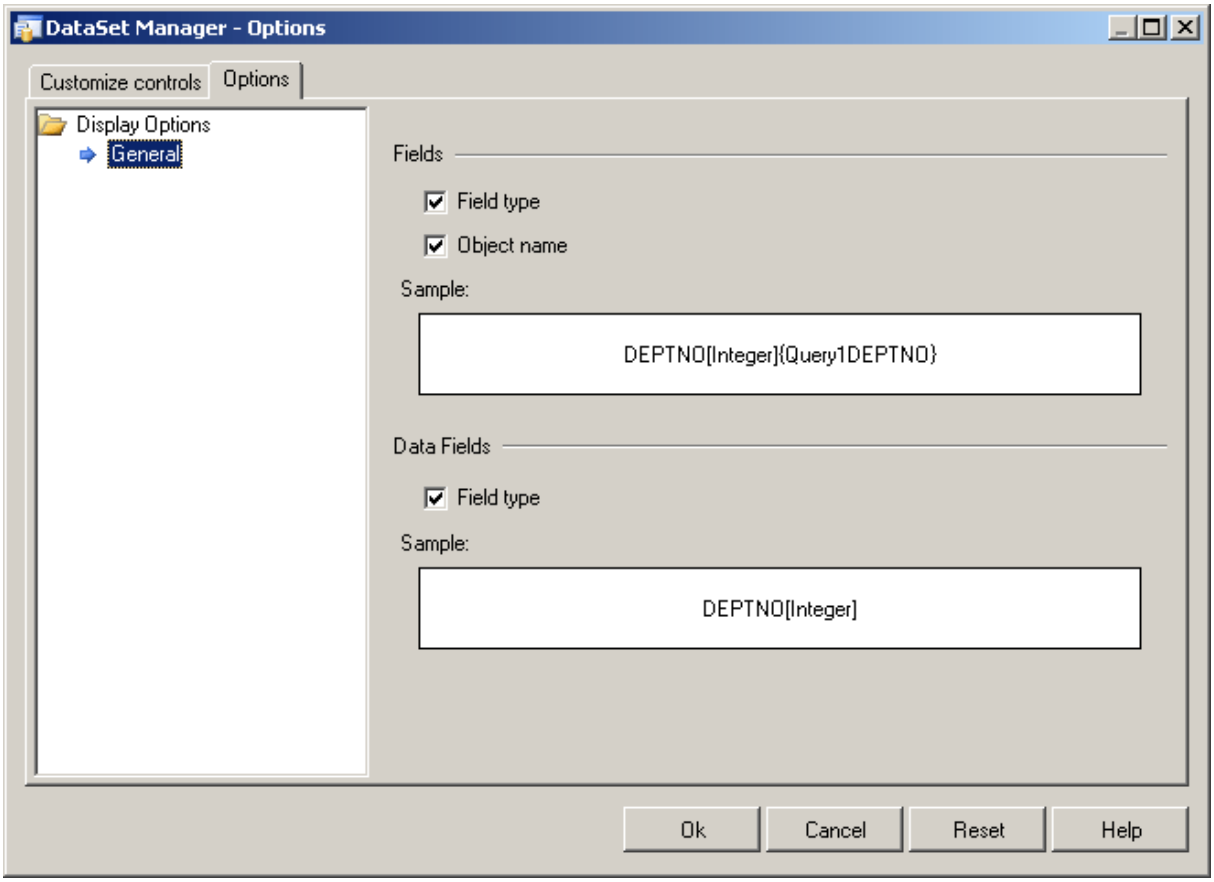
To create a field based on the database table column right-click the Fields node and select *Create Field* from the popup menu or press <Insert>. Note that after you add at least one field manually, DataSet fields corresponding to data fields will not be generated automatically when you drag the DataSet on the form, and you can not drag such fields on the form. To add all available fields right-click the Fields node and select *Add all fields* from the popup menu.

To create new field right-click the Fields node and select *New Field* from the popup menu or press <Ctrl+Insert>. The New Field dialog box will appear. Enter required values and press OK button.

To delete fields select these fields in the DataSet Manager window and press <Delete>.

DataSet Manager allows you to change view of the fields displayed in the main window. Open

the *Customize controls* dialog, and jump to the Options page.



You can chose what information will be added to names of the Field and Data Field objects in the main window of DataSet Manager. Below you can see the example.

4.14 DBMonitor

To extend monitoring capabilities of LiteDAC applications there is an additional tool called DBMonitor. It is provided as an alternative to Borland SQL Monitor which is also supported by LiteDAC.

DBMonitor is an easy-to-use tool to provide visual monitoring of your database applications. DBMonitor has the following features:

- multiple client processes tracing;
- SQL event filtering (by sender objects);
- SQL parameter and error tracing.

DBMonitor is intended to hamper an application being monitored as little as possible.

To trace your application with DB Monitor you should follow these steps:

- drop TLiteSQLMonitor component onto the form;

- turn moDBMonitor option on;
- set to True the Debug property for components you want to trace;
- start DBMonitor before running your program.

4.15 Writing GUI Applications with LiteDAC

LiteDAC GUI part is standalone. This means that to make GUI elements such as SQL cursors, connect form, connect dialog etc. available, you should explicitly include LiteDacVcl unit in your application. This feature is needed for writing console applications.

Delphi and C++Builder

By default LiteDAC does not require Forms, Controls and other GUI related units. Only TLiteConnectDialog component require the Forms unit.

4.16 Connection Pooling

Connection pooling enables an application to use a connection from a pool of connections that do not need to be reestablished for each use. Once a connection has been created and placed in a pool, an application can reuse that connection without performing the complete connection process.
Using a pooled connection can result in significant performance gains, because applications can save the overhead involved in making a connection. This can be particularly significant for middle-tier applications that connect over a network or for applications that connect and disconnect repeatedly, such as Internet applications.
To use connection pooling set the Pooling property of the TCustomDAConnection component to True. Also you should set the PoolingOptions of the TCustomDAConnection. These options include MinPoolSize, MaxPoolSize, Validate, ConnectionLifeTime. Connections belong to the same pool if they have identical values for the following parameters: MinPoolSize, MaxPoolSize, Validate, ConnectionLifeTime, P:Devart.Dac.TCustomDAConnection.Database, P:Devart.Dac.TCustomDAConnection.EncryptionKey, When a connection component disconnects from the database the connection actually remains active and is placed into the pool. When this or another connection component connects to the database it takes a connection from the pool. Only when there are no connections in the pool, new connection is established.
Connections in the pool are validated to make sure that a broken connection will not be returned for the TCustomDAConnection component when it connects to the database. The pool validates connection when it is placed to the pool (e. g. when the TCustomDAConnection component disconnects). If connection is broken it is not placed to the pool. Instead the pool frees this connection. Connections that are held in the pool are validated every 30 seconds.

All broken connections are freed. If you set the PoolingOptions.Validate to True, a connection also will be validated when the TCustomDAConnection component connects and takes a connection from the pool. When some network problem occurs all connections to the database can be broken. Therefore the pool validates all connections before any of them will be used by a TCustomDAConnection component if a fatal error is detected on one connection.

The pool frees connections that are held in the pool during a long time. If no new connections are placed to the pool it becomes empty after approximately 4 minutes. This pool behaviour is intended to save resources when the count of connections in the pool exceeds the count that is needed by application. If you set the PoolingOptions.MinPoolSize property to a non-zero value, this prevents the pool from freeing all pooled connections. When connection count in the pool decreases to MinPoolSize value, remaining connection will not be freed except if they are broken.

The PoolingOptions.MaxPoolSize property limits the count of connections that can be active at the same time. If maximum count of connections is active and some TCustomDAConnection component tries to connect, it will have to wait until any of TCustomDAConnection components disconnect. Maximum wait time is 30 seconds. If active connections' count does not decrease during 30 seconds, the TCustomDAConnection component will not connect and an exception will be raised.

You can limit the time of connection's existence by setting the PoolingOptions.ConnectionLifeTime property. When the TCustomDAConnection component disconnects, its internal connection will be freed instead of placing to the pool if this connection is active during the time longer than the value of the PoolingOptions.ConnectionLifeTime property. This property is designed to make load balancing work with the connection pool.

To force freeing of a connection when the TCustomDAConnection component disconnects, the RemoveFromPool method of TCustomDAConnection can be used. You can also free all connection in the pool by using the class procedures Clear or AsyncClear of TLiteConnectionPoolManager. These procedures can be useful when you know that all connections will be broken for some reason.

It is recommended to use connection pooling with the DisconnectMode option of the TCustomDAConnection component set to True. In this case internal connections can be shared between TCustomDAConnection components. When some operation is performed on the TCustomDAConnection component (for example, an execution of SQL statement) this component will connect using pooled connection and after performing operation it will disconnect. When an operation is performed on another TCustomDAConnection component it can use the same connection from the pool.

See Also

- TCustomDAConnection.Pooling
- TCustomDAConnection.PoolingOptions
- Working with Disconnected Mode

4.17 64-bit Development with Embarcadero RAD Studio XE2

RAD Studio XE2 Overview

RAD Studio XE2 is the major breakthrough in the line of all Delphi versions of this product. It allows deploying your applications both on Windows and Mac OS platforms. Additionally, it is now possible to create 64-bit Windows applications to fully benefit from the power of new hardware. Moreover, you can create visually spectacular applications with the help of the FireMonkey GPU application platform.
Its main features are the following:

- Windows 64-bit platform support;
- Mac OS support;
- FireMonkey application development platform;
- Live data bindings with visual components;
- VCL styles for Windows applications.

For more information about RAD Studio XE2, please refer to World Tour.

Changes in 64-bit Application Development

64-bit platform support implies several important changes that each developer must keep in mind prior to the development of a new application or the modernization of an old one.

General

RAD Studio XE2 IDE is a 32-bit application. It means that it cannot load 64-bit packages at design-time. So, all design-time packages in RAD Studio XE2 IDE are 32-bit.
Therefore, if you develop your own components, you should remember that for the purpose of developing components with the 64-bit platform support, you have to compile run-time packages both for the 32- and 64-bit platforms, while design-time packages need to be compiled only for the 32-bit platform. This might be a source of difficulties if your package is simultaneously both a run-time and a design-time package, as it is more than likely that this package won't be compiled for the 64-bit platform. In this case, you will have to separate your package into two packages, one of which will be used as run-time only, and the other as design-time only.

For the same reason, if your design-time packages require that certain DLLs be loaded, you should remember that design-time packages can be only 32-bit and that is why they can load only 32-bit versions of these DLLs, while at run-time 64-bit versions of the DLLs will be loaded. Correspondingly, if there are only 64-bit versions of the DLL on your computer, you won't be able to use all functions at design-time and, vice versa, if you have only 32-bit versions of the DLLs, your application won't be able to work at run-time.

Extended type

For this type in a 64-bit applications compiler generates SSE2 instructions instead of FPU, and that greatly improves performance in applications that use this type a lot (where data accuracy is needed). For this purpose, the size and precision of Extended type is reduced:

TYPE	32-bit	64-bit
Extended	10 bytes	8 bytes

The following two additional types are introduced to ensure compatibility in the process of developing 32- and 64-bit applications:

Extended80 – whose size in 32-bit application is 10 bytes; however, this type provides the same precision as its 8-byte equivalent in 64-bit applications.

Extended80Rec – can be used to perform low-level operations on an extended precision floating-point value. For example, the sign, the exponent, and the mantissa can be changed separately. It enables you to perform memory-related operations with 10-bit floating-point variables, but not extended-precision arithmetic operations.

Pointer and Integers

The major difference between 32- and 64-bit platforms is the volume of the used memory and, correspondingly, the size of the pointer that is used to address large memory volumes.

TYPE	32-bit	64-bit
Pointer	4 bytes	8 bytes

At the same time, the size of the Integer type remains the same for both platforms:

TYPE	32-bit	64-bit
Integer	4 bytes	4 bytes

That is why, the following code will work incorrectly on the 64-bit platform:

```
Ptr := Pointer(Integer(Ptr) + Offset);
```

While this code will correctly on the 64-bit platform and incorrectly on the 32-bit platform:

```
Ptr := Pointer(Int64(Ptr) + Offset);
```

For this purpose, the following platform-dependent integer type is introduced:

TYPE	32-bit	64-bit
NativeInt	4 bytes	8 bytes
NativeUInt	4 bytes	8 bytes

This type helps ensure that pointers work correctly both for the 32- and 64-bit platforms:

```
Ptr := Pointer(NativeInt(Ptr) + Offset);
```

However, you need to be extra-careful when developing applications for several versions of Delphi, in which case you should remember that in the previous versions of Delphi the NativeInt type had different sizes:

TYPE	Delphi Version	Size
NativeInt	D5	N/A
NativeInt	D6	N/A
NativeInt	D7	8 bytes
NativeInt	D2005	8 bytes
NativeInt	D2006	8 bytes
NativeInt	D2007	8 bytes
NativeInt	D2009	4 bytes
NativeInt	D2010	4 bytes
NativeInt	Delphi XE	4 bytes
NativeInt	Delphi XE2	4 or 8 bytes

Out parameters

Some WinAPIs have OUT parameters of the SIZE_T type, which is equivalent to NativeInt in Delphi XE2. The problem is that if you are developing only a 32-bit application, you won't be able to pass Integer to OUT, while in a 64-bit application, you will not be able to pass Int64; in both cases you will have to pass NativeInt.

For example:

```
procedure MyProc(out Value: NativeInt);
begin
  Value := 12345;
end;
var
    Value1: NativeInt;
{$IFDEF WIN32}
  Value2: Integer;
{$ENDIF}
{$IFDEF WIN64}
  Value2: Int64;
```

```
{$ENDIF}
begin
   MyProc(Value1); // will be compiled;
 MyProc(Value2); // will not be compiled !!!
end;
```

Win API

If you pass pointers to SendMessage/PostMessage/TControl.Perform, the wParam and lParam parameters should be type-casted to the WPARAM/LPARAM type and not to Integer/Longint.

Correct:

```
SendMessage(hWnd, WM_SETTEXT, 0, LPARAM(@MyCharArray));
```

Wrong:

```
SendMessage(hWnd, WM_SETTEXT, 0, Integer(@MyCharArray));
```

Replace SetWindowLong/GetWindowLog with SetWindowLongPtr/GetWindowLongPtr for GWLP_HINSTANCE, GWLP_ID, GWLP_USERDATA, GWLP_HWNDPARENT and GWLP_WNDPROC as they return pointers and handles. Pointers that are passed to SetWindowLongPtr should be type-casted to LONG_PTR and not to Integer/Longint.

Correct:

```
SetWindowLongPtr(hWnd, GWLP_WNDPROC, LONG_PTR(@MyWindowProc));
```

Wrong:

```
SetWindowLong(hWnd, GWL_WNDPROC, Longint(@MyWindowProc));
```

Pointers that are assigned to the TMessage.Result field should use a type-cast to LRESULT instead of Integer/Longint.

Correct:

```
Message.Result := LRESULT(Self);
```

Wrong:

```
Message.Result := Integer(Self);
```

All TWM...-records for the windows message handlers must use the correct Windows types for the fields:

```
Msg: UINT; wParam: WPARAM; lParam: LPARAM; Result: LRESULT)
```

Assembler

In order to make your application (that uses assembly code) work, you will have to make several changes to it:

- rewrite your code that mixes Pascal code and assembly code. Mixing them is not supported in 64-bit applications;
- rewrite assembly code that doesn't consider architecture and processor specifics.

You can use conditional defines to make your application work with different architectures.

You can learn more about Assembly code here: http://docwiki.embarcadero.com/RADStudio/en/Using_Inline_Assembly_Code You can also look at the following article that will help you to make your application support the 64-bit platform: http://docwiki.embarcadero.com/RADStudio/en/Converting_32-bit_Delphi_Applications_to_64-bit_Windows

Exception handling

The biggest difference in exception handling between Delphi 32 and 64-bit is that in Delphi XE2 64-bit you will gain more performance because of different internal exception mechanism. For 32-bit applications, the Delphi compiler (dcc32.exe) generates additional code that is executed any way and that causes performance loss. The 64-bit compiler (dcc64.exe) doesn't generate such code, it generates metadata and stores it in the PDATA section of an executable file instead.

But in Delphi XE2 64-bit it's impossible to have more than 16 levels of nested exceptions. Having more than 16 levels of nested exceptions will cause a Run Time error.

Debugging

Debugging of 64-bit applications in RAD Studio XE2 is remote. It is caused by the same reason: RAD Studio XE2 IDE is a 32 application, but your application is 64-bit. If you are trying to debug your application and you cannot do it, you should check that the **Include remote debug symbols** project option is enabled.

To enable it, perform the following steps:

1. Open Project Options (in the main menu **Project->Options**).
2. In the Target combobox, select **Debug configuration - 64-bit Windows platform**. If there is no such option in the combobox, right click "Target Platforms" in Project Manager and select **Add platform**. After adding the 64-bit Windows platform, the **Debug configuration - 64-bit Windows platform** option will be available in the Target combobox.
3. Select **Linking** in the left part of the Project Options form.
4. enable the **Include remote debug symbols** option.

After that, you can run and debug your 64-bit application.

To enable remote debugging, perform the following steps:

1. Install Platform Assistant Server (PAServer) on a remote computer. You can find PAServer in the %RAD_Studio_XE2_Install_Directory%\PAServer directory. The setup_paserver.exe file is an installation file for Windows, and the setup_paserver.zip file is an istallation file for MacOS.
2. Run the PAServer.exe file on a remote computer and set the password that will be used to connect to this computer.
3. On a local computer with RAD Studio XE2 installed, right-click the target platform that you want to debug in Project Manager and select **Assign Remote Profile**. Click the **Add** button in the displayed window, input your profile name, click the **Next** button, input the name of a

remote computer and the password to it (that you assigned when you started PAServer on a remote computer).

After that, you can test the connection by clicking the **Test Connection** button. If your connection failed, check that your firewalls on both remote and local computers do not block your connection, and try to establish a connection once more. If your connection succeeded, click the Next button and then the Finish button. Select your newly created profile and click **OK**.

After performing these steps you will be able to debug your application on a remote computer. You application will be executed on a remote computer, but you will be able to debug it on your local computer with RAD Studio XE2.

For more information about working with Platform Assistant Server, please refer to http://docwiki.embarcadero.com/RADStudio/en/Installing_and_Running_the_Platform_Assistant_on_the_Target_Platform

4.18 Database Specific Aspects of 64-bit Development

SQLite Connectivity Aspects

Using client library:

If you are developing a 64-bit application, you have to be aware of specifics of working with client libraries at design-time and run-time. To connect to a SQLite database at design-time, you must have a 32-bit SQLite client library. You have to place it to the *C:\Windows\SysWOW64* directory. This requirement flows out from the fact that RAD Studio XE2 is a 32-bit application and it cannot load 64-bit libraries at design-time. To work with a SQLite database in run-time (64-bit application), you must have the 64-bit client library placed to the *C:\Windows\System32* directory.

5 Reference

This page shortly describes units that exist in LiteDAC.

Units

Unit Name	Description
CRAccess	This unit contains base classes for accessing databases.
CRBatchMove	This unit contains implementation of the TCRBatchMove component.

CREncryption	This unit contains base classes for data encryption.
CRGrid	Description is not available at the moment.
DAAlerter	This unit contains the base class for the TLiteAlerter component.
DADump	This unit contains the base class for the TLiteDump component.
DALoader	This unit contains the base class for the TLiteLoader component.
DAScript	This unit contains the base class for the TLiteScript component.
DASQLMonitor	This unit contains the base class for the TLiteSQLMonitor component.
DBAccess	This unit contains base classes for most of the components.
LiteAccess	This unit contains main components of LiteDAC
LiteDacVcl	This unit contains the visual constituent of LiteDAC.
LiteDump	This unit contains implementation of the TLiteDump component
LiteLoader	This unit contains implementation of the TLiteLoader component
LiteScript	This unit contains implementation of the TLiteScript component.
LiteSQLMonitor	This unit contains implementation of the TLiteSQLMonitor component.
MemData	This unit contains classes for storing data in memory.
MemDS	This unit contains implementation of the TMemDataSet class.
VirtualDataSet	Description is not available at the moment.

VirtualTable	Description is not available at the moment.

5.1 CRAccess

This unit contains base classes for accessing databases.

Classes

Name	Description
TCRCursor	A base class for classes that work with database cursors.

Types

Name	Description
TBeforeFetchProc	This type is used for the TCustomDADataSet.BeforeFetch event.

Enumerations

Name	Description
TCRIsolationLevel	Specifies how to handle transactions containing database modifications.
TCRTransactionAction	Specifies the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.
TCursorState	Used to set cursor state

5.1.1 Classes

Classes in the **CRAccess** unit.

Classes

Name	Description

TCRCursor	A base class for classes that work with database cursors.

5.1.1.1 TCRCursor Class

A base class for classes that work with database cursors.
For a list of all members of this type, see TCRCursor members.

Unit

CRAccess

Syntax

```
TCRCursor = class(TSharedObject);
```

Remarks

TCRCursor is a base class for classes that work with database cursors.

Inheritance Hierarchy

TSharedObject
  TCRCursor

5.1.1.1.1 Members

TCRCursor class overview.

Properties

Name	Description
RefCount (inherited from **TSharedObject**)	Used to return the count of reference to a TSharedObject object.

Methods

Name	Description
AddRef (inherited from **TSharedObject**)	Increments the reference count for the number of references dependent on the TSharedObject object.
Release (inherited from **TSharedObject**)	Decrements the reference count.

5.1.2 Types

Types in the **CRAccess** unit.

Types

Name	Description
TBeforeFetchProc	This type is used for the TCustomDADataSet.BeforeFetch event.

5.1.2.1 TBeforeFetchProc Procedure Reference

This type is used for the TCustomDADataSet.BeforeFetch event.

Unit

CRAccess

Syntax

```
TBeforeFetchProc = procedure (var Cancel: boolean) of object;
```

Parameters

Cancel

True, if the current fetch operation should be aborted.

5.1.3 Enumerations

Enumerations in the **CRAccess** unit.

Enumerations

Name	Description
TCRIsolationLevel	Specifies how to handle transactions containing database modifications.
TCRTransactionAction	Specifies the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.
TCursorState	Used to set cursor state

5.1.3.1 TCRIsolationLevel Enumeration

Specifies how to handle transactions containing database modifications.

Unit

CRAccess

Syntax

```
TCRIsolationLevel = (ilReadCommitted);
```

Values

Value	Meaning
ilReadCommitted	The default transaction behavior. If the transaction contains DML that requires row locks held by another transaction, then the DML statement waits until the row locks are released.

5.1.3.2 TCRTransactionAction Enumeration

Specifies the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

Unit

CRAccess

Syntax

```
TCRTransactionAction = (taCommit, taRollback);
```

Values

Value	Meaning
taCommit	Transaction is committed.
taRollback	Transaction is rolled back.

5.1.3.3 TCursorState Enumeration

Used to set cursor state

Unit

CRAccess

Syntax

```
TCursorState = (csInactive, csOpen, csParsed, csPrepared, csBound,
csExecuteFetchAll, csExecuting, csExecuted, csFetching,
csFetchingAll, csFetched);
```

Values

Value	Meaning
csBound	Parameters bound
csExecuted	Statement successfully executed
csExecuteFetchAll	Set before FetchAll
csExecuting	Statement is set before executing
csFetched	Fetch finished or canceled
csFetching	Set on first
csFetchingAll	Set on the FetchAll start
csInactive	Default state
csOpen	statement open
csParsed	Statement parsed
csPrepared	Statement prepared

5.2 CRBatchMove

This unit contains implementation of the TCRBatchMove component.

Classes

Name	Description
TCRBatchMove	Transfers records between datasets.

Types

Name	Description
TCRBatchMoveProgressEvent	This type is used for the TCRBatchMove.OnBatchMoveProgress event.

Enumerations

Name	Description

TCRBatchMode	Used to set the type of the batch operation that will be executed after calling the TCRBatchMove.Execute method.
TCRFieldMappingMode	Used to specify the way fields of the destination and source datasets will be mapped to each other if the TCRBatchMove.Mappings list is empty.

5.2.1 Classes

Classes in the **CRBatchMove** unit.

Classes

Name	Description
TCRBatchMove	Transfers records between datasets.

5.2.1.1 TCRBatchMove Class

Transfers records between datasets.
For a list of all members of this type, see TCRBatchMove members.

Unit

CRBatchMove

Syntax

```
TCRBatchMove = class(TComponent);
```

Remarks

The TCRBatchMove component transfers records between datasets. Use it to copy dataset records to another dataset or to delete datasets records that match records in another dataset. The TCRBatchMove.Mode property determines the desired operation type, the TCRBatchMove.Source and TCRBatchMove.Destination properties indicate corresponding datasets.
Note: A TCRBatchMove component is added to the Data Access page of the component palette, not to the LiteDAC page.

5.2.1.1.1 Members

TCRBatchMove class overview.

Properties

Name	Description
AbortOnKeyViol	Used to specify whether the batch operation should be terminated immediately after key or integrity violation.
AbortOnProblem	Used to specify whether the batch operation should be terminated immediately when it is necessary to truncate data to make it fit the specified Destination.
ChangedCount	Used to get the number of records changed in the destination dataset.
CommitCount	Used to set the number of records to be batch moved before commit occurs.
Destination	Used to specify the destination dataset for the batch operation.
FieldMappingMode	Used to specify the way fields of destination and source datasets will be mapped to each other if the TCRBatchMove.Mappings list is empty.
KeyViolCount	Used to get the number of records that could not be moved to or from the destination dataset because of integrity or key violations.
Mappings	Used to set field matching between source and destination datasets for the batch operation.
Mode	Used to set the type of the batch operation that will be executed after calling the TCRBatchMove.Execute method.
MovedCount	Used to get the number of records that were read from the source dataset during the batch operation.
ProblemCount	Used to get the number of records that could not be added to the

	destination dataset because of the field type mismatch.
RecordCount	Used to indicate the maximum number of records in the source dataset that will be applied to the destination dataset.
Source	Used to specify the source dataset for the batch operation.

Methods

Name	Description
Execute	Performs the batch operation.

Events

Name	Description
OnBatchMoveProgress	Occurs when providing feedback to the user about the batch operation in progress is needed.

5.2.1.1.2 Properties

Properties of the **TCRBatchMove** class.

For a complete list of the **TCRBatchMove** class members, see the TCRBatchMove Members topic.

Public

Name	Description
ChangedCount	Used to get the number of records changed in the destination dataset.
KeyViolCount	Used to get the number of records that could not be moved to or from the destination dataset because of integrity or key violations.
MovedCount	Used to get the number of records that were read from the source dataset during the batch operation.

ProblemCount	Used to get the number of records that could not be added to the destination dataset because of the field type mismatch.

Published

Name	Description
AbortOnKeyViol	Used to specify whether the batch operation should be terminated immediately after key or integrity violation.
AbortOnProblem	Used to specify whether the batch operation should be terminated immediately when it is necessary to truncate data to make it fit the specified Destination.
CommitCount	Used to set the number of records to be batch moved before commit occurs.
Destination	Used to specify the destination dataset for the batch operation.
FieldMappingMode	Used to specify the way fields of destination and source datasets will be mapped to each other if the TCRBatchMove.Mappings list is empty.
Mappings	Used to set field matching between source and destination datasets for the batch operation.
Mode	Used to set the type of the batch operation that will be executed after calling the TCRBatchMove.Execute method.
RecordCount	Used to indicate the maximum number of records in the source dataset that will be applied to the destination dataset.
Source	Used to specify the source dataset for the batch operation.

See Also

- TCRBatchMove Class
- TCRBatchMove Class Members

5.2.1.1.2.1 AbortOnKeyViol Property

Used to specify whether the batch operation should be terminated immediately after key or integrity violation.

Class

TCRBatchMove

Syntax

```
property AbortOnKeyViol: boolean default True;
```

Remarks

Use the AbortOnKeyViol property to specify whether the batch operation is terminated immediately after key or integrity violation.

5.2.1.1.2.2 AbortOnProblem Property

Used to specify whether the batch operation should be terminated immediately when it is necessary to truncate data to make it fit the specified Destination.

Class

TCRBatchMove

Syntax

```
property AbortOnProblem: boolean default True;
```

Remarks

Use the AbortOnProblem property to specify whether the batch operation is terminated immediately when it is necessary to truncate data to make it fit the specified Destination.

5.2.1.1.2.3 ChangedCount Property

Used to get the number of records changed in the destination dataset.

Class

TCRBatchMove

Syntax

```
property ChangedCount: Integer;
```

Remarks

Use the ChangedCount property to get the number of records changed in the destination dataset. It shows the number of records that were updated in the bmUpdate or bmAppendUpdate mode or were deleted in the bmDelete mode.

5.2.1.1.2.4 CommitCount Property

Used to set the number of records to be batch moved before commit occurs.

Class

TCRBatchMove

Syntax

```
property CommitCount: integer default 0;
```

Remarks

Use the CommitCount property to set the number of records to be batch moved before the commit occurs. If it is set to 0, the operation will be chunked to the number of records to fit 32 Kb.

5.2.1.1.2.5 Destination Property

Used to specify the destination dataset for the batch operation.

Class

TCRBatchMove

Syntax

```
property Destination: TDataSet;
```

Remarks

Specifies the destination dataset for the batch operation.

5.2.1.1.2.6 FieldMappingMode Property

Used to specify the way fields of destination and source datasets will be mapped to each other if the Mappings list is empty.

Class

TCRBatchMove

Syntax

```
property FieldMappingMode: TCRFieldMappingMode default
mmFieldIndex;
```

Remarks

Specifies in what way fields of destination and source datasets will be mapped to each other if the Mappings list is empty.

5.2.1.1.2.7 KeyViolCount Property

Used to get the number of records that could not be moved to or from the destination dataset because of integrity or key violations.

Class

TCRBatchMove

Syntax

```
property KeyViolCount: Integer;
```

Remarks

Use the KeyViolCount property to get the number of records that could not be replaced, added, deleted from the destination dataset because of integrity or key violations.
If AbortOnKeyViol is True, then KeyViolCount will never exceed one, because the operation aborts when the integrity or key violation occurs.

See Also

- AbortOnKeyViol

5.2.1.1.2.8 Mappings Property

Used to set field matching between source and destination datasets for the batch operation.

Class

TCRBatchMove

Syntax

```
property Mappings: TStrings;
```

Remarks

Use the Mappings property to set field matching between the source and destination datasets for the batch operation. By default fields matching is based on their position in the datasets. To map the column ColName in the source dataset to the column with the same name in the destination dataset, use:
ColName

Example

To map a column named SourceColName in the source dataset to the column named DestColName in the destination dataset, use:

```
DestColName=SourceColName
```

5.2.1.1.2.9 Mode Property

Used to set the type of the batch operation that will be executed after calling the Execute method.

Class

TCRBatchMove

Syntax

```
property Mode: TCRBatchMode default bmAppend;
```

Remarks

Use the Mode property to set the type of the batch operation that will be executed after calling the Execute method.

5.2.1.1.2.10 MovedCount Property

Used to get the number of records that were read from the source dataset during the batch operation.

Class

TCRBatchMove

Syntax

```
property MovedCount: Integer;
```

Remarks

Use the MovedCount property to get the number of records that were read from the source dataset during the batch operation. This number includes records that caused key or integrity violations or were trimmed.

5.2.1.1.2.11 ProblemCount Property

Used to get the number of records that could not be added to the destination dataset because of the field type mismatch.

Class

TCRBatchMove

Syntax

```
property ProblemCount: Integer;
```

Remarks

Use the ProblemCount property to get the number of records that could not be added to the destination dataset because of the field type mismatch.
If AbortOnProblem is True, then ProblemCount will never exceed one, because the operation aborts when the problem occurs.

See Also

- AbortOnProblem

5.2.1.1.2.12 RecordCount Property

Used to indicate the maximum number of records in the source dataset that will be applied to the destination dataset.

Class

TCRBatchMove

Syntax

```
property RecordCount: Integer default 0;
```

Remarks

Determines the maximum number of records in the source dataset, that will be applied to the destination dataset. If it is set to 0, all records in the source dataset will be applied to the destination dataset, starting from the first record. If RecordCount is greater than 0, up to the RecordCount records are applied to the destination dataset, starting from the current record

in the source dataset. If RecordCount exceeds the number of records left in the source dataset, batch operation terminates after reaching last record.

5.2.1.1.2.13 Source Property

Used to specify the source dataset for the batch operation.

Class

TCRBatchMove

Syntax

```
property Source: TDataSet;
```

Remarks

Specifies the source dataset for the batch operation.

5.2.1.1.3 Methods

Methods of the **TCRBatchMove** class.
For a complete list of the **TCRBatchMove** class members, see the TCRBatchMove Members topic.

Public

Name	Description
Execute	Performs the batch operation.

See Also

- TCRBatchMove Class
- TCRBatchMove Class Members

5.2.1.1.3.1 Execute Method

Performs the batch operation.

Class

TCRBatchMove

Syntax

```
procedure Execute;
```

Remarks

Call the Execute method to perform the batch operation.

5.2.1.1.4 Events

Events of the **TCRBatchMove** class.

For a complete list of the **TCRBatchMove** class members, see the TCRBatchMove Members topic.

Published

Name	Description
OnBatchMoveProgress	Occurs when providing feedback to the user about the batch operation in progress is needed.

See Also

- TCRBatchMove Class
- TCRBatchMove Class Members

5.2.1.1.4.1 OnBatchMoveProgress Event

Occurs when providing feedback to the user about the batch operation in progress is needed.

Class

TCRBatchMove

Syntax

```
property OnBatchMoveProgress: TCRBatchMoveProgressEvent;
```

Remarks

Write the OnBatchMoveProgress event handler to provide feedback to the user about the batch operation progress.

5.2.2 Types

Types in the **CRBatchMove** unit.

Types

Name	Description

TCRBatchMoveProgressEvent	This type is used for the TCRBatchMove.OnBatchMoveProgress event.

5.2.2.1 TCRBatchMoveProgressEvent Procedure Reference

This type is used for the TCRBatchMove.OnBatchMoveProgress event.

Unit

CRBatchMove

Syntax

```
TCRBatchMoveProgressEvent = procedure (Sender: TObject; Percent:
integer) of object;
```

Parameters

Sender
An object that raised the event.

Percent
Percentage of the batch operation progress.

5.2.3 Enumerations

Enumerations in the **CRBatchMove** unit.

Enumerations

Name	Description
TCRBatchMode	Used to set the type of the batch operation that will be executed after calling the TCRBatchMove.Execute method.
TCRFieldMappingMode	Used to specify the way fields of the destination and source datasets will be mapped to each other if the TCRBatchMove.Mappings list is empty.

5.2.3.1 TCRBatchMode Enumeration

Used to set the type of the batch operation that will be executed after calling the TCRBatchMove.Execute method.

Unit

CRBatchMove

Syntax

```
TCRBatchMode = (bmAppend, bmUpdate, bmAppendUpdate, bmDelete);
```

Values

Value	Meaning
bmAppend	Appends the records from the source dataset to the destination dataset. The default mode.
bmAppendUpdate	Replaces records in the destination dataset with the matching records from the source dataset. If there is no matching record in the destination dataset, the record will be appended to it.
bmDelete	Deletes records from the destination dataset if there are matching records in the source dataset.
bmUpdate	Replaces records in the destination dataset with the matching records from the source dataset.

5.2.3.2 TCRFieldMappingMode Enumeration

Used to specify the way fields of the destination and source datasets will be mapped to each other if the TCRBatchMove.Mappings list is empty.

Unit

CRBatchMove

Syntax

```
TCRFieldMappingMode = (mmFieldIndex, mmFieldName);
```

Values

Value	Meaning
mmFieldIndex	Specifies that the fields of the destination dataset will be mapped to the fields of the source dataset by field index.
mmFieldName	Mapping is performed by field names.

5.3 CREncryption

This unit contains base classes for data encryption.

Classes

Name	Description
TCREncryptor	The class that performs data encryption and decryption in a client application using various encryption algorithms.

Enumerations

Name	Description
TCREncDataHeader	Specifies whether the additional information is stored with the encrypted data.
TCREncryptionAlgorithm	Specifies the algorithm of data encryption.
TCRHashAlgorithm	Specifies the algorithm of generating hash data.
TCRInvalidHashAction	Specifies the action to perform on data fetching when hash data is invalid.

5.3.1 Classes

Classes in the **CREncryption** unit.

Classes

Name	Description
TCREncryptor	The class that performs data encryption and decryption in a client application using various encryption algorithms.

5.3.1.1 TCREncryptor Class

The class that performs data encryption and decryption in a client application using various encryption algorithms.
For a list of all members of this type, see TCREncryptor members.

Unit

CREncryption

Syntax

```
TCREncryptor = class(TComponent);
```

5.3.1.1.1 Members

TCREncryptor class overview.

Properties

Name	Description
DataHeader	Specifies whether the additional information is stored with the encrypted data.
EncryptionAlgorithm	Specifies the algorithm of data encryption.
HashAlgorithm	Specifies the algorithm of generating hash data.
InvalidHashAction	Specifies the action to perform on data fetching when hash data is invalid.
Password	Used to set a password that is used to generate a key for encryption.

Methods

Name	Description
SetKey	Sets a key, using which data is encrypted.

5.3.1.1.2 Properties

Properties of the **TCREncryptor** class.

For a complete list of the **TCREncryptor** class members, see the TCREncryptor Members topic.

Published

Name	Description
DataHeader	Specifies whether the additional information is stored with the encrypted data.

EncryptionAlgorithm	Specifies the algorithm of data encryption.
HashAlgorithm	Specifies the algorithm of generating hash data.
InvalidHashAction	Specifies the action to perform on data fetching when hash data is invalid.
Password	Used to set a password that is used to generate a key for encryption.

See Also

- TCREncryptor Class
- TCREncryptor Class Members

5.3.1.1.2.1 DataHeader Property

Specifies whether the additional information is stored with the encrypted data.

Class

TCREncryptor

Syntax

```
property DataHeader: TCREncDataHeader default ehTagAndHash;
```

Remarks

Use DataHeader to specify whether the additional information is stored with the encrypted data. Default value is ehTagAndHash.

5.3.1.1.2.2 EncryptionAlgorithm Property

Specifies the algorithm of data encryption.

Class

TCREncryptor

Syntax

```
property EncryptionAlgorithm: TCREncryptionAlgorithm default
eaBlowfish;
```

Remarks

Use EncryptionAlgorithm to specify the algorithm of data encryption. Default value is eaBlowfish.

5.3.1.1.2.3 HashAlgorithm Property

Specifies the algorithm of generating hash data.

Class

TCREncryptor

Syntax

```
property HashAlgorithm: TCRHashAlgorithm default haSHA1;
```

Remarks

Use HashAlgorithm to specify the algorithm of generating hash data. This property is used only if hash is stored with the encrypted data (the DataHeader property is set to ehTagAndHash). Default value is haSHA1.

5.3.1.1.2.4 InvalidHashAction Property

Specifies the action to perform on data fetching when hash data is invalid.

Class

TCREncryptor

Syntax

```
property InvalidHashAction: TCRInvalidHashAction default ihFail;
```

Remarks

Use InvalidHashAction to specify the action to perform on data fetching when hash data is invalid. This property is used only if hash is stored with the encrypted data (the DataHeader property is set to ehTagAndHash). Default value is ihFail.
If the DataHeader property is set to ehTagAndHash, then on data fetching from a server the hash check is performed for each record. After data decryption its hash is calculated and compared with the hash stored in the field. If these values don't coincide, it means that the stored data is incorrect, and depending on the value of the InvalidHashAction property one of the following actions is performed:
ihFail - the EInvalidHash exception is raised and further data reading from the server is

interrupted.
ihSkipData - the value of the field for this record is set to Null. No exception is raised.
ihIgnoreError - in spite of the fact that the data is not valid, the value is set in the field. No exception is raised.

5.3.1.1.2.5 Password Property

Used to set a password that is used to generate a key for encryption.

Class

TCREncryptor

Syntax

```
property Password: string stored False;
```

Remarks

Use Password to set a password that is used to generate a key for encryption.
Note: Calling of the SetKey method clears the Password property.

5.3.1.1.3 Methods

Methods of the **TCREncryptor** class.
For a complete list of the **TCREncryptor** class members, see the TCREncryptor Members topic.

Public

Name	Description
SetKey	Sets a key, using which data is encrypted.

See Also

- TCREncryptor Class
- TCREncryptor Class Members

5.3.1.1.3.1 SetKey Method

Sets a key, using which data is encrypted.

Class

TCREncryptor

Syntax

```
procedure SetKey(const Key; Count: Integer); overload;procedure
SetKey(const Key: TBytes; Offset: Integer; Count: Integer);
overload;
```

Parameters

Key

Holds bytes that represent a key.

Offset

Offset in bytes to the position, where the key begins.

Count

Number of bytes to use from Key.

Remarks

Use SetKey to set a key, using which data is encrypted.

Note: Calling of the SetKey method clears the Password property.

5.3.2 Enumerations

Enumerations in the **CREncryption** unit.

Enumerations

Name	Description
TCREncDataHeader	Specifies whether the additional information is stored with the encrypted data.
TCREncryptionAlgorithm	Specifies the algorithm of data encryption.
TCRHashAlgorithm	Specifies the algorithm of generating hash data.
TCRInvalidHashAction	Specifies the action to perform on data fetching when hash data is invalid.

5.3.2.1 TCREncDataHeader Enumeration

Specifies whether the additional information is stored with the encrypted data.

Unit

CREncryption

Syntax

```
TCREncDataHeader = (ehTagAndHash, ehTag, ehNone);
```

Values

Value	Meaning
ehNone	No additional information is stored.
ehTag	GUID and the random initialization vector are stored with the encrypted data.
ehTagAndHash	Hash, GUID, and the random initialization vector are stored with the encrypted data.

5.3.2.2 TCREncryptionAlgorithm Enumeration

Specifies the algorithm of data encryption.

Unit

CREncryption

Syntax

```
TCREncryptionAlgorithm = (eaTripleDES, eaBlowfish, eaAES128,
eaAES192, eaAES256, eaCast128, eaRC4);
```

Values

Value	Meaning
eaAES128	The AES encryption algorithm with key size of 128 bits is used.
eaAES192	The AES encryption algorithm with key size of 192 bits is used.
eaAES256	The AES encryption algorithm with key size of 256 bits is used.
eaBlowfish	The Blowfish encryption algorithm is used.
eaCast128	The CAST-128 encryption algorithm with key size of 128 bits is used.
eaRC4	The RC4 encryption algorithm is used.
eaTripleDES	The Triple DES encryption algorithm is used.

5.3.2.3 TCRHashAlgorithm Enumeration

Specifies the algorithm of generating hash data.

Unit

CREncryption

Syntax

```
TCRHashAlgorithm = (haSHA1, haMD5);
```

Values

Value	Meaning
haMD5	The MD5 hash algorithm is used.
haSHA1	The SHA-1 hash algorithm is used.

5.3.2.4 TCRInvalidHashAction Enumeration

Specifies the action to perform on data fetching when hash data is invalid.

Unit

CREncryption

Syntax

```
TCRInvalidHashAction = (ihFail, ihSkipData, ihIgnoreError);
```

Values

Value	Meaning
ihFail	The EInvalidHash exception is raised and further data reading from the server is interrupted.
ihIgnoreError	In spite of the fact that the data is not valid, the value is set in the field. No exception is raised.
ihSkipData	The value of the field for this record is set to Null. No exception is raised.

5.4 CRGrid

5.4.1 Classes

Classes in the **CRGrid** unit.

Classes

Name	Description

TCRDBGrid	Addresses extended functionality commonly not found in TDBGrid component.

5.4.1.1 TCRDBGrid Class

Addresses extended functionality commonly not found in TDBGrid component.
For a list of all members of this type, see TCRDBGrid members.

Unit

CRGrid

Syntax

```
TCRDBGrid = class(TCustomDBGrid);
```

5.4.1.1.1 Members

TCRDBGrid class overview.

5.5 DAAlerter

This unit contains the base class for the TLiteAlerter component.

Classes

Name	Description
TDAAlerter	A base class that defines functionality for database event notification.

Types

Name	Description
TAlerterErrorEvent	This type is used for the TDAAlerter.OnError event.

Routines

Name	Description
DAAlerter	Description of DAAlerter is not available at the moment

5.5.1 Classes

Classes in the **DAAlerter** unit.

Classes

Name	Description
TDAAlerter	A base class that defines functionality for database event notification.

5.5.1.1 TDAAlerter Class

A base class that defines functionality for database event notification.
For a list of all members of this type, see TDAAlerter members.

Unit

DAAlerter

Syntax

```
TDAAlerter = class(TComponent);
```

Remarks

TDAAlerter is a base class that defines functionality for descendant classes support database event notification. Applications never use TDAAlerter objects directly. Instead they use descendants of TDAAlerter.
The TDAAlerter component allows you to register interest in and handle events posted by a database server. Use TDAAlerter to handle events for responding to actions and database changes made by other applications. To get events, an application must register required events. To do this, set the Events property to the required events and call the Start method. When one of the registered events occurs OnEvent handler is called.

5.5.1.1.1 Members

TDAAlerter class overview.

Properties

Name	Description
Active	Used to determine if TDAAlerter waits for messages.

AutoRegister	Used to automatically register events whenever connection opens.
Connection	Used to specify the connection for TDAAlerter.

Methods

Name	Description
SendEvent	Sends an event with Name and content Message.
Start	Starts waiting process.
Stop	Stops waiting process.

Events

Name	Description
OnError	Occurs if an exception occurs in waiting process

5.5.1.1.2 Properties

Properties of the **TDAAlerter** class.

For a complete list of the **TDAAlerter** class members, see the TDAAlerter Members topic.

Public

Name	Description
Active	Used to determine if TDAAlerter waits for messages.
AutoRegister	Used to automatically register events whenever connection opens.
Connection	Used to specify the connection for TDAAlerter.

See Also

- TDAAlerter Class

- TDAAlerter Class Members

5.5.1.1.2.1 Active Property

Used to determine if TDAAlerter waits for messages.

Class

TDAAlerter

Syntax

```
property Active: boolean default False;
```

Remarks

Check the Active property to know whether TDAlerter waits for messages or not. Set it to True to register events.

See Also

- Start
- Stop

5.5.1.1.2.2 AutoRegister Property

Used to automatically register events whenever connection opens.

Class

TDAAlerter

Syntax

```
property AutoRegister: boolean default False;
```

Remarks

Set the AutoRegister property to True to automatically register events whenever connection opens.

5.5.1.1.2.3 Connection Property

Used to specify the connection for TDAAlerter.

Class

TDAAlerter

Syntax

```
property Connection: TCustomDAConnection;
```

Remarks

Use the Connection property to specify the connection for TDAAlerter.

5.5.1.1.3 Methods

Methods of the **TDAAlerter** class.

For a complete list of the **TDAAlerter** class members, see the TDAAlerter Members topic.

Public

Name	Description
SendEvent	Sends an event with Name and content Message.
Start	Starts waiting process.
Stop	Stops waiting process.

See Also

- TDAAlerter Class
- TDAAlerter Class Members

5.5.1.1.3.1 SendEvent Method

Sends an event with Name and content Message.

Class

TDAAlerter

Syntax

```
procedure SendEvent(const EventName: string; const Message:
string);
```

Parameters

EventName

Holds the event name.

Message
Holds the content Message of the event.

Remarks

Use SendEvent procedure to send an event with Name and content Message.

5.5.1.1.3.2 Start Method

Starts waiting process.

Class

TDAAlerter

Syntax

```
procedure Start;
```

Remarks

Call the Start method to run waiting process. After starting TDAAlerter waits for messages with names defined by the Events property.

See Also

- Stop
- Active

5.5.1.1.3.3 Stop Method

Stops waiting process.

Class

TDAAlerter

Syntax

```
procedure Stop;
```

Remarks

Call Stop method to end waiting process.

See Also

- Start

5.5.1.1.4 Events

Events of the **TDAAlerter** class.

For a complete list of the **TDAAlerter** class members, see the TDAAlerter Members topic.

Public

Name	Description
OnError	Occurs if an exception occurs in waiting process

See Also

- TDAAlerter Class
- TDAAlerter Class Members

5.5.1.1.4.1 OnError Event

Occurs if an exception occurs in waiting process

Class

TDAAlerter

Syntax

```
property OnError: TAlerterErrorEvent;
```

Remarks

The OnError event occurs if an exception occurs in waiting process. Alerter stops in this case. The exception can be accessed using the E parameter.

5.5.2 Types

Types in the **DAAlerter** unit.

Types

Name	Description
TAlerterErrorEvent	This type is used for the TDAAlerter.OnError event.

5.5.2.1 TAlerterErrorEvent Procedure Reference

This type is used for the TDAAlerter.OnError event.

Unit

DAAlerter

Syntax

```
TAlerterErrorEvent = procedure (Sender: TDAAlerter; E: Exception)
of object;
```

Parameters

Sender

An object that raised the event.

E

Exception object.

5.5.3 Routines

Routines in the **DAAlerter** unit.

Routines

Name	Description
DAAlerter	

5.5.3.1 DAAlerter Procedure

Unit

DAAlerter

Syntax

5.6 DADump

This unit contains the base class for the TLiteDump component.

Classes

Name	Description

TDADump	A base class that defines functionality for descendant classes that dump database objects to a script.
TDADumpOptions	This class allows setting up the behaviour of the TDADump class.

Types

Name	Description
TDABackupProgressEvent	This type is used for the TDADump.OnBackupProgress event.
TDARestoreProgressEvent	This type is used for the TDADump.OnRestoreProgress event.

5.6.1 Classes

Classes in the **DADump** unit.

Classes

Name	Description
TDADump	A base class that defines functionality for descendant classes that dump database objects to a script.
TDADumpOptions	This class allows setting up the behaviour of the TDADump class.

5.6.1.1 TDADump Class

A base class that defines functionality for descendant classes that dump database objects to a script.

For a list of all members of this type, see TDADump members.

Unit

DADump

Syntax

```
TDADump = class(TComponent);
```

Remarks

TDADump is a base class that defines functionality for descendant classes that dump database objects to a script. Applications never use TDADump objects directly. Instead they use descendants of TDADump.

Use TDADump descedants to dump database objects, such as tables, stored procedures, and functions for backup or for transferring the data to another SQL server. The dump contains SQL statements to create the table or other database objects and/or populate the table.

5.6.1.1.1 Members

TDADump class overview.

Properties

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
Debug	Used to display executing statement, all its parameters' values, and the type of parameters.
Options	Used to specify the behaviour of a TDADump component.
SQL	Used to set or get the dump script.
TableNames	Used to set the names of the tables to dump.

Methods

Name	Description
Backup	Dumps database objects to the TDADump.SQL property.
BackupQuery	Dumps the results of a particular query.
BackupToFile	Dumps database objects to the specified file.

BackupToStream	Dumps database objects to the stream.
Restore	Executes a script contained in the SQL property.
RestoreFromFile	Executes a script from a file.
RestoreFromStream	Executes a script received from the stream.

Events

Name	Description
OnBackupProgress	Occurs to indicate the TDADump.Backup, M:Devart.Dac.TDADump.BackupToFile(System.String) or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution progress.
OnError	Occurs when SQLite raises some error on TDADump.Restore.
OnRestoreProgress	Occurs to indicate the TDADump.Restore, TDADump.RestoreFromFile, or TDADump.RestoreFromStream method execution progress.

5.6.1.1.2 Properties

Properties of the **TDADump** class.

For a complete list of the **TDADump** class members, see the TDADump Members topic.

Public

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
Options	Used to specify the behaviour of a TDADump component.

Published

Name	Description
Debug	Used to display executing statement, all its parameters' values, and the type of parameters.
SQL	Used to set or get the dump script.
TableNames	Used to set the names of the tables to dump.

See Also

- TDADump Class
- TDADump Class Members

5.6.1.1.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TDADump

Syntax

```
property Connection: TCustomDAConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.

Set at design-time by selecting from the list of provided TCustomDAConnection or its descendant class objects.

At runtime, link an instance of a TCustomDAConnection descendant to the Connection property.

See Also

- TCustomDAConnection

5.6.1.1.2.2 Debug Property

Used to display executing statement, all its parameters' values, and the type of parameters.

Class

TDADump

Syntax

```
property Debug: boolean default False;
```

Remarks

Set the Debug property to True to display executing statement and all its parameters' values. Also displays the type of parameters.
You should add the LiteDacVcl unit to the uses clause of any unit in your project to make the Debug property work.
Note: If TLiteSQLMonitor is used in the project and the TLiteSQLMonitor.Active property is set to False, the debug window is not displayed.

See Also

- TCustomDADataSet.Debug
- TCustomDASQL.Debug

5.6.1.1.2.3 Options Property

Used to specify the behaviour of a TDADump component.

Class

TDADump

Syntax

```
property Options: TDADumpOptions;
```

Remarks

Use the Options property to specify the behaviour of a TDADump component.
Descriptions of all options are in the table below.

Option Name	Description
AddDrop	Used to add drop statements to a script before creating statements.
GenerateHeader	Used to add a comment header to a script.

QuoteNames	Used for TDADump to quote all database object names in generated SQL statements.

5.6.1.1.2.4 SQL Property

Used to set or get the dump script.

Class

TDADump

Syntax

```
property SQL: TStrings;
```

Remarks

Use the SQL property to get or set the dump script. The SQL property stores script that is executed by the Restore method. This property will store the result of Backup and BackupQuery. At design time the SQL property can be edited by invoking the String List editor in Object Inspector.

See Also

- Restore
- Backup
- BackupQuery

5.6.1.1.2.5 TableNames Property

Used to set the names of the tables to dump.

Class

TDADump

Syntax

```
property TableNames: string;
```

Remarks

Use the TableNames property to set the names of the tables to dump. Table names must be separated with commas. If it is empty, the Backup method will dump all available tables.

See Also

- Backup

5.6.1.1.3 Methods

Methods of the **TDADump** class.

For a complete list of the **TDADump** class members, see the TDADump Members topic.

Public

Name	Description
Backup	Dumps database objects to the TDADump.SQL property.
BackupQuery	Dumps the results of a particular query.
BackupToFile	Dumps database objects to the specified file.
BackupToStream	Dumps database objects to the stream.
Restore	Executes a script contained in the SQL property.
RestoreFromFile	Executes a script from a file.
RestoreFromStream	Executes a script received from the stream.

See Also

- TDADump Class
- TDADump Class Members

5.6.1.1.3.1 Backup Method

Dumps database objects to the SQL property.

Class

TDADump

Syntax

```
procedure Backup;
```

Remarks

Call the Backup method to dump database objects. The result script will be stored in the SQL property.

See Also

- SQL
- Restore
- BackupToFile
- BackupToStream
- BackupQuery

5.6.1.1.3.2 BackupQuery Method

Dumps the results of a particular query.

Class

TDADump

Syntax

```
procedure BackupQuery(const Query: string);
```

Parameters

Query

Holds a query used for data selection.

Remarks

Call the BackupQuery method to dump the results of a particular query. Query must be a valid select statement. If this query selects data from several tables, only data of the first table in the from list will be dumped.

See Also

- Restore
- Backup
- BackupToFile
- BackupToStream

5.6.1.1.3.3 BackupToFile Method

Dumps database objects to the specified file.

Class

TDADump

Syntax

```
procedure BackupToFile(const FileName: string; const Query:
string = '');
```

Parameters

FileName

Holds the file name to dump database objects to.

Query

Your query to receive the data for dumping.

Remarks

Call the BackupToFile method to dump database objects to the specified file.

See Also

- RestoreFromStream
- Backup
- BackupToStream

5.6.1.1.3.4 BackupToStream Method

Dumps database objects to the stream.

Class

TDADump

Syntax

```
procedure BackupToStream(Stream: TStream; const Query: string =
'');
```

Parameters

Stream

Holds the stream to dump database objects to.

Query

Your query to receive the data for dumping.

Remarks

Call the BackupToStream method to dump database objects to the stream.

See Also

- RestoreFromStream
- Backup
- BackupToFile

5.6.1.1.3.5 Restore Method

Executes a script contained in the SQL property.

Class

TDADump

Syntax

```
procedure Restore;
```

Remarks

Call the Restore method to execute a script contained in the SQL property.

See Also

- RestoreFromFile
- RestoreFromStream
- Backup
- SQL

5.6.1.1.3.6 RestoreFromFile Method

Executes a script from a file.

Class

TDADump

Syntax

```
procedure RestoreFromFile(const FileName: string);
```

Parameters

FileName

Holds the file name to execute a script from.

Remarks

Call the RestoreFromFile method to execute a script from the specified file.

See Also

- Restore
- RestoreFromStream
- BackupToFile

5.6.1.1.3.7 RestoreFromStream Method

Executes a script received from the stream.

Class

TDADump

Syntax

```
procedure RestoreFromStream(Stream: TStream);
```

Parameters

Stream

Holds a stream to receive a script to be executed.

Remarks

Call the RestoreFromStream method to execute a script received from the stream.

See Also

- Restore
- RestoreFromFile
- BackupToStream

5.6.1.1.4 Events

Events of the **TDADump** class.

For a complete list of the **TDADump** class members, see the TDADump Members topic.

Published

Name	Description

OnBackupProgress	Occurs to indicate the TDADump.Backup, M:Devart.Dac.TDADump.BackupToFile(System.String) or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution progress.
OnError	Occurs when SQLite raises some error on TDADump.Restore.
OnRestoreProgress	Occurs to indicate the TDADump.Restore, TDADump.RestoreFromFile, or TDADump.RestoreFromStream method execution progress.

See Also

- TDADump Class
- TDADump Class Members

5.6.1.1.4.1 OnBackupProgress Event

Occurs to indicate the Backup, M:Devart.Dac.TDADump.BackupToFile(System.String) or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution progress.

Class

TDADump

Syntax

```
property OnBackupProgress: TDABackupProgressEvent;
```

Remarks

The OnBackupProgress event occurs several times during the dumping process of the Backup, M:Devart.Dac.TDADump.BackupToFile(System.String), or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution and indicates its progress. ObjectName parameter indicates the name of the currently dumping database object. ObjectNum shows the number of the current database object in the backup queue starting from zero. ObjectCount shows the quantity of database objects to dump. Percent parameter shows the current percentage of the current table data dumped, not the current percentage of the entire dump process.

See Also

- Backup
- BackupToFile
- BackupToStream

5.6.1.1.4.2 OnError Event

Occurs when SQLite raises some error on Restore.

Class

TDADump

Syntax

```
property OnError: TOnErrorEvent;
```

Remarks

The OnError event occurs when SQLite raises some error on Restore.
Action indicates the action to take when the OnError handler exits. On entry into the handler, Action is always set to eaException.
Note: You should add the DAScript module to the 'uses' list to use the OnError event handler.

5.6.1.1.4.3 OnRestoreProgress Event

Occurs to indicate the Restore, RestoreFromFile, or RestoreFromStream method execution progress.

Class

TDADump

Syntax

```
property OnRestoreProgress: TDARestoreProgressEvent;
```

Remarks

The OnRestoreProgress event occurs several times during the dumping process of the Restore, RestoreFromFile, or RestoreFromStream method execution and indicates its progress. The Percent parameter of the OnRestoreProgress event handler indicates the percentage of the whole restore script execution.

See Also

- Restore
- RestoreFromFile
- RestoreFromStream

5.6.1.2 TDADumpOptions Class

This class allows setting up the behaviour of the TDADump class.
For a list of all members of this type, see TDADumpOptions members.

Unit

DADump

Syntax

```
TDADumpOptions = class(TPersistent);
```

5.6.1.2.1 Members

TDADumpOptions class overview.

Properties

Name	Description
AddDrop	Used to add drop statements to a script before creating statements.
GenerateHeader	Used to add a comment header to a script.
QuoteNames	Used for TDADump to quote all database object names in generated SQL statements.

5.6.1.2.2 Properties

Properties of the **TDADumpOptions** class.
For a complete list of the **TDADumpOptions** class members, see the TDADumpOptions Members topic.

Published

Name	Description
AddDrop	Used to add drop statements to a script before creating statements.

GenerateHeader	Used to add a comment header to a script.
QuoteNames	Used for TDADump to quote all database object names in generated SQL statements.

See Also

- TDADumpOptions Class
- TDADumpOptions Class Members

5.6.1.2.2.1 AddDrop Property

Used to add drop statements to a script before creating statements.

Class

TDADumpOptions

Syntax

```
property AddDrop: boolean default True;
```

Remarks

Use the AddDrop property to add drop statements to a script before creating statements.

5.6.1.2.2.2 GenerateHeader Property

Used to add a comment header to a script.

Class

TDADumpOptions

Syntax

```
property GenerateHeader: boolean default True;
```

Remarks

Use the GenerateHeader property to add a comment header to a script. It contains script generation date, DAC version, and some other information.

5.6.1.2.2.3 QuoteNames Property

Used for TDADump to quote all database object names in generated SQL statements.

Class

TDADumpOptions

Syntax

```
property QuoteNames: boolean default False;
```

Remarks

If the QuoteNames property is True, TDADump quotes all database object names in generated SQL statements.

5.6.2 Types

Types in the **DADump** unit.

Types

Name	Description
TDABackupProgressEvent	This type is used for the TDADump.OnBackupProgress event.
TDARestoreProgressEvent	This type is used for the TDADump.OnRestoreProgress event.

5.6.2.1 TDABackupProgressEvent Procedure Reference

This type is used for the TDADump.OnBackupProgress event.

Unit

DADump

Syntax

```
TDABackupProgressEvent = procedure (Sender: TObject; ObjectName:
string; ObjectNum: integer; ObjectCount: integer; Percent:
integer) of object;
```

Parameters

Sender

An object that raised the event.

ObjectName
The name of the currently dumping database object.
ObjectNum
The number of the current database object in the backup queue starting from zero.
ObjectCount
The quantity of database objects to dump.
Percent
The current percentage of the current table data dumped.

5.6.2.2 TDARestoreProgressEvent Procedure Reference

This type is used for the TDADump.OnRestoreProgress event.

Unit

DADump

Syntax

```
TDARestoreProgressEvent = procedure (Sender: TObject; Percent:
integer) of object;
```

Parameters

Sender
An object that raised the event.
Percent
The percentage of the whole restore script execution.

5.7 DALoader

This unit contains the base class for the TLiteLoader component.

Classes

Name	Description
TDAColumn	Represents the attributes for column loading.
TDAColumns	Holds a collection of TDAColumn objects.
TDALoader	This class allows loading external data into database.
TDALoaderOptions	Allows loading external data into database.

Types

Name	Description
TDAPutDataEvent	This type is used for the TDALoader.OnPutData event.
TGetColumnDataEvent	This type is used for the TDALoader.OnGetColumnData event.
TLoaderProgressEvent	This type is used for the TDALoader.OnProgress event.

5.7.1 Classes

Classes in the **DALoader** unit.

Classes

Name	Description
TDAColumn	Represents the attributes for column loading.
TDAColumns	Holds a collection of TDAColumn objects.
TDALoader	This class allows loading external data into database.
TDALoaderOptions	Allows loading external data into database.

5.7.1.1 TDAColumn Class

Represents the attributes for column loading.
For a list of all members of this type, see TDAColumn members.

Unit

DALoader

Syntax

```
TDAColumn = class(TCollectionItem);
```

Remarks

Each TDALoader uses TDAColumns to maintain a collection of TDAColumn objects. TDAColumn object represents the attributes for column loading. Every TDAColumn object corresponds to one of the table fields with the same name as its TDAColumn.Name property. To create columns at design-time use the column editor of the TDALoader component.

See Also

- TDALoader
- TDAColumns

5.7.1.1.1 Members

TDAColumn class overview.

Properties

Name	Description
FieldType	Used to specify the types of values that will be loaded.
Name	Used to specify the field name of loading table.

5.7.1.1.2 Properties

Properties of the **TDAColumn** class.

For a complete list of the **TDAColumn** class members, see the TDAColumn Members topic.

Published

Name	Description
FieldType	Used to specify the types of values that will be loaded.
Name	Used to specify the field name of loading table.

See Also

- TDAColumn Class
- TDAColumn Class Members

5.7.1.1.2.1 FieldType Property

Used to specify the types of values that will be loaded.

Class

TDAColumn

Syntax

```
property FieldType: TFieldType default ftString;
```

Remarks

Use the FieldType property to specify the types of values that will be loaded. Field types for columns may not match data types for the corresponding fields in the database table. TDALoader will cast data values to the types of their fields.

5.7.1.1.2.2 Name Property

Used to specify the field name of loading table.

Class

TDAColumn

Syntax

```
property Name: string;
```

Remarks

Each TDAColumn corresponds to one field of the loading table. Use the Name property to specify the name of this field.

See Also

- FieldType

5.7.1.2 TDAColumns Class

Holds a collection of TDAColumn objects.
For a list of all members of this type, see TDAColumns members.

Unit

DALoader

Syntax

```
TDAColumns = class(TOwnedCollection);
```

Remarks

Each TDAColumns holds a collection of TDAColumn objects. TDAColumns maintains an index of the columns in its Items array. The Count property contains the number of columns in the collection. At design-time, use the Columns editor to add, remove, or modify columns.

See Also

- TDALoader
- TDAColumn

5.7.1.2.1 Members

TDAColumns class overview.

Properties

Name	Description
Items	Used to access individual columns.

5.7.1.2.2 Properties

Properties of the **TDAColumns** class.
For a complete list of the **TDAColumns** class members, see the TDAColumns Members topic.

Public

Name	Description
Items	Used to access individual columns.

See Also

- TDAColumns Class
- TDAColumns Class Members

5.7.1.2.2.1 Items Property(Indexer)

Used to access individual columns.

Class

DACColumns

Syntax

```
property Items[Index: integer]: TDAColumn; default;
```

Parameters

Index

Holds the Index of TDAColumn to refer to.

Remarks

Use the Items property to access individual columns. The value of the Index parameter corresponds to the Index property of TDAColumn.

See Also

- TDAColumn

5.7.1.3 TDALoader Class

This class allows loading external data into database.
For a list of all members of this type, see TDALoader members.

Unit

DALoader

Syntax

```
TDALoader = class(TComponent);
```

Remarks

TDALoader allows loading external data into database. To specify the name of loading table set the TDALoader.TableName property. Use the TDALoader.Columns property to access individual columns. Write the TDALoader.OnGetColumnData or TDALoader.OnPutData event handlers to read external data and pass it to the database. Call the TDALoader.Load method to start loading data.

5.7.1.3.1 Members

TDALoader class overview.

Properties

Name	Description

Columns	Used to add a TDAColumn object for each field that will be loaded.
Connection	Used to specify TCustomDAConnection in which TDALoader will be executed.
TableName	Used to specify the name of the table to which data will be loaded.

Methods

Name	Description
CreateColumns	Creates TDAColumn objects for all fields of the table with the same name as TDALoader.TableName.
Load	Starts loading data.
LoadFromDataSet	Loads data from the specified dataset.
PutColumnData	Overloaded. Puts the value of individual columns.

Events

Name	Description
OnGetColumnData	Occurs when it is needed to put column values.
OnProgress	Occurs if handling data loading progress of the TDALoader.LoadFromDataSet method is needed.
OnPutData	Occurs when putting loading data by rows is needed.

5.7.1.3.2 Properties

Properties of the **TDALoader** class.

For a complete list of the **TDALoader** class members, see the TDALoader Members topic.

Public

Name	Description
Columns	Used to add a TDAColumn object for each field that will be loaded.
Connection	Used to specify TCustomDAConnection in which TDALoader will be executed.
TableName	Used to specify the name of the table to which data will be loaded.

See Also

- TDALoader Class
- TDALoader Class Members

5.7.1.3.2.1 Columns Property

Used to add a TDAColumn object for each field that will be loaded.

Class

TDALoader

Syntax

```
property Columns: TDAColumns stored IsColumnsStored;
```

Remarks

Use the Columns property to add a TDAColumn object for each field that will be loaded.

See Also

- TDAColumns

5.7.1.3.2.2 Connection Property

Used to specify TCustomDAConnection in which TDALoader will be executed.

Class

TDALoader

Syntax

```
property Connection: TCustomDAConnection;
```

Remarks

Use the Connection property to specify TCustomDAConnection in which TDALoader will be executed. If Connection is not connected, the Load method calls TCustomDAConnection.Connect.

See Also

- TCustomDAConnection

5.7.1.3.2.3 TableName Property

Used to specify the name of the table to which data will be loaded.

Class

TDALoader

Syntax

```
property TableName: string;
```

Remarks

Set the TableName property to specify the name of the table to which data will be loaded. Add TDAColumn objects to Columns for the fields that are needed to be loaded.

See Also

- TDAColumn
- TCustomDAConnection.GetTableNames

5.7.1.3.3 Methods

Methods of the **TDALoader** class.

For a complete list of the **TDALoader** class members, see the TDALoader Members topic.

Public

Name	Description
CreateColumns	Creates TDAColumn objects for all fields of the table with the same name as TDALoader.TableName.
Load	Starts loading data.

LoadFromDataSet	Loads data from the specified dataset.
PutColumnData	Overloaded. Puts the value of individual columns.

See Also

- TDALoader Class
- TDALoader Class Members

5.7.1.3.3.1 CreateColumns Method

Creates TDAColumn objects for all fields of the table with the same name as TableName.

Class

TDALoader

Syntax

```
procedure CreateColumns;
```

Remarks

Call the CreateColumns method to create TDAColumn objects for all fields of the table with the same name as TableName. If columns were created before, they will be recreated. You can call CreateColumns from the component popup menu at design-time. After you can customize column loading by setting properties of TDAColumn objects.

See Also

- TDAColumn
- TableName

5.7.1.3.3.2 Load Method

Starts loading data.

Class

TDALoader

Syntax

```
procedure Load; virtual;
```

Remarks

Call the Load method to start loading data. At first it is necessary to create columns and write one of the OnPutData or OnGetColumnData event handlers.

See Also

- OnGetColumnData
- OnPutData

5.7.1.3.3.3 LoadFromDataSet Method

Loads data from the specified dataset.

Class

TDALoader

Syntax

```
procedure LoadFromDataSet(DataSet: TDataSet);
```

Parameters

DataSet

Holds the dataset to load data from.

Remarks

Call the LoadFromDataSet method to load data from the specified dataset. There is no need to create columns and write event handlers for OnPutData and OnGetColumnData before calling this method.

5.7.1.3.3.4 PutColumnData Method

Puts the value of individual columns.

Class

TDALoader

Overload List

Name	Description
PutColumnData(Col: integer; Row: integer; **const** Value: variant)	Puts the value of individual columns by the column index.
PutColumnData(**const** ColName: **string**;	Puts the value of individual columns by the

Row: integer; **const** Value: variant)	column name.

Puts the value of individual columns by the column index.

Class

TDALoader

Syntax

```
procedure PutColumnData(Col: integer; Row: integer; const Value:
variant); overload; virtual;
```

Parameters

Col

Holds the index of a loading column. The first column has index 0.

Row

Holds the number of loading row. Row starts from 1.

Value

Holds the column value.

Remarks

Call the PutColumnData method to put the value of individual columns. The Col parameter indicates the index of loading column. The first column has index 0. The Row parameter indicates the number of the loading row. Row starts from 1.
This overloaded method works faster because it searches the right index by its index, not by the index name.
The value of a column should be assigned to the Value parameter.

See Also

- TDALoader.OnPutData

Puts the value of individual columns by the column name.

Class

TDALoader

Syntax

```
procedure PutColumnData(const ColName: string; Row: integer;
const Value: variant); overload;
```

Parameters

ColName

Hods the name of a loading column.

Row

Holds the number of loading row. Row starts from 1.

Value

Holds the column value.

5.7.1.3.4 Events

Events of the **TDALoader** class.

For a complete list of the **TDALoader** class members, see the TDALoader Members topic.

Public

Name	Description
OnGetColumnData	Occurs when it is needed to put column values.
OnProgress	Occurs if handling data loading progress of the TDALoader.LoadFromDataSet method is needed.
OnPutData	Occurs when putting loading data by rows is needed.

See Also

- TDALoader Class
- TDALoader Class Members

5.7.1.3.4.1 OnGetColumnData Event

Occurs when it is needed to put column values.

Class

TDALoader

Syntax

```
property OnGetColumnData: TGetColumnDataEvent;
```

Remarks

Write the OnGetColumnData event handler to put column values. TDALoader calls the OnGetColumnData event handler for each column in the loop. Column points to a TDAColumn object that corresponds to the current loading column. Use its Name or Index property to identify what column is loading. The Row parameter indicates the current loading record. TDALoader increments the Row parameter when all the columns of the current record are loaded. The first row is 1. Set EOF to True to stop data loading. Fill the Value parameter by column values. To start loading call the Load method.
Another way to load data is using the OnPutData event.

Example

This handler loads 1000 rows.

```
procedure TfmMain.GetColumnData(Sender: TObject;
   Column: TDAColumn; Row: Integer; var Value: Variant;
   var EOF: Boolean);
begin
   if Row <= 1000 then begin
      case Column.Index of
         0: Value := Row;
         1: Value := Random(100);
         2: Value := Random*100;
         3: Value := 'abc01234567890123456789';
         4: Value := Date;
      else
         Value := Null;
      end;
   end
   else
      EOF := True;
end;
```

See Also

- OnPutData
- Load

5.7.1.3.4.2 OnProgress Event

Occurs if handling data loading progress of the LoadFromDataSet method is needed.

Class

TDALoader

Syntax

```
property OnProgress: TLoaderProgressEvent;
```

Remarks

Add a handler to this event if you want to handle data loading progress of the LoadFromDataSet method.

See Also

- LoadFromDataSet

5.7.1.3.4.3 OnPutData Event

Occurs when putting loading data by rows is needed.

Class

TDALoader

Syntax

```
property OnPutData: TDAPutDataEvent;
```

Remarks

Write the OnPutData event handler to put loading data by rows.

Note that rows should be loaded from the first in the ascending order.

To start loading, call the Load method.

Example

This handler loads 1000 rows.

```
procedure TfmMain.PutData(Sender: TDALoader);
var
   Count: Integer;
   i: Integer;
begin
   Count := StrToInt(edRows.Text);
   for i := 1 to Count dobegin
      Sender.PutColumnData(0, i, 1);
      Sender.PutColumnData(1, i, Random(100));
      Sender.PutColumnData(2, i, Random*100);
      Sender.PutColumnData(3, i, 'abc01234567890123456789');
      Sender.PutColumnData(4, i, Date);
   end;
end;
```

See Also

- TDALoader.PutColumnData
- Load

- OnGetColumnData

5.7.1.4 TDALoaderOptions Class

Allows loading external data into database.
For a list of all members of this type, see TDALoaderOptions members.

Unit

DALoader

Syntax

```
TDALoaderOptions = class(TPersistent);
```

5.7.1.4.1 Members

TDALoaderOptions class overview.

Properties

Name	Description
UseBlankValues	Forces LiteDAC to fill the buffer with null values after loading a row to the database.

5.7.1.4.2 Properties

Properties of the **TDALoaderOptions** class.
For a complete list of the **TDALoaderOptions** class members, see the TDALoaderOptions Members topic.

Public

Name	Description
UseBlankValues	Forces LiteDAC to fill the buffer with null values after loading a row to the database.

See Also

- TDALoaderOptions Class
- TDALoaderOptions Class Members

5.7.1.4.2.1 UseBlankValues Property

Forces LiteDAC to fill the buffer with null values after loading a row to the database.

Class

TDALoaderOptions

Syntax

```
property UseBlankValues: boolean default True;
```

Remarks

Used to force LiteDAC to fill the buffer with null values after loading a row to the database.

5.7.2 Types

Types in the **DALoader** unit.

Types

Name	Description
TDAPutDataEvent	This type is used for the TDALoader.OnPutData event.
TGetColumnDataEvent	This type is used for the TDALoader.OnGetColumnData event.
TLoaderProgressEvent	This type is used for the TDALoader.OnProgress event.

5.7.2.1 TDAPutDataEvent Procedure Reference

This type is used for the TDALoader.OnPutData event.

Unit

DALoader

Syntax

```
TDAPutDataEvent = procedure (Sender: TDALoader) of object;
```

Parameters

Sender

An object that raised the event.

5.7.2.2 TGetColumnDataEvent Procedure Reference

This type is used for the TDALoader.OnGetColumnData event.

Unit

DALoader

Syntax

```
TGetColumnDataEvent = procedure (Sender: TObject; Column:
TDAColumn; Row: integer; var Value: variant; var IsEOF: boolean)
of object;
```

Parameters

Sender
An object that raised the event.

Column
Points to TDAColumn object that corresponds to the current loading column.

Row
Indicates the current loading record.

Value
Holds column values.

IsEOF
True, if data loading needs to be stopped.

5.7.2.3 TLoaderProgressEvent Procedure Reference

This type is used for the TDALoader.OnProgress event.

Unit

DALoader

Syntax

```
TLoaderProgressEvent = procedure (Sender: TObject; Percent:
integer) of object;
```

Parameters

Sender
An object that raised the event.

Percent
Percentage of the load operation progress.

5.8 DAScript

This unit contains the base class for the TLiteScript component.

Classes

Name	Description
TDAScript	Makes it possible to execute several SQL statements one by one.
TDAStatement	This class has attributes and methods for controlling single SQL statement of a script.
TDAStatements	Holds a collection of TDAStatement objects.

Types

Name	Description
TAfterStatementExecuteEvent	This type is used for the TDAScript.AfterExecute event.
TBeforeStatementExecuteEvent	This type is used for the TDAScript.BeforeExecute event.
TOnErrorEvent	This type is used for the TDAScript.OnError event.

Enumerations

Name	Description
TErrorAction	Indicates the action to take when the OnError handler exits.

5.8.1 Classes

Classes in the **DAScript** unit.

Classes

Name	Description
TDAScript	Makes it possible to execute several SQL statements one by one.

TDAStatement	This class has attributes and methods for controlling single SQL statement of a script.
TDAStatements	Holds a collection of TDAStatement objects.

5.8.1.1 TDAScript Class

Makes it possible to execute several SQL statements one by one.
For a list of all members of this type, see TDAScript members.

Unit

DAScript

Syntax

```
TDAScript = class(TComponent);
```

Remarks

Often it is necessary to execute several SQL statements one by one. This can be performed using a lot of components such as TCustomDASQL descendants. Usually it isn't the best solution. With only one TDAScript descedant component you can execute several SQL statements as one. This sequence of statements is called script. To separate single statements use semicolon (;) or slash (/) and for statements that can contain semicolon, only slash. Note that slash must be the first character in line.
Errors that occur during execution can be processed in the TDAScript.OnError event handler. By default, on error TDAScript shows exception and continues execution.

See Also

- TCustomDASQL

5.8.1.1.1 Members

TDAScript class overview.

Properties

Name	Description
Connection	Used to specify the connection in which the script will be executed.

DataSet	Refers to a dataset that holds the result set of query execution.
Debug	Used to display the script execution and all its parameter values.
Delimiter	Used to set the delimiter string that separates script statements.
EndLine	Used to get the current statement last line number in a script.
EndOffset	Used to get the offset in the last line of the current statement.
EndPos	Used to get the end position of the current statement.
Macros	Used to change SQL script text in design- or run-time easily.
SQL	Used to get or set script text.
StartLine	Used to get the current statement start line number in a script.
StartOffset	Used to get the offset in the first line of the current statement.
StartPos	Used to get the start position of the current statement in a script.
Statements	Contains a list of statements obtained from the SQL property.

Methods

Name	Description
BreakExec	Stops script execution.
ErrorOffset	Used to get the offset of the statement if the Execute method raised an exception.
Execute	Executes a script.

ExecuteFile	Executes SQL statements contained in a file.
ExecuteNext	Executes the next statement in the script and then stops.
ExecuteStream	Executes SQL statements contained in a stream object.
MacroByName	Finds a Macro with the name passed in Name.

Events

Name	Description
AfterExecute	Occurs after a SQL script execution.
BeforeExecute	Occurs when taking a specific action before executing the current SQL statement is needed.
OnError	Occurs when SQLite raises an error.

5.8.1.1.2 Properties

Properties of the **TDAScript** class.

For a complete list of the **TDAScript** class members, see the TDAScript Members topic.

Public

Name	Description
Connection	Used to specify the connection in which the script will be executed.
DataSet	Refers to a dataset that holds the result set of query execution.
EndLine	Used to get the current statement last line number in a script.
EndOffset	Used to get the offset in the last line of the current statement.
EndPos	Used to get the end position of the current statement.

StartLine	Used to get the current statement start line number in a script.
StartOffset	Used to get the offset in the first line of the current statement.
StartPos	Used to get the start position of the current statement in a script.
Statements	Contains a list of statements obtained from the SQL property.

Published

Name	Description
Debug	Used to display the script execution and all its parameter values.
Delimiter	Used to set the delimiter string that separates script statements.
Macros	Used to change SQL script text in design- or run-time easily.
SQL	Used to get or set script text.

See Also

- TDAScript Class
- TDAScript Class Members

5.8.1.1.2.1 Connection Property

Used to specify the connection in which the script will be executed.

Class

TDAScript

Syntax

```
property Connection: TCustomDAConnection;
```

Remarks

Use the Connection property to specify the connection in which the script will be executed. If

Connection is not connected, the Execute method calls the Connect method of Connection.
Set at design-time by selecting from the list of provided TCustomDAConnection objects.
At run-time, set the Connection property to reference an existing TCustomDAConnection object.

See Also

- TCustomDAConnection

5.8.1.1.2.2 DataSet Property

Refers to a dataset that holds the result set of query execution.

Class

TDAScript

Syntax

```
property DataSet: TCustomDADataSet;
```

Remarks

Set the DataSet property to retrieve the results of the SELECT statements execution inside a script.

See Also

- ExecuteNext
- Execute

5.8.1.1.2.3 Debug Property

Used to display the script execution and all its parameter values.

Class

TDAScript

Syntax

```
property Debug: boolean default False;
```

Remarks

Set the Debug property to True to display executing statement and all its parameters' values. Also displays the type of parameters.
You should add the LiteDacVcl unit to the uses clause of any unit in your project to make the

Debug property work.
Note: If TLiteSQLMonitor is used in the project and the TLiteSQLMonitor.Active property is set to False, the debug window is not displayed.

5.8.1.1.2.4 Delimiter Property

Used to set the delimiter string that separates script statements.

Class

TDAScript

Syntax

```
property Delimiter: string stored IsDelimiterStored;
```

Remarks

Use the Delimiter property to set the delimiter string that separates script statements. By default it is semicolon (;). You can use slash (/) to separate statements that can contain semicolon if the Delimiter property's default value is semicolon. Note that slash must be the first character in line.

5.8.1.1.2.5 EndLine Property

Used to get the current statement last line number in a script.

Class

TDAScript

Syntax

```
property EndLine: Int64;
```

Remarks

Use the EndLine property to get the current statement last line number in a script.

5.8.1.1.2.6 EndOffset Property

Used to get the offset in the last line of the current statement.

Class

TDAScript

Syntax

```
property EndOffset: Int64;
```

Remarks

Use the EndOffset property to get the offset in the last line of the current statement.

5.8.1.1.2.7 EndPos Property

Used to get the end position of the current statement.

Class

TDAScript

Syntax

```
property EndPos: Int64;
```

Remarks

Use the EndPos property to get the end position of the current statement (the position of the last character in the statement) in a script.

5.8.1.1.2.8 Macros Property

Used to change SQL script text in design- or run-time easily.

Class

TDAScript

Syntax

```
property Macros: TMacros stored False;
```

Remarks

With the help of macros you can easily change SQL script text in design- or run-time. Macros extend abilities of parameters and allow changing conditions in the WHERE clause or sort order in the ORDER BY clause. You just insert &MacroName in a SQL query text and change value of macro by the Macro property editor in design-time or the MacroByName function in run-time. In time of opening query macro is replaced by its value.

See Also

- TMacro
- MacroByName

5.8.1.1.2.9 SQL Property

Used to get or set script text.

Class

TDAScript

Syntax

```
property SQL: TStrings;
```

Remarks

Use the SQL property to get or set script text.

5.8.1.1.2.10 StartLine Property

Used to get the current statement start line number in a script.

Class

TDAScript

Syntax

```
property StartLine: Int64;
```

Remarks

Use the StartLine property to get the current statement start line number in a script.

5.8.1.1.2.11 StartOffset Property

Used to get the offset in the first line of the current statement.

Class

TDAScript

Syntax

```
property StartOffset: Int64;
```

Remarks

Use the StartOffset property to get the offset in the first line of the current statement.

5.8.1.1.2.12 StartPos Property

Used to get the start position of the current statement in a script.

Class

TDAScript

Syntax

```
property StartPos: Int64;
```

Remarks

Use the StartPos property to get the start position of the current statement (the position of the first statement character) in a script.

5.8.1.1.2.13 Statements Property

Contains a list of statements obtained from the SQL property.

Class

TDAScript

Syntax

```
property Statements: TDAStatements;
```

Remarks

Contains a list of statements that are obtained from the SQL property. Use the Access Statements property to view SQL statement, set parameters or execute the specified statement. Statements is a zero-based array of statement records. Index specifies the array element to access.

For example, consider the following script:

```
CREATE TABLE A (FIELD1 INTEGER);
INSERT INTO A VALUES(1);
INSERT INTO A VALUES(2);
INSERT INTO A VALUES(3);
CREATE TABLE B (FIELD1 INTEGER);
INSERT INTO B VALUES(1);
INSERT INTO B VALUES(2);
INSERT INTO B VALUES(3);
```

Note: The list of statements is created and filled when the value of Statements property is requested. That's why the first access to the Statements property can take a long time.

Example

You can use the Statements property in the following way:

```
procedure TForm1.Button1Click(Sender: TObject);
var
   i: integer;
begin
   with Script do
   begin
      for i := 0 to Statements.Count - 1 do
         if Copy(Statements[i].SQL, 1, 6) <> 'CREATE' then
 Statements[i].Execute;
   end;
end;
```

See Also

- TDAStatements

5.8.1.1.3 Methods

Methods of the **TDAScript** class.

For a complete list of the **TDAScript** class members, see the TDAScript Members topic.

Public

Name	Description
BreakExec	Stops script execution.
ErrorOffset	Used to get the offset of the statement if the Execute method raised an exception.
Execute	Executes a script.
ExecuteFile	Executes SQL statements contained in a file.
ExecuteNext	Executes the next statement in the script and then stops.
ExecuteStream	Executes SQL statements contained in a stream object.
MacroByName	Finds a Macro with the name passed in Name.

See Also

- TDAScript Class

- TDAScript Class Members

5.8.1.1.3.1 BreakExec Method

Stops script execution.

Class

TDAScript

Syntax

```
procedure BreakExec; virtual;
```

Remarks

Call the BreakExec method to stop script execution.

5.8.1.1.3.2 ErrorOffset Method

Used to get the offset of the statement if the Execute method raised an exception.

Class

TDAScript

Syntax

```
function ErrorOffset: Int64;
```

Return Value

offset of an error.

Remarks

Call the ErrorOffset method to get the offset of the statement if the Execute method raised an exception.

See Also

- OnError

5.8.1.1.3.3 Execute Method

Executes a script.

Class

TDAScript

Syntax

```
procedure Execute; virtual;
```

Remarks

Call the Execute method to execute a script. If SQLite raises an error, the OnError event occurs.

See Also

- ExecuteNext
- OnError
- ErrorOffset

5.8.1.1.3.4 ExecuteFile Method

Executes SQL statements contained in a file.

Class

TDAScript

Syntax

```
procedure ExecuteFile(const FileName: string);
```

Parameters

FileName

Holds the file name.

Remarks

Call the ExecuteFile method to execute SQL statements contained in a file. Script doesn't load full content into memory. Reading and execution is performed by blocks of 64k size. Therefore, it is optimal to use it for big files.

5.8.1.1.3.5 ExecuteNext Method

Executes the next statement in the script and then stops.

Class

TDAScript

Syntax

```
function ExecuteNext: boolean; virtual;
```

Return Value

True, if there are any statements left in the script, False otherwise.

Remarks

Use the ExecuteNext method to execute the next statement in the script statement and stop. If SQLite raises an error, the OnError event occurs.

See Also

- Execute
- OnError
- ErrorOffset

5.8.1.1.3.6 ExecuteStream Method

Executes SQL statements contained in a stream object.

Class

TDAScript

Syntax

```
procedure ExecuteStream(Stream: TStream);
```

Parameters

Stream

Holds the stream object from which the statements will be executed.

Remarks

Call the ExecuteStream method to execute SQL statements contained in a stream object. Reading from the stream and execution is performed by blocks of 64k size.

5.8.1.1.3.7 MacroByName Method

Finds a Macro with the name passed in Name.

Class

TDAScript

Syntax

```
function MacroByName(Name: string): TMacro;
```

Parameters

Name

Holds the name of the Macro to search for.

Return Value

the Macro, if a match was found.

Remarks

Call the MacroByName method to find a Macro with the name passed in Name. If a match was found, MacroByName returns the Macro. Otherwise, an exception is raised. Use this method rather than a direct reference to the Items property to avoid depending on the order of the entries.

To locate a parameter by name without raising an exception if the parameter is not found, use the FindMacro method.

To assign the value of macro use the TMacro.Value property.

See Also

- TMacro
- Macros
- M:Devart.Dac.TDAScript.FindMacro(System.String)

5.8.1.1.4 Events

Events of the **TDAScript** class.

For a complete list of the **TDAScript** class members, see the TDAScript Members topic.

Published

Name	Description
AfterExecute	Occurs after a SQL script execution.
BeforeExecute	Occurs when taking a specific action before executing the current SQL statement is needed.
OnError	Occurs when SQLite raises an error.

See Also

- TDAScript Class
- TDAScript Class Members

5.8.1.1.4.1 AfterExecute Event

Occurs after a SQL script execution.

Class

TDAScript

Syntax

```
property AfterExecute: TAfterStatementExecuteEvent;
```

Remarks

Occurs after a SQL script has been executed.

See Also

- Execute

5.8.1.1.4.2 BeforeExecute Event

Occurs when taking a specific action before executing the current SQL statement is needed.

Class

TDAScript

Syntax

```
property BeforeExecute: TBeforeStatementExecuteEvent;
```

Remarks

Write the BeforeExecute event handler to take specific action before executing the current SQL statement. SQL holds text of the current SQL statement. Write SQL to change the statement that will be executed. Set Omit to True to skip statement execution.

5.8.1.1.4.3 OnError Event

Occurs when SQLite raises an error.

Class

TDAScript

Syntax

```
property OnError: TOnErrorEvent;
```

Remarks

Occurs when SQLite raises an error.
Action indicates the action to take when the OnError handler exits. On entry into the handler, Action is always set to eaFail.

See Also

- ErrorOffset

5.8.1.2 TDAStatement Class

This class has attributes and methods for controlling single SQL statement of a script.
For a list of all members of this type, see TDAStatement members.

Unit

DAScript

Syntax

```
TDAStatement = class(TCollectionItem);
```

Remarks

TDAScript contains SQL statements, represented as TDAStatement objects. The TDAStatement class has attributes and methods for controlling single SQL statement of a script.

See Also

- TDAScript
- TDAStatements

5.8.1.2.1 Members

TDAStatement class overview.

Properties

Name	Description
EndLine	Used to determine the number of the last statement line in a script.
EndOffset	Used to get the offset in the last line of the statement.

EndPos	Used to get the end position of the statement in a script.
Omit	Used to avoid execution of a statement.
Params	Contains parasmeters for an SQL statement.
Script	Used to determine the TDAScript object the SQL Statement belongs to.
SQL	Used to get or set the text of an SQL statement.
StartLine	Used to determine the number of the first statement line in a script.
StartOffset	Used to get the offset in the first line of a statement.
StartPos	Used to get the start position of the statement in a script.

Methods

Name	Description
Execute	Executes a statement.

5.8.1.2.2 Properties

Properties of the **TDAStatement** class.

For a complete list of the **TDAStatement** class members, see the TDAStatement Members topic.

Public

Name	Description
EndLine	Used to determine the number of the last statement line in a script.
EndOffset	Used to get the offset in the last line of the statement.

EndPos	Used to get the end position of the statement in a script.
Omit	Used to avoid execution of a statement.
Params	Contains parasmeters for an SQL statement.
Script	Used to determine the TDAScript object the SQL Statement belongs to.
SQL	Used to get or set the text of an SQL statement.
StartLine	Used to determine the number of the first statement line in a script.
StartOffset	Used to get the offset in the first line of a statement.
StartPos	Used to get the start position of the statement in a script.

See Also

- TDAStatement Class
- TDAStatement Class Members

5.8.1.2.2.1 EndLine Property

Used to determine the number of the last statement line in a script.

Class

TDAStatement

Syntax

```
property EndLine: integer;
```

Remarks

Use the EndLine property to determine the number of the last statement line in a script.

5.8.1.2.2.2 EndOffset Property

Used to get the offset in the last line of the statement.

Class

TDAStatement

Syntax

```
property EndOffset: integer;
```

Remarks

Use the EndOffset property to get the offset in the last line of the statement.

5.8.1.2.2.3 EndPos Property

Used to get the end position of the statement in a script.

Class

TDAStatement

Syntax

```
property EndPos: integer;
```

Remarks

Use the EndPos property to get the end position of the statement (the position of the last character in the statement) in a script.

5.8.1.2.2.4 Omit Property

Used to avoid execution of a statement.

Class

TDAStatement

Syntax

```
property Omit: boolean;
```

Remarks

Set the Omit property to True to avoid execution of a statement.

5.8.1.2.2.5 Params Property

Contains parasmeters for an SQL statement.

Class

TDAStatement

Syntax

```
property Params: TDAParams;
```

Remarks

Contains parameters for an SQL statement.
Access Params at runtime to view and set parameter names, values, and data types dynamically. Params is a zero-based array of parameter records. Index specifies the array element to access.

See Also

- TDAParam

5.8.1.2.2.6 Script Property

Used to determine the TDAScript object the SQL Statement belongs to.

Class

TDAStatement

Syntax

```
property Script: TDAScript;
```

Remarks

Use the Script property to determine the TDAScript object the SQL Statement belongs to.

5.8.1.2.2.7 SQL Property

Used to get or set the text of an SQL statement.

Class

TDAStatement

Syntax

```
property SQL: string;
```

Remarks

Use the SQL property to get or set the text of an SQL statement.

5.8.1.2.2.8 StartLine Property

Used to determine the number of the first statement line in a script.

Class

TDAStatement

Syntax

```
property StartLine: integer;
```

Remarks

Use the StartLine property to determine the number of the first statement line in a script.

5.8.1.2.2.9 StartOffset Property

Used to get the offset in the first line of a statement.

Class

TDAStatement

Syntax

```
property StartOffset: integer;
```

Remarks

Use the StartOffset property to get the offset in the first line of a statement.

5.8.1.2.2.10 StartPos Property

Used to get the start position of the statement in a script.

Class

TDAStatement

Syntax

```
property StartPos: integer;
```

Remarks

Use the StartPos property to get the start position of the statement (the position of the first statement character) in a script.

5.8.1.2.3 Methods

Methods of the **TDAStatement** class.
For a complete list of the **TDAStatement** class members, see the TDAStatement Members topic.

Public

Name	Description
Execute	Executes a statement.

See Also

- TDAStatement Class
- TDAStatement Class Members

5.8.1.2.3.1 Execute Method

Executes a statement.

Class

TDAStatement

Syntax

```
procedure Execute;
```

Remarks

Use the Execute method to execute a statement.

5.8.1.3 TDAStatements Class

Holds a collection of TDAStatement objects.
For a list of all members of this type, see TDAStatements members.

Unit

DAScript

Syntax

```
TDAStatements = class(TCollection);
```

Remarks

Each TDAStatements holds a collection of TDAStatement objects. TDAStatements maintains an index of the statements in its Items array. The Count property contains the number of statements in the collection. Use TDAStatements class to manipulate script SQL statements.

See Also

- TDAScript
- TDAStatement

5.8.1.3.1 Members

TDAStatements class overview.

Properties

Name	Description
Items	Used to access separate script statements.

5.8.1.3.2 Properties

Properties of the **TDAStatements** class.

For a complete list of the **TDAStatements** class members, see the TDAStatements Members topic.

Public

Name	Description
Items	Used to access separate script statements.

See Also

- TDAStatements Class
- TDAStatements Class Members

5.8.1.3.2.1 Items Property(Indexer)

Used to access separate script statements.

Class

TDAStatements

Syntax

```
property Items[Index: Integer]: TDAStatement; default;
```

Parameters

Index
Holds the index value.

Remarks

Use the Items property to access individual script statements. The value of the Index parameter corresponds to the Index property of TDAStatement.

See Also

- TDAStatement

5.8.2 Types

Types in the **DAScript** unit.

Types

Name	Description
TAfterStatementExecuteEvent	This type is used for the TDAScript.AfterExecute event.
TBeforeStatementExecuteEvent	This type is used for the TDAScript.BeforeExecute event.
TOnErrorEvent	This type is used for the TDAScript.OnError event.

5.8.2.1 TAfterStatementExecuteEvent Procedure Reference

This type is used for the TDAScript.AfterExecute event.

Unit

DAScript

Syntax

```
TAfterStatementExecuteEvent = procedure (Sender: TObject; SQL:
string) of object;
```

Parameters

Sender
An object that raised the event.

SQL
Holds the passed SQL statement.

5.8.2.2 TBeforeStatementExecuteEvent Procedure Reference

This type is used for the TDAScript.BeforeExecute event.

Unit

DAScript

Syntax

```
TBeforeStatementExecuteEvent = procedure (Sender: TObject; var
SQL: string; var Omit: boolean) of object;
```

Parameters

Sender
An object that raised the event.

SQL
Holds the passed SQL statement.

Omit
True, if the statement execution should be skipped.

5.8.2.3 TOnErrorEvent Procedure Reference

This type is used for the TDAScript.OnError event.

Unit

DAScript

Syntax

```
TOnErrorEvent = procedure (Sender: TObject; E: Exception; SQL:
string; var Action: TErrorAction) of object;
```

Parameters

Sender
An object that raised the event.

E
The error code.

SQL
Holds the passed SQL statement.

Action
The action to take when the OnError handler exits.

5.8.3 Enumerations

Enumerations in the **DAScript** unit.

Enumerations

Name	Description
TErrorAction	Indicates the action to take when the OnError handler exits.

5.8.3.1 TErrorAction Enumeration

Indicates the action to take when the OnError handler exits.

Unit

DAScript

Syntax

```
TErrorAction = (eaAbort, eaFail, eaException, eaContinue);
```

Values

Value	Meaning
eaAbort	Abort execution without displaying an error message.
eaContinue	Continue execution.
eaException	In Delphi 6 and higher exception is handled by the Application.HandleException method.
eaFail	Abort execution and display an error message.

5.9 DASQLMonitor

This unit contains the base class for the TLiteSQLMonitor component.

Classes

Name	Description
TCustomDASQLMonitor	A base class that introduces properties and methods to monitor dynamic SQL execution in database applications interactively.
TDBMonitorOptions	This class holds options for dbMonitor.

Types

Name	Description
TDATraceFlags	Represents the set of TDATraceFlag.
TMonitorOptions	Represents the set of TMonitorOption.
TOnSQLEvent	This type is used for the TCustomDASQLMonitor.OnSQL event.

Enumerations

Name	Description
TDATraceFlag	Use TraceFlags to specify which database operations the monitor should track in an application at runtime.
TMonitorOption	Used to define where information from SQLMonitor will be dispalyed.

5.9.1 Classes

Classes in the **DASQLMonitor** unit.

Classes

Name	Description

TCustomDASQLMonitor	A base class that introduces properties and methods to monitor dynamic SQL execution in database applications interactively.
TDBMonitorOptions	This class holds options for dbMonitor.

5.9.1.1 TCustomDASQLMonitor Class

A base class that introduces properties and methods to monitor dynamic SQL execution in database applications interactively.
For a list of all members of this type, see TCustomDASQLMonitor members.

Unit

DASQLMonitor

Syntax

```
TCustomDASQLMonitor = class(TComponent);
```

Remarks

TCustomDASQLMonitor is a base class that introduces properties and methods to monitor dynamic SQL execution in database applications interactively. TCustomDASQLMonitor provides two ways of displaying debug information. It monitors either by dialog window or by Borland's proprietary SQL Monitor. Furthermore to receive debug information use the TCustomDASQLMonitor.OnSQL event.
In applications use descendants of TCustomDASQLMonitor.

5.9.1.1.1 Members

TCustomDASQLMonitor class overview.

Properties

Name	Description
Active	Used to activate monitoring of SQL.
DBMonitorOptions	Used to set options for dbMonitor.
Options	Used to include the desired properties for

	TCustomDASQLMonitor.
TraceFlags	Used to specify which database operations the monitor should track in an application at runtime.

Events

Name	Description
OnSQL	Occurs when tracing of SQL activity on database components is needed.

5.9.1.1.2 Properties

Properties of the **TCustomDASQLMonitor** class.

For a complete list of the **TCustomDASQLMonitor** class members, see the TCustomDASQLMonitor Members topic.

Public

Name	Description
Active	Used to activate monitoring of SQL.
DBMonitorOptions	Used to set options for dbMonitor.
Options	Used to include the desired properties for TCustomDASQLMonitor.
TraceFlags	Used to specify which database operations the monitor should track in an application at runtime.

See Also

- TCustomDASQLMonitor Class
- TCustomDASQLMonitor Class Members

5.9.1.1.2.1 Active Property

Used to activate monitoring of SQL.

Class

`TCustomDASQLMonitor`

Syntax

```
property Active: boolean default True;
```

Remarks

Set the Active property to True to activate monitoring of SQL.

See Also

- OnSQL

5.9.1.1.2.2 DBMonitorOptions Property

Used to set options for dbMonitor.

Class

TCustomDASQLMonitor

Syntax

```
property DBMonitorOptions: TDBMonitorOptions;
```

Remarks

Use DBMonitorOptions to set options for dbMonitor.

5.9.1.1.2.3 Options Property

Used to include the desired properties for TCustomDASQLMonitor.

Class

TCustomDASQLMonitor

Syntax

```
property Options: TMonitorOptions default [moDialog,
moSQLMonitor, moDBMonitor, moCustom];
```

Remarks

Set Options to include the desired properties for TCustomDASQLMonitor.

See Also

- OnSQL

5.9.1.1.2.4 TraceFlags Property

Used to specify which database operations the monitor should track in an application at runtime.

Class

TCustomDASQLMonitor

Syntax

```
property TraceFlags: TDATraceFlags default [tfQPrepare,
tfQExecute, tfError, tfConnect, tfTransact, tfParams, tfMisc];
```

Remarks

Use the TraceFlags property to specify which database operations the monitor should track in an application at runtime.

See Also

- OnSQL

5.9.1.1.3 Events

Events of the **TCustomDASQLMonitor** class.

For a complete list of the **TCustomDASQLMonitor** class members, see the TCustomDASQLMonitor Members topic.

Public

Name	Description
OnSQL	Occurs when tracing of SQL activity on database components is needed.

See Also

- TCustomDASQLMonitor Class
- TCustomDASQLMonitor Class Members

5.9.1.1.3.1 OnSQL Event

Occurs when tracing of SQL activity on database components is needed.

Class

TCustomDASQLMonitor

Syntax

```
property OnSQL: TOnSQLEvent;
```

Remarks

Write the OnSQL event handler to let an application trace SQL activity on database components. The Text parameter holds the detected SQL statement. Use the Flag parameter to make selective processing of SQL in the handler body.

See Also

- TraceFlags

5.9.1.2 TDBMonitorOptions Class

This class holds options for dbMonitor.
For a list of all members of this type, see TDBMonitorOptions members.

Unit

DASQLMonitor

Syntax

```
TDBMonitorOptions = class(TPersistent);
```

5.9.1.2.1 Members

TDBMonitorOptions class overview.

Properties

Name	Description
Host	Used to set the host name or IP address of the computer where dbMonitor application runs.
Port	Used to set the port number for connecting to dbMonitor.
ReconnectTimeout	Used to set the minimum time that should be spent before reconnecting to dbMonitor is allowed.
SendTimeout	Used to set timeout for sending events to dbMonitor.

5.9.1.2.2 Properties

Properties of the **TDBMonitorOptions** class.

For a complete list of the **TDBMonitorOptions** class members, see the TDBMonitorOptions Members topic.

Published

Name	Description
Host	Used to set the host name or IP address of the computer where dbMonitor application runs.
Port	Used to set the port number for connecting to dbMonitor.
ReconnectTimeout	Used to set the minimum time that should be spent before reconnecting to dbMonitor is allowed.
SendTimeout	Used to set timeout for sending events to dbMonitor.

See Also

- TDBMonitorOptions Class
- TDBMonitorOptions Class Members

5.9.1.2.2.1 Host Property

Used to set the host name or IP address of the computer where dbMonitor application runs.

Class

TDBMonitorOptions

Syntax

```
property Host: string;
```

Remarks

Use the Host property to set the host name or IP address of the computer where dbMonitor application runs.

dbMonitor supports remote monitoring. You can run dbMonitor on a different computer than monitored application runs. In this case you need to set the Host property to the corresponding computer name.

5.9.1.2.2.2 Port Property

Used to set the port number for connecting to dbMonitor.

Class

TDBMonitorOptions

Syntax

```
property Port: integer default DBMonitorPort;
```

Remarks

Use the Port property to set the port number for connecting to dbMonitor.

5.9.1.2.2.3 ReconnectTimeout Property

Used to set the minimum time that should be spent before reconnecting to dbMonitor is allowed.

Class

TDBMonitorOptions

Syntax

```
property ReconnectTimeout: integer default
DefaultReconnectTimeout;
```

Remarks

Use the ReconnectTimeout property to set the minimum time (in milliseconds) that should be spent before allowing reconnecting to dbMonitor. If an error occurs when the component sends an event to dbMonitor (dbMonitor is not running), next events are ignored and the component does not restore the connection until ReconnectTimeout is over.

5.9.1.2.2.4 SendTimeout Property

Used to set timeout for sending events to dbMonitor.

Class

TDBMonitorOptions

Syntax

```
property SendTimeout: integer default DefaultSendTimeout;
```

Remarks

Use the SendTimeout property to set timeout (in milliseconds) for sending events to dbMonitor. If dbMonitor does not respond in the specified timeout, event is ignored.

5.9.2 Types

Types in the **DASQLMonitor** unit.

Types

Name	Description
TDATraceFlags	Represents the set of TDATraceFlag.
TMonitorOptions	Represents the set of TMonitorOption.
TOnSQLEvent	This type is used for the TCustomDASQLMonitor.OnSQL event.

5.9.2.1 TDATraceFlags Set

Represents the set of TDATraceFlag.

Unit

DASQLMonitor

Syntax

```
TDATraceFlags = set of TDATraceFlag;
```

5.9.2.2 TMonitorOptions Set

Represents the set of TMonitorOption.

Unit

DASQLMonitor

Syntax

```
TMonitorOptions = set of TMonitorOption;
```

5.9.2.3 TOnSQLEvent Procedure Reference

This type is used for the TCustomDASQLMonitor.OnSQL event.

Unit

DASQLMonitor

Syntax

```
TOnSQLEvent = procedure (Sender: TObject; Text: string; Flag:
TDATraceFlag) of object;
```

Parameters

Sender
An object that raised the event.

Text
Holds the detected SQL statement.

Flag
Use the Flag parameter to make selective processing of SQL in the handler body.

5.9.3 Enumerations

Enumerations in the **DASQLMonitor** unit.

Enumerations

Name	Description
TDATraceFlag	Use TraceFlags to specify which database operations the monitor should track in an application at runtime.
TMonitorOption	Used to define where information from SQLMonitor will be dispalyed.

5.9.3.1 TDATraceFlag Enumeration

Use TraceFlags to specify which database operations the monitor should track in an application at runtime.

Unit

DASQLMonitor

Syntax

```
TDATraceFlag = (tfQPrepare, tfQExecute, tfQFetch, tfError, tfStmt,
tfConnect, tfTransact, tfBlob, tfService, tfMisc, tfParams,
tfObjDestroy, tfPool);
```

Values

Value	Meaning
tfBlob	This option is declared for future use.
tfConnect	Establishing a connection.
tfError	Errors of query execution.
tfMisc	This option is declared for future use.
tfObjDestroy	Destroying of components.
tfParams	Representing parameter values for tfQPrepare and tfQExecute.
tfPool	Connection pool operations.
tfQExecute	Execution of the queries.
tfQFetch	This option is declared for future use.
tfQPrepare	Queries preparation.
tfService	This option is declared for future use.
tfStmt	This option is declared for future use.
tfTransact	Processing transactions.

5.9.3.2 TMonitorOption Enumeration

Used to define where information from SQLMonitor will be dispalyed.

Unit

DASQLMonitor

Syntax

```
TMonitorOption = (moDialog, moSQLMonitor, moDBMonitor, moCustom,
moHandled);
```

Values

Value	Meaning
moCustom	Monitoring of SQL for individual components is allowed. Set Debug properties in SQL-related components to True to let TCustomDASQLMonitor instance to monitor their behavior. Has effect when moDialog is included.
moDBMonitor	Debug information is displayed in DBMonitor.

moDialog	Debug information is displayed in debug window.
moHandled	Component handle is included into the event description string.
moSQLMonitor	Debug information is displayed in Borland SQL Monitor.

5.10 DBAccess

This unit contains base classes for most of the components.

Classes

Name	Description
EDAError	A base class for exceptions that are raised when an error occurs on the server side.
TCRDataSource	Provides an interface between a DAC dataset components and data-aware controls on a form.
TCustomConnectDialog	A base class for the connect dialog components.
TCustomDAConnection	A base class for components used to establish connections.
TCustomDADataSet	Encapsulates general set of properties, events, and methods for working with data accessed through various database engines.
TCustomDASQL	A base class for components executing SQL statements that do not return result sets.
TCustomDAUpdateSQL	A base class for components that provide DML statements for more flexible control over data modifications.
TDACondition	Represents a condition from the TDAConditions list.
TDAConditions	Holds a collection of TDACondition objects.
TDAConnectionOptions	This class allows setting up the behaviour of the TDAConnection class.
TDADataSetOptions	This class allows setting up the behaviour of the TDADataSet class.

TDAEncryption	Used to specify the options of the data encryption in a dataset.
TDAMapRule	Class that formes rules for Data Type Mapping.
TDAMapRules	Used for adding rules for DataSet fields mapping with both identifying by field name and by field type and Delphi field types.
TDAMetaData	A class for retrieving metainformation of the specified database objects in the form of dataset.
TDAParam	A class that forms objects to represent the values of the parameters set.
TDAParams	This class is used to manage a list of TDAParam objects for an object that uses field parameters.
TDATransaction	A base class that implements functionality for controlling transactions.
TMacro	Object that represents the value of a macro.
TMacros	Controls a list of TMacro objects for the TCustomDASQL.Macros or TCustomDADataSet components.
TPoolingOptions	This class allows setting up the behaviour of the connection pool.
TSmartFetchOptions	Smart fetch options are used to set up the behavior of the SmartFetch mode.

Types

Name	Description
TAfterExecuteEvent	This type is used for the TCustomDADataSet.AfterExecute and TCustomDASQL.AfterExecute events.
TAfterFetchEvent	This type is used for the TCustomDADataSet.AfterFetch event.

TBeforeFetchEvent	This type is used for the TCustomDADataSet.BeforeFetch event.
TConnectionLostEvent	This type is used for the TCustomDAConnection.OnConnectionLost event.
TDAConnectionErrorEvent	This type is used for the TCustomDAConnection.OnError event.
TDATransactionErrorEvent	This type is used for the TDATransaction.OnError event.
TRefreshOptions	Represents the set of TRefreshOption.
TUpdateExecuteEvent	This type is used for the TCustomDADataSet.AfterUpdateExecute and TCustomDADataSet.BeforeUpdateExecute events.

Enumerations

Name	Description
TLabelSet	Sets the languauge of labels in the connect dialog.
TRefreshOption	Indicates when the editing record will be refreshed.
TRetryMode	Specifies the application behavior when connection is lost.

Variables

Name	Description
BaseSQLOldBehavior	After assigning SQL text and modifying it by AddWhere, DeleteWhere, and SetOrderBy, all subsequent changes of the SQL property will not be reflected in the BaseSQL property.
ChangeCursor	When set to True allows data access components to change screen cursor for the execution time.

SQLGeneratorCompatibility	The value of the TCustomDADataSet.BaseSQL property is used to complete the refresh SQL statement, if the manually assigned TCustomDAUpdateSQL.RefreshSQL property contains only WHERE clause.

5.10.1 Classes

Classes in the **DBAccess** unit.

Classes

Name	Description
EDAError	A base class for exceptions that are raised when an error occurs on the server side.
TCRDataSource	Provides an interface between a DAC dataset components and data-aware controls on a form.
TCustomConnectDialog	A base class for the connect dialog components.
TCustomDAConnection	A base class for components used to establish connections.
TCustomDADataSet	Encapsulates general set of properties, events, and methods for working with data accessed through various database engines.
TCustomDASQL	A base class for components executing SQL statements that do not return result sets.
TCustomDAUpdateSQL	A base class for components that provide DML statements for more flexible control over data modifications.
TDACondition	Represents a condition from the TDAConditions list.
TDAConditions	Holds a collection of TDACondition objects.

TDAConnectionOptions	This class allows setting up the behaviour of the TDAConnection class.
TDADataSetOptions	This class allows setting up the behaviour of the TDADataSet class.
TDAEncryption	Used to specify the options of the data encryption in a dataset.
TDAMapRule	Class that formes rules for Data Type Mapping.
TDAMapRules	Used for adding rules for DataSet fields mapping with both identifying by field name and by field type and Delphi field types.
TDAMetaData	A class for retrieving metainformation of the specified database objects in the form of dataset.
TDAParam	A class that forms objects to represent the values of the parameters set.
TDAParams	This class is used to manage a list of TDAParam objects for an object that uses field parameters.
TDATransaction	A base class that implements functionality for controlling transactions.
TMacro	Object that represents the value of a macro.
TMacros	Controls a list of TMacro objects for the TCustomDASQL.Macros or TCustomDADataSet components.
TPoolingOptions	This class allows setting up the behaviour of the connection pool.
TSmartFetchOptions	Smart fetch options are used to set up the behavior of the SmartFetch mode.

5.10.1.1 EDAError Class

A base class for exceptions that are raised when an error occurs on the server side.
For a list of all members of this type, see EDAError members.

Unit

DBAccess

Syntax

```
EDAError = class(EDatabaseError);
```

Remarks

EDAError is a base class for exceptions that are raised when an error occurs on the server side.

5.10.1.1.1 Members

EDAError class overview.

Properties

Name	Description
Component	Contains the component that caused the error.
ErrorCode	Determines the error code returned by the server.

5.10.1.1.2 Properties

Properties of the **EDAError** class.

For a complete list of the **EDAError** class members, see the EDAError Members topic.

Public

Name	Description
Component	Contains the component that caused the error.
ErrorCode	Determines the error code returned by the server.

See Also

- EDAError Class
- EDAError Class Members

5.10.1.1.2.1 Component Property

Contains the component that caused the error.

Class

EDAError

Syntax

```
property Component: TObject;
```

Remarks

The Component property contains the component that caused the error.

5.10.1.1.2.2 ErrorCode Property

Determines the error code returned by the server.

Class

EDAError

Syntax

```
property ErrorCode: integer;
```

Remarks

Use the ErrorCode property to determine the error code returned by SQLite. This value is always positive.

5.10.1.2 TCRDataSource Class

Provides an interface between a DAC dataset components and data-aware controls on a form.
For a list of all members of this type, see TCRDataSource members.

Unit

DBAccess

Syntax

```
TCRDataSource = class(TDataSource);
```

Remarks

TCRDataSource provides an interface between a DAC dataset components and data-aware controls on a form.
TCRDataSource inherits its functionality directly from the TDataSource component.
At design time assign individual data-aware components' DataSource properties from their drop-down listboxes.

5.10.1.2.1 Members

TCRDataSource class overview.

5.10.1.3 TCustomConnectDialog Class

A base class for the connect dialog components.
For a list of all members of this type, see TCustomConnectDialog members.

Unit

DBAccess

Syntax

```
TCustomConnectDialog = class(TComponent);
```

Remarks

TCustomConnectDialog is a base class for the connect dialog components. It provides functionality to show a dialog box where user can edit username, password and server name before connecting to a database. You can customize captions of buttons and labels by their properties.

5.10.1.3.1 Members

TCustomConnectDialog class overview.

Properties

Name	Description
CancelButton	Used to specify the label for the Cancel button.
Caption	Used to set the caption of dialog box.
ConnectButton	Used to specify the label for the Connect button.

DialogClass	Used to specify the class of the form that will be displayed to enter login information.
LabelSet	Used to set the language of buttons and labels captions.
PasswordLabel	Used to specify a prompt for password edit.
Retries	Used to indicate the number of retries of failed connections.
SavePassword	Used for the password to be displayed in ConnectDialog in asterisks.
StoreLogInfo	Used to specify whether the login information should be kept in system registry after a connection was established.

Methods

Name	Description
Execute	Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button.

5.10.1.3.2 Properties

Properties of the **TCustomConnectDialog** class.

For a complete list of the **TCustomConnectDialog** class members, see the TCustomConnectDialog Members topic.

Public

Name	Description
CancelButton	Used to specify the label for the Cancel button.
Caption	Used to set the caption of dialog box.
ConnectButton	Used to specify the label for the Connect button.

DialogClass	Used to specify the class of the form that will be displayed to enter login information.
LabelSet	Used to set the language of buttons and labels captions.
PasswordLabel	Used to specify a prompt for password edit.
Retries	Used to indicate the number of retries of failed connections.
SavePassword	Used for the password to be displayed in ConnectDialog in asterisks.
StoreLogInfo	Used to specify whether the login information should be kept in system registry after a connection was established.

See Also

- TCustomConnectDialog Class
- TCustomConnectDialog Class Members

5.10.1.3.2.1 CancelButton Property

Used to specify the label for the Cancel button.

Class

TCustomConnectDialog

Syntax

```
property CancelButton: string;
```

Remarks

Use the CancelButton property to specify the label for the Cancel button.

5.10.1.3.2.2 Caption Property

Used to set the caption of dialog box.

Class

TCustomConnectDialog

Syntax

```
property Caption: string;
```

Remarks

Use the Caption property to set the caption of dialog box.

5.10.1.3.2.3 ConnectButton Property

Used to specify the label for the Connect button.

Class

TCustomConnectDialog

Syntax

```
property ConnectButton: string;
```

Remarks

Use the ConnectButton property to specify the label for the Connect button.

5.10.1.3.2.4 DialogClass Property

Used to specify the class of the form that will be displayed to enter login information.

Class

TCustomConnectDialog

Syntax

```
property DialogClass: string;
```

Remarks

Use the DialogClass property to specify the class of the form that will be displayed to enter login information. When this property is blank, TCustomConnectDialog uses the default form - TConnectForm. You can write your own login form to enter login information and assign its class name to the DialogClass property. Each login form must have ConnectDialog: TCustomConnectDialog published property to access connection information. For details see the implementation of the connect form which sources are in the Lib subdirectory of the LiteDAC installation directory.

See Also

- M:Devart.Dac.TCustomConnectDialog.GetServerList(Borland.Vcl.TStrings)

5.10.1.3.2.5 LabelSet Property

Used to set the language of buttons and labels captions.

Class

TCustomConnectDialog

Syntax

```
property LabelSet: TLabelSet default lsEnglish;
```

Remarks

Use the LabelSet property to set the language of labels and buttons captions.
The default value is lsEnglish.

5.10.1.3.2.6 PasswordLabel Property

Used to specify a prompt for password edit.

Class

TCustomConnectDialog

Syntax

```
property PasswordLabel: string;
```

Remarks

Use the PasswordLabel property to specify a prompt for password edit.

5.10.1.3.2.7 Retries Property

Used to indicate the number of retries of failed connections.

Class

TCustomConnectDialog

Syntax

```
property Retries: word default 3;
```

Remarks

Use the Retries property to determine the number of retries of failed connections.

5.10.1.3.2.8 SavePassword Property

Used for the password to be displayed in ConnectDialog in asterisks.

Class

TCustomConnectDialog

Syntax

```
property SavePassword: boolean default False;
```

Remarks

If True, and the Password property of the connection instance is assigned, the password in ConnectDialog is displayed in asterisks.

5.10.1.3.2.9 StoreLogInfo Property

Used to specify whether the login information should be kept in system registry after a connection was established.

Class

TCustomConnectDialog

Syntax

```
property StoreLogInfo: boolean default True;
```

Remarks

Use the StoreLogInfo property to specify whether to keep login information in system registry after a connection was established using provided username, password and servername.
Set this property to True to store login information.
The default value is True.

5.10.1.3.3 Methods

Methods of the **TCustomConnectDialog** class.
For a complete list of the **TCustomConnectDialog** class members, see the TCustomConnectDialog Members topic.

Public

Name	Description
Execute	Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button.

See Also

- TCustomConnectDialog Class
- TCustomConnectDialog Class Members

5.10.1.3.3.1 Execute Method

Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button.

Class

TCustomConnectDialog

Syntax

```
function Execute: boolean; virtual;
```

Return Value

True, if connected.

Remarks

Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button. Returns True if connected. If user clicks Cancel, Execute returns False.
In the case of failed connection Execute offers to connect repeat Retries times.

5.10.1.4 TCustomDAConnection Class

A base class for components used to establish connections.
For a list of all members of this type, see TCustomDAConnection members.

Unit

DBAccess

Syntax

```
TCustomDAConnection = class(TCustomConnection);
```

Remarks

TCustomDAConnection is a base class for components that establish connection with database, provide customised login support, and perform transaction control.
Do not create instances of TCustomDAConnection. To add a component that represents a connection to a source of data, use descendants of the TCustomDAConnection class.

5.10.1.4.1 Members

TCustomDAConnection class overview.

Properties

Name	Description
ConnectDialog	Allows to link a TCustomConnectDialog component.
ConnectString	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL	Allows customizing line breaks in string fields and parameters.
InTransaction	Indicates whether the transaction is active.
LoginPrompt	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Specifies the connection behavior.
Pooling	Enables or disables using connection pool.
PoolingOptions	Specifies the behaviour of connection pool.

Methods

Name	Description
ApplyUpdates	Overloaded. Applies changes in datasets.
Commit	Commits current transaction.

Connect	Establishes a connection to the server.
CreateSQL	Creates a component for queries execution.
Disconnect	Performs disconnect.
GetKeyFieldNames	Provides a list of available key field names.
GetTableNames	Provides a list of available tables names.
MonitorMessage	Sends a specified message through the TCustomDASQLMonitor component.
Ping	Used to check state of connection to the server.
RemoveFromPool	Marks the connection that should not be returned to the pool after disconnect.
Rollback	Discards all current data changes and ends transaction.
StartTransaction	Begins a new user transaction.

Events

Name	Description
OnConnectionLost	This event occurs when connection was lost.
OnError	This event occurs when an error has arisen in the connection.

5.10.1.4.2 Properties

Properties of the **TCustomDAConnection** class.

For a complete list of the **TCustomDAConnection** class members, see the TCustomDAConnection Members topic.

Public

Name	Description
ConnectDialog	Allows to link a TCustomConnectDialog component.
ConnectString	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL	Allows customizing line breaks in string fields and parameters.
InTransaction	Indicates whether the transaction is active.
LoginPrompt	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Specifies the connection behavior.
Pooling	Enables or disables using connection pool.
PoolingOptions	Specifies the behaviour of connection pool.

See Also

- TCustomDAConnection Class
- TCustomDAConnection Class Members

5.10.1.4.2.1 ConnectDialog Property

Allows to link a TCustomConnectDialog component.

Class

TCustomDAConnection

Syntax

```
property ConnectDialog: TCustomConnectDialog;
```

Remarks

Use the ConnectDialog property to assign to connection a TCustomConnectDialog component.

See Also

- TCustomConnectDialog

5.10.1.4.2.2 ConnectString Property

Used to specify the connection information, such as: UserName, Password, Server, etc.

Class

TCustomDAConnection

Syntax

```
property ConnectString: string stored False;
```

Remarks

LiteDAC recognizes an ODBC-like syntax in provider string property values. Within the string, elements are delimited by using a semicolon. Each element consists of a keyword, an equal sign character, and the value passed on initialization. For example:

```
Server=London1;User ID=nancyd
```

Connection parameters

The following connection parameters can be used to customize connection:

Parameter Name	Description
LoginPrompt	Specifies whether a login dialog appears immediately before opening a new connection.
Pooling	Enables or disables using connection pool.
ConnectionLifeTime	Used to specify the maximum time during which an opened connection can be used by connection pool.
MaxPoolSize	Used to specify the maximum number of connections that can be opened in connection pool.
MinPoolSize	Used to specify the minimum number of connections that can be opened in connection pool.
Validate Connection	Used for a connection to be validated when it is returned from the pool.
ClientLibrary	Used to set or get the SQLite client library location.

Database	Used to specify the name of the database to be used once a connection is open.
UseUnicode	Used to enable or disable Unicode support.
Direct	Used to connect to the database directly and without using SQLite3 client library.
ForceCreateDatabase	Used to force TLiteConnection to create a new database before opening a connection, if the database is not exists.

See Also

- Connect

5.10.1.4.2.3 ConvertEOL Property

Allows customizing line breaks in string fields and parameters.

Class

TCustomDAConnection

Syntax

```
property ConvertEOL: boolean default False;
```

Remarks

Affects the line break behavior in string fields and parameters. When fetching strings (including the TEXT fields) with ConvertEOL = True, dataset converts their line breaks from the LF to CRLF form. And when posting strings to server with ConvertEOL turned on, their line breaks are converted from CRLF to LF form. By default, strings are not converted.

5.10.1.4.2.4 InTransaction Property

Indicates whether the transaction is active.

Class

TCustomDAConnection

Syntax

```
property InTransaction: boolean;
```

Remarks

Examine the InTransaction property at runtime to determine whether user transaction is currently in progress. In other words InTransaction is set to True when user explicitly calls StartTransaction. Calling Commit or Rollback sets InTransaction to False. The value of the InTransaction property cannot be changed directly.

See Also

- StartTransaction
- Commit
- Rollback

5.10.1.4.2.5 LoginPrompt Property

Specifies whether a login dialog appears immediately before opening a new connection.

Class

TCustomDAConnection

Syntax

```
property LoginPrompt default DefValLoginPrompt;
```

Remarks

Specifies whether a login dialog appears immediately before opening a new connection. If ConnectDialog is not specified, the default connect dialog will be shown. The connect dialog will appear only if the LiteDacVcl unit appears to the uses clause.

5.10.1.4.2.6 Options Property

Specifies the connection behavior.

Class

TCustomDAConnection

Syntax

```
property Options: TDAConnectionOptions;
```

Remarks

Set the properties of Options to specify the behaviour of the connection.
Descriptions of all options are in the table below.

Option Name	Description
AllowImplicitConnect	Specifies whether to allow or not implicit connection opening.
DefaultSortType	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode	Used to open a connection only when needed for performing a server call and closes after performing the operation.
KeepDesignConnected	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover	If True, the OnConnectionLost event occurs and a failover operation can be performed after connection breaks.

See Also

- Disconnected Mode
- Working in an Unstable Network

5.10.1.4.2.7 Pooling Property

Enables or disables using connection pool.

Class

TCustomDAConnection

Syntax

```
property Pooling: boolean default DefValPooling;
```

Remarks

Normally, when TCustomDAConnection establishes connection with the server it takes server memory and time resources for allocating new server connection. For example, pooling can be very useful when using disconnect mode. If an application has wide user activity that forces many connect/disconnect operations, it may spend a lot of time on creating connection and sending requests to the server. TCustomDAConnection has software pool which stores open connections with identical parameters.
Connection pool uses separate thread that validates the pool every 30 seconds. Pool

validation consists of checking each connection in the pool. If a connection is broken due to a network problem or another reason, it is deleted from the pool. The validation procedure removes also connections that are not used for a long time even if they are valid from the pool.
Set Pooling to True to enable pooling. Specify correct values for PoolingOptions. Two connections belong to the same pool if they have identical values for the parameters: MinPoolSize, MaxPoolSize, Validate, ConnectionLifeTime
Note: Using Pooling := True can cause errors with working with temporary tables.

See Also

- P:Devart.Dac.TCustomDAConnection.Username
- P:Devart.Dac.TCustomDAConnection.Password
- PoolingOptions
- Connection Pooling

5.10.1.4.2.8 PoolingOptions Property

Specifies the behaviour of connection pool.

Class

TCustomDAConnection

Syntax

```
property PoolingOptions: TPoolingOptions;
```

Remarks

Set the properties of PoolingOptions to specify the behaviour of connection pool.
Descriptions of all options are in the table below.

Option Name	Description
ConnectionLifetime	Used to specify the maximum time during which an opened connection can be used by connection pool.
MaxPoolSize	Used to specify the maximum number of connections that can be opened in connection pool.
MinPoolSize	Used to specify the minimum number of connections that can be opened in the connection pool.
Validate	Used for a connection to be validated when it is returned from the pool.

See Also

- Pooling

5.10.1.4.3 Methods

Methods of the **TCustomDAConnection** class.

For a complete list of the **TCustomDAConnection** class members, see the TCustomDAConnection Members topic.

Public

Name	Description
ApplyUpdates	Overloaded. Applies changes in datasets.
Commit	Commits current transaction.
Connect	Establishes a connection to the server.
CreateSQL	Creates a component for queries execution.
Disconnect	Performs disconnect.
GetKeyFieldNames	Provides a list of available key field names.
GetTableNames	Provides a list of available tables names.
MonitorMessage	Sends a specified message through the TCustomDASQLMonitor component.
Ping	Used to check state of connection to the server.
RemoveFromPool	Marks the connection that should not be returned to the pool after disconnect.
Rollback	Discards all current data changes and ends transaction.
StartTransaction	Begins a new user transaction.

See Also

- TCustomDAConnection Class
- TCustomDAConnection Class Members

5.10.1.4.3.1 ApplyUpdates Method

Applies changes in datasets.

Class

TCustomDAConnection

Overload List

Name	Description
ApplyUpdates	Applies changes from all active datasets.
ApplyUpdates(**const** DataSets: **array of** TCustomDADataSet)	Applies changes from the specified datasets.

Applies changes from all active datasets.

Class

TCustomDAConnection

Syntax

```
procedure ApplyUpdates; overload; virtual;
```

Remarks

Call the ApplyUpdates method to write all pending cached updates from all active datasets attached to this connection to a database or from specific datasets. The ApplyUpdates method passes cached data to the database for storage, takes care of committing or rolling back transactions, and clearing the cache when the operation is successful.
Using ApplyUpdates for connection is a preferred method of updating datasets rather than calling each individual dataset's ApplyUpdates method.

See Also

- TMemDataSet.CachedUpdates
- TMemDataSet.ApplyUpdates

Applies changes from the specified datasets.

Class

TCustomDAConnection

Syntax

```
procedure ApplyUpdates(const DataSets: array of TCustomDADataSet); overload; virtual;
```

Parameters

DataSets

A list of datasets changes in which are to be applied.

Remarks

Call the ApplyUpdates method to write all pending cached updates from the specified datasets. The ApplyUpdates method passes cached data to the database for storage, takes care of committing or rolling back transactions and clearing the cache when operation is successful.

Using ApplyUpdates for connection is a preferred method of updating datasets rather than calling each individual dataset's ApplyUpdates method.

5.10.1.4.3.2 Commit Method

Commits current transaction.

Class

TCustomDAConnection

Syntax

```
procedure Commit; virtual;
```

Remarks

Call the Commit method to commit current transaction. On commit server writes permanently all pending data updates associated with the current transaction to the database and then ends the transaction. The current transaction is the last transaction started by calling StartTransaction.

See Also

- Rollback

- StartTransaction
- P:Devart.SQLiteDac.TCustomLiteDataSet.FetchAll

5.10.1.4.3.3 Connect Method

Establishes a connection to the server.

Class

TCustomDAConnection

Syntax

```
procedure Connect; overload;procedure Connect(const
ConnectString: string); overload;
```

Remarks

Call the Connect method to establish a connection to the server. Connect sets the Connected property to True. If LoginPrompt is True, Connect prompts user for login information as required by the server, or otherwise tries to establish a connection using values provided in the P:Devart.Dac.TCustomDAConnection.Username, P:Devart.Dac.TCustomDAConnection.Password, and P:Devart.Dac.TCustomDAConnection.Server properties.

See Also

- Disconnect
- P:Devart.Dac.TCustomDAConnection.Username
- P:Devart.Dac.TCustomDAConnection.Password
- P:Devart.Dac.TCustomDAConnection.Server
- ConnectDialog

5.10.1.4.3.4 CreateSQL Method

Creates a component for queries execution.

Class

TCustomDAConnection

Syntax

```
function CreateSQL: TCustomDASQL; virtual;
```

Return Value

A new instance of the class.

Remarks

Call the CreateSQL to return a new instance of the TCustomDASQL class and associates it with this connection object. In the descendant classes this method should be overridden to create an appropriate descendant of the TCustomDASQL component.

5.10.1.4.3.5 Disconnect Method

Performs disconnect.

Class

TCustomDAConnection

Syntax

```
procedure Disconnect;
```

Remarks

Call the Disconnect method to drop a connection to database. Before the connection component is deactivated, all associated datasets are closed. Calling Disconnect is similar to setting the Connected property to False.
In most cases, closing a connection frees system resources allocated to the connection.
If user transaction is active, e.g. the InTransaction flag is set, calling to Disconnect the current user transaction.
Note: If a previously active connection is closed and then reopened, any associated datasets must be individually reopened; reopening the connection does not automatically reopen associated datasets.

See Also

- Connect

5.10.1.4.3.6 GetKeyFieldNames Method

Provides a list of available key field names.

Class

TCustomDAConnection

Syntax

```
procedure GetKeyFieldNames(const TableName: string; List:
```

```
TStrings); virtual;
```

Parameters

TableName

Holds the table name

List

The list of available key field names

Return Value

Key field name

Remarks

Call the GetKeyFieldNames method to get the names of available key fields. Populates a string list with the names of key fields in tables.

See Also

- GetTableNames
- M:Devart.Dac.TCustomDAConnection.GetStoredProcNames(Borland.Vcl.TStrings,System.Boolean)

5.10.1.4.3.7 GetTableNames Method

Provides a list of available tables names.

Class

TCustomDAConnection

Syntax

```
procedure GetTableNames(List: TStrings; AllTables: boolean =
False; OnlyTables: boolean = False); virtual;
```

Parameters

List

A TStrings descendant that will be filled with table names.

AllTables

True, if procedure returns all table names including the names of system tables to the List parameter.

OnlyTables

Remarks

Call the GetTableNames method to get the names of available tables. Populates a string list

with the names of tables in the database. If AllTables = True, procedure returns all table names including the names of system tables to the List parameter, otherwise List will not contain the names of system tables. If AllTables = True, the procedure returns to the List parameter the names of the tables that belong to all schemas; otherwise, List will contain the names of the tables that belong to the current schema.
Note: Any contents already in the target string list object are eliminated and overwritten by the data produced by GetTableNames.

See Also

- M:Devart.Dac.TCustomDAConnection.GetDatabaseNames(Borland.Vcl.TStrings)
- M:Devart.Dac.TCustomDAConnection.GetStoredProcNames(Borland.Vcl.TStrings,System.Boolean)

5.10.1.4.3.8 MonitorMessage Method

Sends a specified message through the TCustomDASQLMonitor component.

Class

TCustomDAConnection

Syntax

```
procedure MonitorMessage(const Msg: string);
```

Parameters

Msg
Message text that will be sent.

Remarks

Call the MonitorMessage method to output specified message via the TCustomDASQLMonitor component.

See Also

- TCustomDASQLMonitor

5.10.1.4.3.9 Ping Method

Used to check state of connection to the server.

Class

TCustomDAConnection

Syntax

```
procedure Ping;
```

Remarks

The method is used for checking server connection state.

5.10.1.4.3.10 RemoveFromPool Method

Marks the connection that should not be returned to the pool after disconnect.

Class

TCustomDAConnection

Syntax

```
procedure RemoveFromPool;
```

Remarks

Call the RemoveFromPool method to mark the connection that should be deleted after disconnect instead of returning to the connection pool.

See Also

- Pooling
- PoolingOptions

5.10.1.4.3.11 Rollback Method

Discards all current data changes and ends transaction.

Class

TCustomDAConnection

Syntax

```
procedure Rollback; virtual;
```

Remarks

Call the Rollback method to discard all updates, insertions, and deletions of data associated with the current transaction to the database server and then end the transaction. The current transaction is the last transaction started by calling StartTransaction.

See Also

- Commit
- StartTransaction
- P:Devart.SQLiteDac.TCustomLiteDataSet.FetchAll

5.10.1.4.3.12 StartTransaction Method

Begins a new user transaction.

Class

TCustomDAConnection

Syntax

```
procedure StartTransaction; virtual;
```

Remarks

Call the StartTransaction method to begin a new user transaction against the database server. Before calling StartTransaction, an application should check the status of the InTransaction property. If InTransaction is True, indicating that a transaction is already in progress, a subsequent call to StartTransaction without first calling Commit or Rollback to end the current transaction raises EDatabaseError. Calling StartTransaction when connection is closed also raises EDatabaseError.
Updates, insertions, and deletions that take place after a call to StartTransaction are held by the server until an application calls Commit to save the changes, or Rollback to cancel them.

See Also

- Commit
- Rollback
- InTransaction

5.10.1.4.4 Events

Events of the **TCustomDAConnection** class.
For a complete list of the **TCustomDAConnection** class members, see the TCustomDAConnection Members topic.

Public

Name	Description

OnConnectionLost	This event occurs when connection was lost.
OnError	This event occurs when an error has arisen in the connection.

See Also

- TCustomDAConnection Class
- TCustomDAConnection Class Members

5.10.1.4.4.1 OnConnectionLost Event

This event occurs when connection was lost.

Class

TCustomDAConnection

Syntax

```
property OnConnectionLost: TConnectionLostEvent;
```

Remarks

Write the OnConnectionLost event handler to process fatal errors and perform failover.
Note: To use the OnConnectionLost event handler, you should explicitly add the MemData unit to the 'uses' list and set the TCustomDAConnection.Options.LocalFailover property to True.

5.10.1.4.4.2 OnError Event

This event occurs when an error has arisen in the connection.

Class

TCustomDAConnection

Syntax

```
property OnError: TDAConnectionErrorEvent;
```

Remarks

Write the OnError event handler to respond to errors that arise with connection. Check the E parameter to get the error code. Set the Fail parameter to False to prevent an error dialog

from being displayed and to raise the EAbort exception to cancel current operation. The default value of Fail is True.

5.10.1.5 TCustomDADataSet Class

Encapsulates general set of properties, events, and methods for working with data accessed through various database engines.
For a list of all members of this type, see TCustomDADataSet members.

Unit

DBAccess

Syntax

```
TCustomDADataSet = class(TMemDataSet);
```

Remarks

TCustomDADataSet encapsulates general set of properties, events, and methods for working with data accessed through various database engines. All database-specific features are supported by descendants of TCustomDADataSet.
Applications should not use TCustomDADataSet objects directly.

Inheritance Hierarchy

TMemDataSet
  TCustomDADataSet

5.10.1.5.1 Members

TCustomDADataSet class overview.

Properties

Name	Description
BaseSQL	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Conditions	Used to add WHERE conditions to a query

Connection	Used to specify a connection object to use to connect to a data store.
DataTypeMap	Used to set data type mapping rules
Debug	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected	Used to keep dataset opened after connection is closed.
FetchRows	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
KeyFields	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.

MacroCount	Used to get the number of macros associated with the Macros property.
Macros	Makes it possible to change SQL queries easily.
MasterFields	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource	Used to specify the data source component which binds current dataset to the master one.
Options	Used to specify the behaviour of TCustomDADataSet object.
ParamCheck	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount	Used to indicate how many parameters are there in the Params property.
Params	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions	Used to indicate when the editing record is refreshed.
RowsAffected	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL	Used to provide a SQL statement that a query component executes when its Open method is called.

SQLDelete	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional	Used if an application does not need bidirectional access to records in the result set.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Methods

Name	Description
AddWhere	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.

BreakExec	Breaks execution of the SQL statement on the server.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
CreateBlobStream	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
DeleteWhere	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
Execute	Overloaded. Executes a SQL statement on the server.
Executing	Indicates whether SQL statement is still being executed.
Fetched	Used to learn whether TCustomDADataSet has already fetched all rows.
Fetching	Used to learn whether TCustomDADataSet is still fetching rows.
FetchingAll	Used to learn whether TCustomDADataSet is fetching all rows to the end.

FindKey	Searches for a record which contains specified field values.
FindMacro	Description is not available at the moment.
FindNearest	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam	Determines if a parameter with the specified name exists in a dataset.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject	Returns a multireference shared object from field.
GetFieldPrecision	Retrieves the precision of a number field.
GetFieldScale	Retrieves the scale of a number field.
GetKeyFieldNames	Provides a list of available key field names.
GetOrderBy	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock	Locks the current record.

MacroByName	Finds a Macro with the name passed in Name.
ParamByName	Sets or uses parameter information for a specific parameter based on its name.
Prepare	Allocates, opens, and parses cursor for a query.
RefreshRecord	Actualizes field values for the current record.
RestoreSQL	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved	Determines if the SQL property value was saved to the BaseSQL property.
UnLock	Releases a record lock.

UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
AfterExecute	Occurs after a component has executed a query to database.
AfterFetch	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute	Occurs after executing insert, delete, update, lock and refresh operations.
BeforeFetch	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute	Occurs before executing insert, delete, update, lock, and refresh operations.
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from **TMemDataSet**)	Occurs when a single update component can not handle the updates.

5.10.1.5.2 Properties

Properties of the **TCustomDADataSet** class.

For a complete list of the **TCustomDADataSet** class members, see the TCustomDADataSet Members topic.

Public

Name	Description
BaseSQL	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Conditions	Used to add WHERE conditions to a query
Connection	Used to specify a connection object to use to connect to a data store.
DataTypeMap	Used to set data type mapping rules
Debug	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected	Used to keep dataset opened after connection is closed.
FetchRows	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.

KeyFields	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MacroCount	Used to get the number of macros associated with the Macros property.
Macros	Makes it possible to change SQL queries easily.
MasterFields	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource	Used to specify the data source component which binds current dataset to the master one.
Options	Used to specify the behaviour of TCustomDADataSet object.
ParamCheck	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount	Used to indicate how many parameters are there in the Params property.
Params	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly	Used to prevent users from updating, inserting, or deleting data in the

	dataset.
RefreshOptions	Used to indicate when the editing record is refreshed.
RowsAffected	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional	Used if an application does not need bidirectional access to records in the result set.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

See Also

- TCustomDADataSet Class

- TCustomDADataSet Class Members

5.10.1.5.2.1 BaseSQL Property

Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.

Class

TCustomDADataSet

Syntax

```
property BaseSQL: string;
```

Remarks

Use the BaseSQL property to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL, only macros are expanded. SQL text with all these changes can be returned by FinalSQL.

See Also

- FinalSQL
- AddWhere
- SaveSQL
- SQLSaved
- RestoreSQL

5.10.1.5.2.2 Conditions Property

Used to add WHERE conditions to a query

Class

TCustomDADataSet

Syntax

```
property Conditions: TDAConditions stored False;
```

See Also

- TDAConditions

5.10.1.5.2.3 Connection Property

Used to specify a connection object to use to connect to a data store.

Class

TCustomDADataSet

Syntax

```
property Connection: TCustomDAConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.
Set at design-time by selecting from the list of provided TCustomDAConnection or its descendant class objects.
At runtime, link an instance of a TCustomDAConnection descendant to the Connection property.

5.10.1.5.2.4 DataTypeMap Property

Used to set data type mapping rules

Class

TCustomDADataSet

Syntax

```
property DataTypeMap: TDAMapRules stored IsMapRulesStored;
```

See Also

- TDAMapRules

5.10.1.5.2.5 Debug Property

Used to display executing statement, all its parameters' values, and the type of parameters.

Class

TCustomDADataSet

Syntax

```
property Debug: boolean default False;
```

Remarks

Set the Debug property to True to display executing statement and all its parameters' values. Also displays the type of parameters.
You should add the LiteDacVcl unit to the uses clause of any unit in your project to make the Debug property work.
Note: If TLiteSQLMonitor is used in the project and the TLiteSQLMonitor.Active property is set to False, the debug window is not displayed.

See Also

- TCustomDASQL.Debug

5.10.1.5.2.6 DetailFields Property

Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.

Class

TCustomDADataSet

Syntax

```
property DetailFields: string;
```

Remarks

Use the DetailFields property to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship. DetailFields is a string containing one or more field names in the detail table. Separate field names with semicolons.
Use Field Link Designer to set the value in design time.

See Also

- MasterFields
- MasterSource

5.10.1.5.2.7 Disconnected Property

Used to keep dataset opened after connection is closed.

Class

TCustomDADataSet

Syntax

```
property Disconnected: boolean;
```

Remarks

Set the Disconnected property to True to keep dataset opened after connection is closed.

5.10.1.5.2.8 FetchRows Property

Used to define the number of rows to be transferred across the network at the same time.

Class

TCustomDADataSet

Syntax

```
property FetchRows: integer default 25;
```

Remarks

The number of rows that will be transferred across the network at the same time. This property can have a great impact on performance. So it is preferable to choose the optimal value of the FetchRows property for each SQL statement and software/hardware configuration experimentally.
The default value is 25.

5.10.1.5.2.9 FilterSQL Property

Used to change the WHERE clause of SELECT statement and reopen a query.

Class

TCustomDADataSet

Syntax

```
property FilterSQL: string;
```

Remarks

The FilterSQL property is similar to the Filter property, but it changes the WHERE clause of SELECT statement and reopens query. Syntax is the same to the WHERE clause.
Note: the FilterSQL property adds a value to the WHERE condition as is. If you expect this value to be enclosed in brackets, you should bracket it explicitly.

Example

```
Query1.FilterSQL := 'Dept >= 20 and DName LIKE ''M%''';
```

See Also

- AddWhere

5.10.1.5.2.10 FinalSQL Property

Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.

Class

TCustomDADataSet

Syntax

```
property FinalSQL: string;
```

Remarks

Use FinalSQL to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros. This is the exact statement that will be passed on to the database server.

See Also

- FinalSQL
- AddWhere
- SaveSQL
- SQLSaved
- RestoreSQL
- BaseSQL

5.10.1.5.2.11 IsQuery Property

Used to check whether SQL statement returns rows.

Class

TCustomDADataSet

Syntax

```
property IsQuery: boolean;
```

Remarks

After the TCustomDADataSet component is prepared, the IsQuery property returns True if SQL statement is a SELECT query.
Use the IsQuery property to check whether the SQL statement returns rows or not.
IsQuery is a read-only property. Reading IsQuery on unprepared dataset raises an exception.

5.10.1.5.2.12 KeyFields Property

Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.

Class

TCustomDADataSet

Syntax

```
property KeyFields: string;
```

Remarks

TCustomDADataset uses the KeyFields property to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database. For this feature KeyFields may hold a list of semicolon-delimited field names. If KeyFields is not defined before opening dataset, TCustomDADataset .

See Also

- SQLDelete
- SQLInsert
- SQLRefresh
- SQLUpdate

5.10.1.5.2.13 MacroCount Property

Used to get the number of macros associated with the Macros property.

Class

TCustomDADataSet

Syntax

```
property MacroCount: word;
```

Remarks

Use the MacroCount property to get the number of macros associated with the Macros property.

See Also

- Macros

5.10.1.5.2.14 Macros Property

Makes it possible to change SQL queries easily.

Class

TCustomDADataSet

Syntax

```
property Macros: TMacros stored False;
```

Remarks

With the help of macros you can easily change SQL query text at design- or runtime. Marcos extend abilities of parameters and allow to change conditions in a WHERE clause or sort order in an ORDER BY clause. You just insert &MacroName in the SQL query text and change value of macro in the Macro property editor at design time or call the MacroByName function at run time. At the time of opening the query macro is replaced by its value.

Example

```
LiteQuery.SQL:= 'SELECT * FROM Dept ORDER BY &Order';
LiteQuery.MacroByName('Order').Value:= 'DeptNo';
LiteQuery.Open;
```

See Also

- TMacro
- MacroByName
- Params

5.10.1.5.2.15 MasterFields Property

Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.

Class

TCustomDADataSet

Syntax

```
property MasterFields: string;
```

Remarks

Use the MasterFields property after setting the MasterSource property to specify the names of one or more fields that are used as foreign keys for this dataset when establishing detail/ master relationship between it and the dataset specified in MasterSource.
MasterFields is a string containing one or more field names in the master table. Separate field names with semicolons.
Each time the current record in the master table changes, the new values in these fields are used to select corresponding records in this table for display.
Use Field Link Designer to set the values at design time after setting the MasterSource property.

See Also

- DetailFields
- MasterSource
- Master/Detail Relationships

5.10.1.5.2.16 MasterSource Property

Used to specify the data source component which binds current dataset to the master one.

Class

TCustomDADataSet

Syntax

```
property MasterSource: TDataSource;
```

Remarks

The MasterSource property specifies the data source component which binds current dataset to the master one.
TCustomDADataset uses MasterSource to extract foreign key fields values from the master dataset when building master/detail relationship between two datasets. MasterSource must

point to another dataset; it cannot point to this dataset component.
When MasterSource is not **nil** dataset fills parameter values with corresponding field values from the current record of the master dataset.
Note: Do not set the DataSource property when building master/detail relationships. Although it points to the same object as the MasterSource property, it may lead to undesirable results.

See Also

- MasterFields
- DetailFields
- Master/Detail Relationships

5.10.1.5.2.17 Options Property

Used to specify the behaviour of TCustomDADataSet object.

Class

TCustomDADataSet

Syntax

```
property Options: TDADataSetOptions;
```

Remarks

Set the properties of Options to specify the behaviour of a TCustomDADataSet object.
Descriptions of all options are in the table below.

Option Name	Description
AutoPrepare	Used to execute automatic Prepare on the query execution.
CacheCalcFields	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CompressBlobMode	Used to store values of the BLOB fields in compressed form.
DefaultValues	Used to request default values/expressions from the server and assign them to the DefaultExpression property.
DetailDelay	Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.
FieldsOrigin	Used for TCustomDADataSet to fill the Origin property of the TField objects by

	appropriate value when opening a dataset.
FlatBuffers	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
InsertAllSetFields	Used to include all set dataset fields in the generated INSERT statement
LocalMasterDetail	Used for TCustomDADataSet to use local filtering to establish master/detail relationship for detail dataset and does not refer to the server.
LongStrings	Used to represent string fields with the length that is greater than 255 as TStringField.
MasterFieldsNullable	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
NumberRange	Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.
QueryRecCount	Used for TCustomDADataSet to perform additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records.
QuoteNames	Used for TCustomDADataSet to quote all database object names in autogenerated SQL statements such as update SQL.
RemoveOnRefresh	Used for a dataset to locally remove a record that can not be found on the server.
RequiredFields	Used for TCustomDADataSet to set the Required property of the TField objects for the NOT NULL fields.
ReturnParams	Used to return the new value of fields to dataset after insert or update.
SetFieldsReadOnly	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.
StrictUpdate	Used for TCustomDADataSet to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar	Specifies whether to discard all trailing spaces in the string fields of a dataset.
UpdateAllFields	Used to include all dataset fields in the

	generated UPDATE and INSERT statements.
UpdateBatchSize	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

See Also

- Master/Detail Relationships
- TMemDataSet.CachedUpdates

5.10.1.5.2.18 ParamCheck Property

Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.

Class

TCustomDADataSet

Syntax

```
property ParamCheck: boolean default True;
```

Remarks

Use the ParamCheck property to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
Set ParamCheck to True to let dataset automatically generate the Params property for the dataset based on a SQL statement.
Setting ParamCheck to False can be used if the dataset component passes to a server the DDL statements that contain, for example, declarations of stored procedures which themselves will accept parameterized values. The default value is True.

See Also

- Params

5.10.1.5.2.19 ParamCount Property

Used to indicate how many parameters are there in the Params property.

Class

TCustomDADataSet

Syntax

```
property ParamCount: word;
```

Remarks

Use the ParamCount property to determine how many parameters are there in the Params property.

See Also

- Params

5.10.1.5.2.20 Params Property

Used to view and set parameter names, values, and data types dynamically.

Class

TCustomDADataSet

Syntax

```
property Params: TDAParams stored False;
```

Remarks

Contains the parameters for a query's SQL statement.
Access Params at runtime to view and set parameter names, values, and data types dynamically (at design time use the Parameters editor to set the parameter information).
Params is a zero-based array of parameter records. Index specifies the array element to access.
An easier way to set and retrieve parameter values when the name of each parameter is known is to call ParamByName.

See Also

- ParamByName
- Macros

5.10.1.5.2.21 ReadOnly Property

Used to prevent users from updating, inserting, or deleting data in the dataset.

Class

TCustomDADataSet

Syntax

```
property ReadOnly: boolean default False;
```

Remarks

Use the ReadOnly property to prevent users from updating, inserting, or deleting data in the dataset. By default, ReadOnly is False, meaning that users can potentially alter data stored in the dataset.
To guarantee that users cannot modify or add data to a dataset, set ReadOnly to True.
When ReadOnly is True, the dataset's CanModify property is False.

5.10.1.5.2.22 RefreshOptions Property

Used to indicate when the editing record is refreshed.

Class

TCustomDADataSet

Syntax

```
property RefreshOptions: TRefreshOptions default [];
```

Remarks

Use the RefreshOptions property to determine when the editing record is refreshed.
Refresh is performed by the RefreshRecord method.
It queries the current record and replaces one in the dataset. Refresh record is useful when the table has triggers or the table fields have default values. Use roBeforeEdit to get actual data before editing.
The default value is [].

See Also

- RefreshRecord

5.10.1.5.2.23 RowsAffected Property

Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.

Class

TCustomDADataSet

Syntax

```
property RowsAffected: integer;
```

Remarks

Check RowsAffected to determine how many rows were inserted, updated, or deleted during the last query operation. If RowsAffected is -1, the query has not inserted, updated, or deleted any rows.

5.10.1.5.2.24 SQL Property

Used to provide a SQL statement that a query component executes when its Open method is called.

Class

TCustomDADataSet

Syntax

```
property SQL: TStrings;
```

Remarks

Use the SQL property to provide a SQL statement that a query component executes when its Open method is called. At the design time the SQL property can be edited by invoking the String List editor in Object Inspector.
When SQL is changed, TCustomDADataSet calls Close and UnPrepare.

See Also

- SQLInsert
- SQLUpdate
- SQLDelete
- SQLRefresh

5.10.1.5.2.25 SQLDelete Property

Used to specify a SQL statement that will be used when applying a deletion to a record.

Class

TCustomDADataSet

Syntax

```
property SQLDelete: TStrings;
```

Remarks

Use the SQLDelete property to specify the SQL statement that will be used when applying a deletion to a record. Statements can be parameterized queries.
To create a SQLDelete statement at design-time, use the query statements editor.

Example

```
DELETE FROM Orders
   WHERE
      OrderID = :Old_OrderID
```

See Also

- SQL
- SQLInsert
- SQLUpdate
- SQLRefresh

5.10.1.5.2.26 SQLInsert Property

Used to specify the SQL statement that will be used when applying an insertion to a dataset.

Class

TCustomDADataSet

Syntax

```
property SQLInsert: TStrings;
```

Remarks

Use the SQLInsert property to specify the SQL statement that will be used when applying an insertion to a dataset. Statements can be parameterized queries. Names of the parameters should be the same as field names. Parameters prefixed with OLD_ allow using current values of fields prior to the actual operation.
Use ReturnParam to return OUT parameters back to dataset.
To create a SQLInsert statement at design-time, use the query statements editor.

See Also

- SQL
- SQLUpdate

- SQLDelete
- SQLRefresh

5.10.1.5.2.27 SQLLock Property

Used to specify a SQL statement that will be used to perform a record lock.

Class

TCustomDADataSet

Syntax

```
property SQLLock: TStrings;
```

Remarks

Use the SQLLock property to specify a SQL statement that will be used to perform a record lock. Statements can be parameterized queries. Names of the parameters should be the same as field names. The parameters prefixed with OLD_ allow to use current values of fields prior to the actual operation.
To create a SQLLock statement at design-time, the use query statement editor.

See Also

- SQL
- SQLInsert
- SQLUpdate
- SQLDelete
- SQLRefresh

5.10.1.5.2.28 SQLRecCount Property

Used to specify the SQL statement that is used to get the record count when opening a dataset.

Class

TCustomDADataSet

Syntax

```
property SQLRecCount: TStrings;
```

Remarks

Use the SQLRecCount property to specify the SQL statement that is used to get the record count when opening a dataset. The SQL statement is used if the TDADataSetOptions.QueryRecCount property is True, and the TCustomDADataSet.FetchAll property is False. Is not used if the FetchAll property is True.
To create a SQLRecCount statement at design-time, use the query statements editor.

See Also

- SQLInsert
- SQLUpdate
- SQLDelete
- SQLRefresh
- TDADataSetOptions
- M:Devart.Dac.TCustomDADataSet.FetchingAll

5.10.1.5.2.29 SQLRefresh Property

Used to specify a SQL statement that will be used to refresh current record by calling the RefreshRecord procedure.

Class

TCustomDADataSet

Syntax

```
property SQLRefresh: TStrings;
```

Remarks

Use the SQLRefresh property to specify a SQL statement that will be used to refresh current record by calling the RefreshRecord procedure.
Different behavior is observed when the SQLRefresh property is assigned with a single WHERE clause that holds frequently altered search condition. In this case the WHERE clause from SQLRefresh is combined with the same clause of the SELECT statement in a SQL property and this final query is then sent to the database server.
To create a SQLRefresh statement at design-time, use the query statements editor.

Example

```
SELECT Shipname FROM Orders
   WHERE
      OrderID = :OrderID
```

See Also

- RefreshRecord
- SQL
- SQLInsert
- SQLUpdate
- SQLDelete

5.10.1.5.2.30 SQLUpdate Property

Used to specify a SQL statement that will be used when applying an update to a dataset.

Class

TCustomDADataSet

Syntax

```
property SQLUpdate: TStrings;
```

Remarks

Use the SQLUpdate property to specify a SQL statement that will be used when applying an update to a dataset. Statements can be parameterized queries. Names of the parameters should be the same as field names. The parameters prefixed with OLD_ allow to use current values of fields prior to the actual operation.
Use ReturnParam to return OUT parameters back to the dataset.
To create a SQLUpdate statement at design-time, use the query statement editor.

Example

```
UPDATE Orders
   set
      ShipName = :ShipName
   WHERE
      OrderID = :Old_OrderID
```

See Also

- SQL
- SQLInsert
- SQLDelete
- SQLRefresh

5.10.1.5.2.31 UniDirectional Property

Used if an application does not need bidirectional access to records in the result set.

Class

TCustomDADataSet

Syntax

```
property UniDirectional: boolean default False;
```

Remarks

Traditionally SQL cursors are unidirectional. They can travel only forward through a dataset. TCustomDADataset, however, permits bidirectional travelling by caching records. If an application does not need bidirectional access to the records in the result set, set UniDirectional to True. When UniDirectional is True, an application requires less memory and performance is improved. However, UniDirectional datasets cannot be modified. In FetchAll=False mode data is fetched on demand. When UniDirectional is set to True, data is fetched on demand as well, but obtained rows are not cached except for the current row. In case if the Unidirectional property is True, the FetchAll property will be automatically set to False. And if the FetchAll property is True, the Unidirectional property will be automatically set to False. The default value of UniDirectional is False, enabling forward and backward navigation.

Note: Pay attention to the specificity of using the FetchAll property=False

See Also

- TLiteQuery.FetchAll

5.10.1.5.3 Methods

Methods of the **TCustomDADataSet** class.

For a complete list of the **TCustomDADataSet** class members, see the TCustomDADataSet Members topic.

Public

Name	Description
AddWhere	Adds condition to the WHERE clause of SELECT statement in the SQL property.

ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec	Breaks execution of the SQL statement on the server.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
CreateBlobStream	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
DeleteWhere	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
Execute	Overloaded. Executes a SQL statement on the server.
Executing	Indicates whether SQL statement is still being executed.
Fetched	Used to learn whether TCustomDADataSet has already fetched all rows.

Fetching	Used to learn whether TCustomDADataSet is still fetching rows.
FetchingAll	Used to learn whether TCustomDADataSet is fetching all rows to the end.
FindKey	Searches for a record which contains specified field values.
FindMacro	Description is not available at the moment.
FindNearest	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam	Determines if a parameter with the specified name exists in a dataset.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject	Returns a multireference shared object from field.
GetFieldPrecision	Retrieves the precision of a number field.
GetFieldScale	Retrieves the scale of a number field.
GetKeyFieldNames	Provides a list of available key field names.
GetOrderBy	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.

LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock	Locks the current record.
MacroByName	Finds a Macro with the name passed in Name.
ParamByName	Sets or uses parameter information for a specific parameter based on its name.
Prepare	Allocates, opens, and parses cursor for a query.
RefreshRecord	Actualizes field values for the current record.
RestoreSQL	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from	Indicates that subsequent assignments to field values specify

TMemDataSet)	the start of the range of rows to include in the dataset.
SQLSaved	Determines if the SQL property value was saved to the BaseSQL property.
UnLock	Releases a record lock.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- TCustomDADataSet Class
- TCustomDADataSet Class Members

5.10.1.5.3.1 AddWhere Method

Adds condition to the WHERE clause of SELECT statement in the SQL property.

Class

TCustomDADataSet

Syntax

```
procedure AddWhere(const Condition: string);
```

Parameters

Condition

Holds the condition that will be added to the WHERE clause.

Remarks

Call the AddWhere method to add a condition to the WHERE clause of SELECT statement in the SQL property.

If SELECT has no WHERE clause, AddWhere creates it.

Note: the AddWhere method is implicitly called by RefreshRecord. The AddWhere method works for the SELECT statements only.

Note: the AddWhere method adds a value to the WHERE condition as is. If you expect this value to be enclosed in brackets, you should bracket it explicitly.

See Also

- DeleteWhere

5.10.1.5.3.2 BreakExec Method

Breaks execution of the SQL statement on the server.

Class

TCustomDADataSet

Syntax

```
procedure BreakExec; virtual;
```

Remarks

Call the BreakExec method to break execution of the SQL statement on the server. It makes sense to call BreakExec only from another thread.

5.10.1.5.3.3 CreateBlobStream Method

Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.

Class

TCustomDADataSet

Syntax

```
function CreateBlobStream(Field: TField; Mode: TBlobStreamMode):
TStream; override;
```

Parameters

Field

Holds the BLOB field for reading data from or writing data to from a stream.

Mode

Holds the stream mode, for which the stream will be used.

Return Value

The BLOB Stream.

Remarks

Call the CreateBlobStream method to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter. It must be a TBlobField component. You can specify whether the stream will be used for reading, writing, or updating the contents of the field with the Mode parameter.

5.10.1.5.3.4 DeleteWhere Method

Removes WHERE clause from the SQL property and assigns the BaseSQL property.

Class

TCustomDADataSet

Syntax

```
procedure DeleteWhere;
```

Remarks

Call the DeleteWhere method to remove WHERE clause from the the SQL property and assign BaseSQL.

See Also

- AddWhere
- BaseSQL

5.10.1.5.3.5 Execute Method

Executes a SQL statement on the server.

Class

TCustomDADataSet

Overload List

Name	Description
Execute	Executes a SQL statement on the server.
Execute(Iters: integer; Offset: integer)	Used to perform Batch operations .

Executes a SQL statement on the server.

Class

TCustomDADataSet

Syntax

```
procedure Execute; overload; virtual;
```

Remarks

Call the Execute method to execute a SQL statement on the server. If SQL statement is a query, Execute calls the Open method.
Execute implicitly prepares SQL statement by calling the TCustomDADataSet.Prepare method if the TCustomDADataSet.Options option is set to True and the statement has not been prepared yet. To speed up the performance in case of multiple Execute calls, an application should call Prepare before calling the Execute method for the first time.

See Also

- TCustomDADataSet.AfterExecute
- TCustomDADataSet.Executing
- TCustomDADataSet.Prepare

Used to perform Batch operations .

Class

TCustomDADataSet

Syntax

```
procedure Execute(Iters: integer; Offset: integer = 0); overload;
virtual;
```

Parameters

Iters

Specifies the number of inserted rows.

Offset

Points the array element, which the Batch operation starts from. 0 by default.

Remarks

The Execute method executes the specified batch SQL query. See the Batch operations article for samples.

See Also

- Batch operations

5.10.1.5.3.6 Executing Method

Indicates whether SQL statement is still being executed.

Class

TCustomDADataSet

Syntax

```
function Executing: boolean;
```

Return Value

True, if SQL statement is still being executed.

Remarks

Check Executing to learn whether TCustomDADataSet is still executing SQL statement.

5.10.1.5.3.7 Fetched Method

Used to learn whether TCustomDADataSet has already fetched all rows.

Class

TCustomDADataSet

Syntax

```
function Fetched: boolean; virtual;
```

Return Value

True, if all rows are fetched.

Remarks

Check Fetched to learn whether TCustomDADataSet has already fetched all rows.

See Also

- Fetching

5.10.1.5.3.8 Fetching Method

Used to learn whether TCustomDADataSet is still fetching rows.

Class

TCustomDADataSet

Syntax

```
function Fetching: boolean;
```

Return Value

True, if TCustomDADataSet is still fetching rows.

Remarks

Check Fetching to learn whether TCustomDADataSet is still fetching rows. Use the Fetching method if NonBlocking is True.

See Also

- Executing

5.10.1.5.3.9 FetchingAll Method

Used to learn whether TCustomDADataSet is fetching all rows to the end.

Class

TCustomDADataSet

Syntax

```
function FetchingAll: boolean;
```

Return Value

True, if TCustomDADataSet is fetching all rows to the end.

Remarks

Check FetchingAll to learn whether TCustomDADataSet is fetching all rows to the end.

See Also

- Executing

5.10.1.5.3.10 FindKey Method

Searches for a record which contains specified field values.

Class

TCustomDADataSet

Syntax

```
function FindKey(const KeyValues: array of System.TVarRec):
Boolean;
```

Parameters

KeyValues
Holds a key.

Remarks

Call the FindKey method to search for a specific record in a dataset. KeyValues holds a comma-delimited array of field values, that is called a key.
This function is provided for BDE compatibility only. It is recommended to use functions TMemDataSet.Locate and TMemDataSet.LocateEx for the record search.

5.10.1.5.3.11 FindMacro Method

Class

TCustomDADataSet

Syntax

```
function FindMacro(const Value: string): TMacro;
```

Parameters

Value

See Also

- TMacro
- Macros
- MacroByName

5.10.1.5.3.12 FindNearest Method

Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.

Class

TCustomDADataSet

Syntax

```
procedure FindNearest(const KeyValues: array of System.TVarRec);
```

Parameters

KeyValues

Holds the values of the record key fields to which the cursor should be moved.

Remarks

Call the FindNearest method to move the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter. If there are no records that match or exceed the specified criteria, the cursor will not move. This function is provided for BDE compatibility only. It is recommended to use functions TMemDataSet.Locate and TMemDataSet.LocateEx for the record search.

See Also

- TMemDataSet.Locate
- TMemDataSet.LocateEx
- FindKey

5.10.1.5.3.13 FindParam Method

Determines if a parameter with the specified name exists in a dataset.

Class

TCustomDADataSet

Syntax

```
function FindParam(const Value: string): TDAParam;
```

Parameters

Value

Holds the name of the param for which to search.

Return Value

the TDAParam object for the specified Name. Otherwise it returns nil.

Remarks

Call the FindParam method to determine if a specified param component exists in a dataset. Name is the name of the param for which to search. If FindParam finds a param with a matching name, it returns a TDAParam object for the specified Name. Otherwise it returns nil.

See Also

- Params
- ParamByName

5.10.1.5.3.14 GetDataType Method

Returns internal field types defined in the MemData and accompanying modules.

Class

TCustomDADataSet

Syntax

```
function GetDataType(const FieldName: string): integer; virtual;
```

Parameters

FieldName

Holds the name of the field.

Return Value

internal field types defined in MemData and accompanying modules.

Remarks

Call the GetDataType method to return internal field types defined in the MemData and accompanying modules. Internal field data types extend the TFieldType type of VCL by specific database server data types. For example, ftString, ftFile, ftObject.

5.10.1.5.3.15 GetFieldObject Method

Returns a multireference shared object from field.

Class

TCustomDADataSet

Syntax

```
function GetFieldObject(Field: TField): TSharedObject;
overload;function GetFieldObject(Field: TField; RecBuf:
TRecordBuffer): TSharedObject; overload;function
GetFieldObject(FieldDesc: TFieldDesc): TSharedObject;
overload;function GetFieldObject(FieldDesc: TFieldDesc; RecBuf:
TRecordBuffer): TSharedObject; overload;function
GetFieldObject(const FieldName: string): TSharedObject; overload;
```

Parameters

FieldName

Holds the field name.

Return Value

multireference shared object.

Remarks

Call the GetFieldObject method to return a multireference shared object from field. If field does not hold one of the TSharedObject descendants, GetFieldObject raises an exception.

5.10.1.5.3.16 GetFieldPrecision Method

Retrieves the precision of a number field.

Class

TCustomDADataSet

Syntax

```
function GetFieldPrecision(const FieldName: string): integer;
```

Parameters

FieldName

Holds the existing field name.

Return Value

precision of number field.

Remarks

Call the GetFieldPrecision method to retrieve the precision of a number field. FieldName is the name of an existing field.

See Also

- GetFieldScale

5.10.1.5.3.17 GetFieldScale Method

Retrieves the scale of a number field.

Class

TCustomDADataSet

Syntax

```
function GetFieldScale(const FieldName: string): integer;
```

Parameters

FieldName

Holds the existing field name.

Return Value

the scale of the number field.

Remarks

Call the GetFieldScale method to retrieve the scale of a number field. FieldName is the name of an existing field.

See Also

- GetFieldPrecision

5.10.1.5.3.18 GetKeyFieldNames Method

Provides a list of available key field names.

Class

TCustomDADataSet

Syntax

```
procedure GetKeyFieldNames(List: TStrings);
```

Parameters

List

The list of available key field names

Return Value

Key field name

Remarks

Call the GetKeyFieldNames method to get the names of available key fields. Populates a string list with the names of key fields in tables.

See Also

- TCustomDAConnection.GetTableNames
- M:Devart.Dac.TCustomDAConnection.GetStoredProcNames(Borland.Vcl.TStrings,System.Boolean)

5.10.1.5.3.19 GetOrderBy Method

Retrieves an ORDER BY clause from a SQL statement.

Class

TCustomDADataSet

Syntax

```
function GetOrderBy: string;
```

Return Value

an ORDER BY clause from the SQL statement.

Remarks

Call the GetOrderBy method to retrieve an ORDER BY clause from a SQL statement.
Note: GetOrderBy and SetOrderBy methods serve to process only quite simple queries and don't support, for example, subqueries.

See Also

- SetOrderBy

5.10.1.5.3.20 GotoCurrent Method

Sets the current record in this dataset similar to the current record in another dataset.

Class

TCustomDADataSet

Syntax

```
procedure GotoCurrent(DataSet: TCustomDADataSet);
```

Parameters

DataSet

Holds the TCustomDADataSet descendant to synchronize the record position with.

Remarks

Call the GotoCurrent method to set the current record in this dataset similar to the current record in another dataset. The key fields in both these DataSets must be coincident.

See Also

- TMemDataSet.Locate

- TMemDataSet.LocateEx

5.10.1.5.3.21 Lock Method

Locks the current record.

Class

TCustomDADataSet

Syntax

```
procedure Lock; virtual;
```

Remarks

Call the Lock method to lock the current record by executing the statement that is defined in the SQLLock property.
The Lock method sets the savepoint with the name LOCK_ + <component_name>.

See Also

- UnLock

5.10.1.5.3.22 MacroByName Method

Finds a Macro with the name passed in Name.

Class

TCustomDADataSet

Syntax

```
function MacroByName(const Value: string): TMacro;
```

Parameters

Value
Holds the name of the Macro to search for.

Return Value
the Macro, if a match was found.

Remarks

Call the MacroByName method to find a Macro with the name passed in Name. If a match was found, MacroByName returns the Macro. Otherwise, an exception is raised. Use this method rather than a direct reference to the Items property to avoid depending on the order of

the entries.
To locate a parameter by name without raising an exception if the parameter is not found, use the FindMacro method.
To assign the value of macro use the TMacro.Value property.

Example

```
LiteQuery.SQL:= 'SELECT * FROM Scott.Dept ORDER BY &Order';
LiteQuery.MacroByName('Order').Value:= 'DeptNo';
LiteQuery.Open;
```

See Also

- TMacro
- Macros
- FindMacro

5.10.1.5.3.23 ParamByName Method

Sets or uses parameter information for a specific parameter based on its name.

Class

TCustomDADataSet

Syntax

```
function ParamByName(const Value: string): TDAParam;
```

Parameters

Value
Holds the name of the parameter for which to retrieve information.

Return Value
a TDAParam object.

Remarks

Call the ParamByName method to set or use parameter information for a specific parameter based on its name. Name is the name of the parameter for which to retrieve information. ParamByName is used to set a parameter's value at runtime and returns a TDAParam object.

Example

The following statement retrieves the current value of a parameter called "Contact" into an edit box:

```
Edit1.Text := Query1.ParamsByName('Contact').AsString;
```

See Also

- Params
- FindParam

5.10.1.5.3.24 Prepare Method

Allocates, opens, and parses cursor for a query.

Class

TCustomDADataSet

Syntax

```
procedure Prepare; override;
```

Remarks

Call the Prepare method to allocate, open, and parse cursor for a query. Calling Prepare before executing a query improves application performance.
The UnPrepare method unprepares a query.
Note: When you change the text of a query at runtime, the query is automatically closed and unprepared.

See Also

- TMemDataSet.Prepared
- TMemDataSet.UnPrepare
- Options

5.10.1.5.3.25 RefreshRecord Method

Actualizes field values for the current record.

Class

TCustomDADataSet

Syntax

```
procedure RefreshRecord;
```

Remarks

Call the RefreshRecord method to actualize field values for the current record. RefreshRecord performs query to database and refetches new field values from the returned cursor.

See Also

- RefreshOptions
- SQLRefresh

5.10.1.5.3.26 RestoreSQL Method

Restores the SQL property modified by AddWhere and SetOrderBy.

Class

TCustomDADataSet

Syntax

```
procedure RestoreSQL;
```

Remarks

Call the RestoreSQL method to restore the SQL property modified by AddWhere and SetOrderBy.

See Also

- AddWhere
- SetOrderBy
- SaveSQL
- SQLSaved

5.10.1.5.3.27 SaveSQL Method

Saves the SQL property value to BaseSQL.

Class

TCustomDADataSet

Syntax

```
procedure SaveSQL;
```

Remarks

Call the SaveSQL method to save the SQL property value to the BaseSQL property.

See Also

- SQLSaved
- RestoreSQL
- BaseSQL

5.10.1.5.3.28 SetOrderBy Method

Builds an ORDER BY clause of a SELECT statement.

Class

TCustomDADataSet

Syntax

```
procedure SetOrderBy(const Fields: string);
```

Parameters

Fields

Holds the names of the fields which will be added to the ORDER BY clause.

Remarks

Call the SetOrderBy method to build an ORDER BY clause of a SELECT statement. The fields are identified by the comma-delimited field names.

Note: The GetOrderBy and SetOrderBy methods serve to process only quite simple queries and don't support, for example, subqueries.

Example

```
Query1.SetOrderBy('DeptNo;DName');
```

See Also

- GetOrderBy

5.10.1.5.3.29 SQLSaved Method

Determines if the SQL property value was saved to the BaseSQL property.

Class

TCustomDADataSet

Syntax

```
function SQLSaved: boolean;
```

Return Value

True, if the SQL property value was saved to the BaseSQL property.

Remarks

Call the SQLSaved method to know whether the SQL property value was saved to the BaseSQL property.

5.10.1.5.3.30 UnLock Method

Releases a record lock.

Class

TCustomDADataSet

Syntax

```
procedure UnLock;
```

Remarks

Call the Unlock method to release the record lock made by the Lock method before. Unlock is performed by rolling back to the savepoint set by the Lock method.

See Also

- Lock

5.10.1.5.4 Events

Events of the **TCustomDADataSet** class.

For a complete list of the **TCustomDADataSet** class members, see the TCustomDADataSet Members topic.

Public

Name	Description
AfterExecute	Occurs after a component has executed a query to database.
AfterFetch	Occurs after dataset finishes fetching data from server.

AfterUpdateExecute	Occurs after executing insert, delete, update, lock and refresh operations.
BeforeFetch	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute	Occurs before executing insert, delete, update, lock, and refresh operations.
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from **TMemDataSet**)	Occurs when a single update component can not handle the updates.

See Also

- TCustomDADataSet Class
- TCustomDADataSet Class Members

5.10.1.5.4.1 AfterExecute Event

Occurs after a component has executed a query to database.

Class

TCustomDADataSet

Syntax

```
property AfterExecute: TAfterExecuteEvent;
```

Remarks

Occurs after a component has executed a query to database.

See Also

- TCustomDADataSet.Execute

5.10.1.5.4.2 AfterFetch Event

Occurs after dataset finishes fetching data from server.

Class

TCustomDADataSet

Syntax

```
property AfterFetch: TAfterFetchEvent;
```

Remarks

The AfterFetch event occurs after dataset finishes fetching data from server.

See Also

- BeforeFetch

5.10.1.5.4.3 AfterUpdateExecute Event

Occurs after executing insert, delete, update, lock and refresh operations.

Class

TCustomDADataSet

Syntax

```
property AfterUpdateExecute: TUpdateExecuteEvent;
```

Remarks

Occurs after executing insert, delete, update, lock, and refresh operations. You can use AfterUpdateExecute to set the parameters of corresponding statements.

5.10.1.5.4.4 BeforeFetch Event

Occurs before dataset is going to fetch block of records from the server.

Class

TCustomDADataSet

Syntax

```
property BeforeFetch: TBeforeFetchEvent;
```

Remarks

The BeforeFetch event occurs every time before dataset is going to fetch a block of records from the server. Set Cancel to True to abort current fetch operation.

See Also

- AfterFetch

5.10.1.5.4.5 BeforeUpdateExecute Event

Occurs before executing insert, delete, update, lock, and refresh operations.

Class

TCustomDADataSet

Syntax

```
property BeforeUpdateExecute: TUpdateExecuteEvent;
```

Remarks

Occurs before executing insert, delete, update, lock, and refresh operations. You can use BeforeUpdateExecute to set the parameters of corresponding statements.

See Also

- AfterUpdateExecute

5.10.1.6 TCustomDASQL Class

A base class for components executing SQL statements that do not return result sets.
For a list of all members of this type, see TCustomDASQL members.

Unit

DBAccess

Syntax

```
TCustomDASQL = class(TComponent);
```

Remarks

TCustomDASQL is a base class that defines functionality for descendant classes which access database using SQL statements. Applications never use TCustomDASQL objects directly. Instead they use descendants of TCustomDASQL.
Use TCustomDASQL when client application must execute SQL statement or call stored procedure on the database server. The SQL statement should not retrieve rows from the database.

5.10.1.6.1 Members

TCustomDASQL class overview.

Properties

Name	Description
ChangeCursor	Enables or disables changing screen cursor when executing commands in the NonBlocking mode.
Connection	Used to specify a connection object to use to connect to a data store.
Debug	Used to display executing statement, all its parameters' values, and the type of parameters.
FinalSQL	Used to return a SQL statement with expanded macros.
MacroCount	Used to get the number of macros associated with the Macros property.
Macros	Makes it possible to change SQL queries easily.
ParamCheck	Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.
ParamCount	Indicates the number of parameters in the Params property.
Params	Used to contain parameters for a SQL statement.
ParamValues	Used to get or set the values of individual field parameters that are identified by name.
Prepared	Used to indicate whether a query is prepared for execution.
RowsAffected	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL	Used to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called.

Methods

Name	Description
Execute	Overloaded. Executes a SQL statement on the server.
Executing	Checks whether TCustomDASQL still executes a SQL statement.
FindMacro	Searches for a macro with the specified name.
FindParam	Finds a parameter with the specified name.
MacroByName	Finds a Macro with the name passed in Name.
ParamByName	Finds a parameter with the specified name.
Prepare	Allocates, opens, and parses cursor for a query.
UnPrepare	Frees the resources allocated for a previously prepared query on the server and client sides.
WaitExecuting	Waits until TCustomDASQL executes a SQL statement.

Events

Name	Description
AfterExecute	Occurs after a SQL statement has been executed.

5.10.1.6.2 Properties

Properties of the **TCustomDASQL** class.

For a complete list of the **TCustomDASQL** class members, see the TCustomDASQL Members topic.

Public

Name	Description

ChangeCursor	Enables or disables changing screen cursor when executing commands in the NonBlocking mode.
Connection	Used to specify a connection object to use to connect to a data store.
Debug	Used to display executing statement, all its parameters' values, and the type of parameters.
FinalSQL	Used to return a SQL statement with expanded macros.
MacroCount	Used to get the number of macros associated with the Macros property.
Macros	Makes it possible to change SQL queries easily.
ParamCheck	Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.
ParamCount	Indicates the number of parameters in the Params property.
Params	Used to contain parameters for a SQL statement.
ParamValues	Used to get or set the values of individual field parameters that are identified by name.
Prepared	Used to indicate whether a query is prepared for execution.
RowsAffected	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL	Used to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called.

See Also

- TCustomDASQL Class
- TCustomDASQL Class Members

5.10.1.6.2.1 ChangeCursor Property

Enables or disables changing screen cursor when executing commands in the NonBlocking mode.

Class

TCustomDASQL

Syntax

```
property ChangeCursor: boolean;
```

Remarks

Set the ChangeCursor property to False to prevent the screen cursor from changing to crSQLArrow when executing commands in the NonBlocking mode. The default value is True.

5.10.1.6.2.2 Connection Property

Used to specify a connection object to use to connect to a data store.

Class

TCustomDASQL

Syntax

```
property Connection: TCustomDAConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.
Set at design-time by selecting from the list of provided TCustomDAConnection or its descendant class objects.
At runtime, link an instance of a TCustomDAConnection descendant to the Connection property.

5.10.1.6.2.3 Debug Property

Used to display executing statement, all its parameters' values, and the type of parameters.

Class

TCustomDASQL

Syntax

```
property Debug: boolean default False;
```

Remarks

Set the Debug property to True to display executing statement and all its parameters' values. Also displays the type of parameters.
You should add the LiteDacVcl unit to the uses clause of any unit in your project to make the Debug property work.
Note: If TLiteSQLMonitor is used in the project and the TLiteSQLMonitor.Active property is set to False, the debug window is not displayed.

See Also

- TCustomDADataSet.Debug

5.10.1.6.2.4 FinalSQL Property

Used to return a SQL statement with expanded macros.

Class

TCustomDASQL

Syntax

```
property FinalSQL: string;
```

Remarks

Read the FinalSQL property to return a SQL statement with expanded macros. This is the exact statement that will be passed on to the database server.

5.10.1.6.2.5 MacroCount Property

Used to get the number of macros associated with the Macros property.

Class

TCustomDASQL

Syntax

```
property MacroCount: word;
```

Remarks

Use the MacroCount property to get the number of macros associated with the Macros

property.

See Also

- Macros

5.10.1.6.2.6 Macros Property

Makes it possible to change SQL queries easily.

Class

TCustomDASQL

Syntax

```
property Macros: TMacros stored False;
```

Remarks

With the help of macros you can easily change SQL query text at design- or runtime. Marcos extend abilities of parameters and allow to change conditions in a WHERE clause or sort order in an ORDER BY clause. You just insert &MacroName in the SQL query text and change value of macro in the Macro property editor at design time or call the MacroByName function at run time. At the time of opening the query macro is replaced by its value.

See Also

- TMacro
- MacroByName
- Params

5.10.1.6.2.7 ParamCheck Property

Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.

Class

TCustomDASQL

Syntax

```
property ParamCheck: boolean default True;
```

Remarks

Use the ParamCheck property to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.
Set ParamCheck to True to let TCustomDASQL generate the Params property for the dataset based on a SQL statement automatically.
Setting ParamCheck to False can be used if the dataset component passes to a server the DDL statements that contain, for example, declarations of the stored procedures that will accept parameterized values themselves. The default value is True.

See Also

- Params

5.10.1.6.2.8 ParamCount Property

Indicates the number of parameters in the Params property.

Class

TCustomDASQL

Syntax

```
property ParamCount: word;
```

Remarks

Use the ParamCount property to determine how many parameters are there in the Params property.

5.10.1.6.2.9 Params Property

Used to contain parameters for a SQL statement.

Class

TCustomDASQL

Syntax

```
property Params: TDAParams stored False;
```

Remarks

Access the Params property at runtime to view and set parameter names, values, and data types dynamically (at design-time use the Parameters editor to set parameter properties). Params is a zero-based array of parameter records. Index specifies the array element to access. An easier way to set and retrieve parameter values when the name of each

parameter is known is to call ParamByName.

Example

Setting parameters at runtime:

```
procedure TForm1.Button1Click(Sender: TObject);
begin
with LiteSQL do
 begin
      SQL.Clear;
      SQL.Add('INSERT INTO Temp_Table(Id, Name)');
      SQL.Add('VALUES (:id, :Name)');
      ParamByName('Id').AsInteger := 55;
      Params[1].AsString := ' Green';
      Execute;
   end;
end;
```

See Also

- TDAParam
- FindParam
- Macros

5.10.1.6.2.10 ParamValues Property(Indexer)

Used to get or set the values of individual field parameters that are identified by name.

Class

TCustomDASQL

Syntax

```
property ParamValues[const ParamName: string]: Variant; default;
```

Parameters

ParamName

Holds parameter names separated by semicolon.

Remarks

Use the ParamValues property to get or set the values of individual field parameters that are identified by name.

Setting ParamValues sets the Value property for each parameter listed in the ParamName string. Specify the values as Variants.

Getting ParamValues retrieves an array of variants, each of which represents the value of one of the named parameters.

Note: The Params array is generated implicitly if ParamCheck property is set to True. If ParamName includes a name that does not match any of the parameters in Items, an exception is raised.

5.10.1.6.2.11 Prepared Property

Used to indicate whether a query is prepared for execution.

Class

TCustomDASQL

Syntax

```
property Prepared: boolean;
```

Remarks

Check the Prepared property to determine if a query is already prepared for execution. True means that the query has already been prepared. As a rule prepared queries are executed faster, but the preparation itself also takes some time. One of the proper cases for using preparation is parametrized queries that are executed several times.

See Also

- Prepare

5.10.1.6.2.12 RowsAffected Property

Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.

Class

TCustomDASQL

Syntax

```
property RowsAffected: integer;
```

Remarks

Check RowsAffected to determine how many rows were inserted, updated, or deleted during the last query operation. If RowsAffected is -1, the query has not inserted, updated, or deleted any rows.

5.10.1.6.2.13 SQL Property

Used to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called.

Class

TCustomDASQL

Syntax

```
property SQL: TStrings;
```

Remarks

Use the SQL property to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called. At design time the SQL property can be edited by invoking the String List editor in Object Inspector.

See Also

- FinalSQL
- TCustomDASQL.Execute

5.10.1.6.3 Methods

Methods of the **TCustomDASQL** class.
For a complete list of the **TCustomDASQL** class members, see the TCustomDASQL Members topic.

Public

Name	Description
Execute	Overloaded. Executes a SQL statement on the server.
Executing	Checks whether TCustomDASQL still executes a SQL statement.
FindMacro	Searches for a macro with the specified name.
FindParam	Finds a parameter with the specified name.
MacroByName	Finds a Macro with the name passed in Name.

ParamByName	Finds a parameter with the specified name.
Prepare	Allocates, opens, and parses cursor for a query.
UnPrepare	Frees the resources allocated for a previously prepared query on the server and client sides.
WaitExecuting	Waits until TCustomDASQL executes a SQL statement.

See Also

- TCustomDASQL Class
- TCustomDASQL Class Members

5.10.1.6.3.1 Execute Method

Executes a SQL statement on the server.

Class

TCustomDASQL

Overload List

Name	Description
Execute	Executes a SQL statement on the server.
Execute(Iters: integer; Offset: integer)	Used to perform Batch operations .

Executes a SQL statement on the server.

Class

TCustomDASQL

Syntax

```
procedure Execute; overload; virtual;
```

Remarks

Call the Execute method to execute a SQL statement on the server. If the SQL statement has OUT parameters, use the TCustomDASQL.ParamByName method or the TCustomDASQL.Params property to get their values. Iters argument specifies the number of

times this statement is executed for the DML array operations.

Used to perform Batch operations .

Class

TCustomDASQL

Syntax

```
procedure Execute(Iters: integer; Offset: integer = 0); overload;
virtual;
```

Parameters

Iters

Specifies the number of inserted rows.

Offset

Points the array element, which the Batch operation starts from. 0 by default.

Remarks

The Execute method executes the specified batch SQL query. See the Batch operations article for samples.

See Also

- Batch operations

5.10.1.6.3.2 Executing Method

Checks whether TCustomDASQL still executes a SQL statement.

Class

TCustomDASQL

Syntax

```
function Executing: boolean;
```

Return Value

True, if a SQL statement is still being executed by TCustomDASQL.

Remarks

Check Executing to find out whether TCustomDASQL still executes a SQL statement.

5.10.1.6.3.3 FindMacro Method

Searches for a macro with the specified name.

Class

TCustomDASQL

Syntax

```
function FindMacro(const Value: string): TMacro;
```

Parameters

Value

Holds the name of a macro to search for.

Return Value

the TMacro object, if a macro with the specified name has been found. If it has not, returns nil.

Remarks

Call the FindMacro method to find a macro with the specified name in a dataset.

See Also

- TMacro
- Macros
- MacroByName

5.10.1.6.3.4 FindParam Method

Finds a parameter with the specified name.

Class

TCustomDASQL

Syntax

```
function FindParam(const Value: string): TDAParam;
```

Parameters

Value

Holds the parameter name to search for.

Return Value

a TDAParm object, if a parameter with the specified name has been found. If it has not, returns nil.

Remarks

Call the FindParam method to find a parameter with the specified name in a dataset.

See Also

- ParamByName

5.10.1.6.3.5 MacroByName Method

Finds a Macro with the name passed in Name.

Class

TCustomDASQL

Syntax

```
function MacroByName(const Value: string): TMacro;
```

Parameters

Value

Holds the name of the Macro to search for.

Return Value

the Macro, if a match was found.

Remarks

Call the MacroByName method to find a Macro with the name passed in Name. If a match was found, MacroByName returns the Macro. Otherwise, an exception is raised. Use this method rather than a direct reference to the Items property to avoid depending on the order of the entries.

To locate a parameter by name without raising an exception if the parameter is not found, use the FindMacro method.

To assign the value of macro use the TMacro.Value property.

See Also

- TMacro
- Macros
- FindMacro

5.10.1.6.3.6 ParamByName Method

Finds a parameter with the specified name.

Class

TCustomDASQL

Syntax

```
function ParamByName(const Value: string): TDAParam;
```

Parameters

Value

Holds the name of the parameter to search for.

Return Value

a TDAParam object, if a match was found. Otherwise, an exception is raised.

Remarks

Use the ParamByName method to find a parameter with the specified name. If no parameter with the specified name found, an exception is raised.

Example

```
LiteSQL.Execute;
Edit1.Text := LiteSQL.ParamsByName('Contact').AsString;
```

See Also

- FindParam

5.10.1.6.3.7 Prepare Method

Allocates, opens, and parses cursor for a query.

Class

TCustomDASQL

Syntax

```
procedure Prepare; virtual;
```

Remarks

Call the Prepare method to allocate, open, and parse cursor for a query. Calling Prepare before executing a query improves application performance.

The UnPrepare method unprepares a query.

Note: When you change the text of a query at runtime, the query is automatically closed and unprepared.

See Also

- Prepared
- UnPrepare

5.10.1.6.3.8 UnPrepare Method

Frees the resources allocated for a previously prepared query on the server and client sides.

Class

TCustomDASQL

Syntax

```
procedure UnPrepare; virtual;
```

Remarks

Call the UnPrepare method to free resources allocated for a previously prepared query on the server and client sides.

See Also

- Prepare

5.10.1.6.3.9 WaitExecuting Method

Waits until TCustomDASQL executes a SQL statement.

Class

TCustomDASQL

Syntax

```
function WaitExecuting(TimeOut: integer = 0): boolean;
```

Parameters

TimeOut

Holds the time in seconds to wait while TCustomDASQL executes the SQL statement. Zero means infinite time.

Return Value

True, if the execution of a SQL statement was completed in the preset time.

Remarks

Call the WaitExecuting method to wait until TCustomDASQL executes a SQL statement.

See Also

- Executing

5.10.1.6.4 Events

Events of the **TCustomDASQL** class.

For a complete list of the **TCustomDASQL** class members, see the TCustomDASQL Members topic.

Public

Name	Description
AfterExecute	Occurs after a SQL statement has been executed.

See Also

- TCustomDASQL Class
- TCustomDASQL Class Members

5.10.1.6.4.1 AfterExecute Event

Occurs after a SQL statement has been executed.

Class

TCustomDASQL

Syntax

```
property AfterExecute: TAfterExecuteEvent;
```

Remarks

Occurs after a SQL statement has been executed. This event may be used for descendant components which use multithreaded environment.

See Also

- TCustomDASQL.Execute

5.10.1.7 TCustomDAUpdateSQL Class

A base class for components that provide DML statements for more flexible control over data modifications.
For a list of all members of this type, see TCustomDAUpdateSQL members.

Unit

DBAccess

Syntax

```
TCustomDAUpdateSQL = class(TComponent);
```

Remarks

TCustomDAUpdateSQL is a base class for components that provide DML statements for more flexible control over data modifications. Besides providing BDE compatibility, this component allows to associate a separate component for each update command.

See Also

- P:Devart.SQLiteDac.TCustomLiteDataSet.UpdateObject

5.10.1.7.1 Members

TCustomDAUpdateSQL class overview.

Properties

Name	Description
DataSet	Used to hold a reference to the TCustomDADataSet object that is being updated.
DeleteObject	Provides ability to perform advanced adjustment of the delete operations.
DeleteSQL	Used when deleting a record.
InsertObject	Provides ability to perform advanced adjustment of insert operations.
InsertSQL	Used when inserting a record.
LockObject	Provides ability to perform advanced adjustment of lock operations.

LockSQL	Used to lock the current record.
ModifyObject	Provides ability to perform advanced adjustment of modify operations.
ModifySQL	Used when updating a record.
RefreshObject	Provides ability to perform advanced adjustment of refresh operations.
RefreshSQL	Used to specify an SQL statement that will be used for refreshing the current record by TCustomDADataSet.RefreshRecord procedure.
SQL	Used to return a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties.

Methods

Name	Description
Apply	Sets parameters for a SQL statement and executes it to update a record.
ExecSQL	Executes a SQL statement.

5.10.1.7.2 Properties

Properties of the **TCustomDAUpdateSQL** class.

For a complete list of the **TCustomDAUpdateSQL** class members, see the TCustomDAUpdateSQL Members topic.

Public

Name	Description
DataSet	Used to hold a reference to the TCustomDADataSet object that is being updated.
SQL	Used to return a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties.

Published

Name	Description
DeleteObject	Provides ability to perform advanced adjustment of the delete operations.
DeleteSQL	Used when deleting a record.
InsertObject	Provides ability to perform advanced adjustment of insert operations.
InsertSQL	Used when inserting a record.
LockObject	Provides ability to perform advanced adjustment of lock operations.
LockSQL	Used to lock the current record.
ModifyObject	Provides ability to perform advanced adjustment of modify operations.
ModifySQL	Used when updating a record.
RefreshObject	Provides ability to perform advanced adjustment of refresh operations.
RefreshSQL	Used to specify an SQL statement that will be used for refreshing the current record by TCustomDADataSet.RefreshRecord procedure.

See Also

- TCustomDAUpdateSQL Class
- TCustomDAUpdateSQL Class Members

5.10.1.7.2.1 DataSet Property

Used to hold a reference to the TCustomDADataSet object that is being updated.

Class

TCustomDAUpdateSQL

Syntax

```
property DataSet: TCustomDADataSet;
```

Remarks

The DataSet property holds a reference to the TCustomDADataSet object that is being updated. Generally it is not used directly.

5.10.1.7.2.2 DeleteObject Property

Provides ability to perform advanced adjustment of the delete operations.

Class

TCustomDAUpdateSQL

Syntax

```
property DeleteObject: TComponent;
```

Remarks

Assign SQL component or a TCustomLiteDataSet descendant to this property to perform advanced adjustment of the delete operations. In some cases this can give some additional performance. Use the same principle to set the SQL property of an object as for setting the DeleteSQL property.

See Also

- DeleteSQL

5.10.1.7.2.3 DeleteSQL Property

Used when deleting a record.

Class

TCustomDAUpdateSQL

Syntax

```
property DeleteSQL: TStrings;
```

Remarks

Set the DeleteSQL property to a DELETE statement to use when deleting a record. Statements can be parameterized queries with parameter names corresponding to the

dataset field names.

5.10.1.7.2.4 InsertObject Property

Provides ability to perform advanced adjustment of insert operations.

Class

TCustomDAUpdateSQL

Syntax

```
property InsertObject: TComponent;
```

Remarks

Assign SQL component or TCustomLiteDataSet descendant to this property to perform advanced adjustment of insert operations. In some cases this can give some additional performance. Set the SQL property of the object in the same way as used for the InsertSQL property.

See Also

- InsertSQL

5.10.1.7.2.5 InsertSQL Property

Used when inserting a record.

Class

TCustomDAUpdateSQL

Syntax

```
property InsertSQL: TStrings;
```

Remarks

Set the InsertSQL property to an INSERT INTO statement to use when inserting a record. Statements can be parameterized queries with parameter names corresponding to the dataset field names.

5.10.1.7.2.6 LockObject Property

Provides ability to perform advanced adjustment of lock operations.

Class

TCustomDAUpdateSQL

Syntax

```
property LockObject: TComponent;
```

Remarks

Assign a SQL component or TCustomLiteDataSet descendant to this property to perform advanced adjustment of lock operations. In some cases that can give some additional performance. Set the SQL property of an object in the same way as used for the LockSQL property.

See Also

- LockSQL

5.10.1.7.2.7 LockSQL Property

Used to lock the current record.

Class

TCustomDAUpdateSQL

Syntax

```
property LockSQL: TStrings;
```

Remarks

Use the LockSQL property to lock the current record. Statements can be parameterized queries with parameter names corresponding to the dataset field names.

5.10.1.7.2.8 ModifyObject Property

Provides ability to perform advanced adjustment of modify operations.

Class

TCustomDAUpdateSQL

Syntax

```
property ModifyObject: TComponent;
```

Remarks

Assign a SQL component or TCustomLiteDataSet descendant to this property to perform advanced adjustment of modify operations. In some cases this can give some additional performance. Set the SQL property of the object in the same way as used for the ModifySQL property.

See Also

- ModifySQL

5.10.1.7.2.9 ModifySQL Property

Used when updating a record.

Class

TCustomDAUpdateSQL

Syntax

```
property ModifySQL: TStrings;
```

Remarks

Set ModifySQL to an UPDATE statement to use when updating a record. Statements can be parameterized queries with parameter names corresponding to the dataset field names.

5.10.1.7.2.10 RefreshObject Property

Provides ability to perform advanced adjustment of refresh operations.

Class

TCustomDAUpdateSQL

Syntax

```
property RefreshObject: TComponent;
```

Remarks

Assign a SQL component or TCustomLiteDataSet descendant to this property to perform advanced adjustment of refresh operations. In some cases that can give some additional performance. Set the SQL property of the object in the same way as used for the RefreshSQL property.

See Also

- RefreshSQL

5.10.1.7.2.11 RefreshSQL Property

Used to specify an SQL statement that will be used for refreshing the current record by TCustomDADataSet.RefreshRecord procedure.

Class

TCustomDAUpdateSQL

Syntax

```
property RefreshSQL: TStrings;
```

Remarks

Use the RefreshSQL property to specify a SQL statement that will be used for refreshing the current record by the TCustomDADataSet.RefreshRecord procedure.
You can assign to SQLRefresh a WHERE clause only. In such a case it is added to SELECT defined by the SQL property by TCustomDADataSet.AddWhere.
To create a RefreshSQL statement at design time, use the query statements editor.

See Also

- TCustomDADataSet.RefreshRecord

5.10.1.7.2.12 SQL Property(Indexer)

Used to return a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties.

Class

TCustomDAUpdateSQL

Syntax

```
property SQL[UpdateKind: TUpdateKind]: TStrings;
```

Parameters

UpdateKind
Specifies which of update SQL statements to return.

Remarks

Returns a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties, depending on the value of the UpdateKind index.

5.10.1.7.3 Methods

Methods of the **TCustomDAUpdateSQL** class.

For a complete list of the **TCustomDAUpdateSQL** class members, see the TCustomDAUpdateSQL Members topic.

Public

Name	Description
Apply	Sets parameters for a SQL statement and executes it to update a record.
ExecSQL	Executes a SQL statement.

See Also

- TCustomDAUpdateSQL Class
- TCustomDAUpdateSQL Class Members

5.10.1.7.3.1 Apply Method

Sets parameters for a SQL statement and executes it to update a record.

Class

TCustomDAUpdateSQL

Syntax

```
procedure Apply(UpdateKind: TUpdateKind); virtual;
```

Parameters

UpdateKind

Specifies which of update SQL statements to execute.

Remarks

Call the Apply method to set parameters for a SQL statement and execute it to update a record. UpdateKind indicates which SQL statement to bind and execute.

Apply is primarily intended for manually executing update statements from an OnUpdateRecord event handler.

Note: If a SQL statement does not contain parameters, it is more efficient to call ExecSQL instead of Apply.

See Also

- ExecSQL

5.10.1.7.3.2 ExecSQL Method

Executes a SQL statement.

Class

TCustomDAUpdateSQL

Syntax

```
procedure ExecSQL(UpdateKind: TUpdateKind);
```

Parameters

UpdateKind

Specifies the kind of update statement to be executed.

Remarks

Call the ExecSQL method to execute a SQL statement, necessary for updating the records belonging to a read-only result set when cached updates is enabled. UpdateKind specifies the statement to execute.

ExecSQL is primarily intended for manually executing update statements from the OnUpdateRecord event handler.

Note: To both bind parameters and execute a statement, call Apply.

See Also

- Apply

5.10.1.8 TDACondition Class

Represents a condition from the TDAConditions list.

For a list of all members of this type, see TDACondition members.

Unit

DBAccess

Syntax

```
TDACondition = class(TCollectionItem);
```

Remarks

Manipulate conditions using TDAConditions.

See Also

- TDAConditions

5.10.1.8.1 Members

TDACondition class overview.

Properties

Name	Description
Enabled	Indicates whether the condition is enabled or not
Name	The name of the condition
Value	The value of the condition

Methods

Name	Description
Disable	Disables the condition
Enable	Enables the condition

5.10.1.8.2 Properties

Properties of the **TDACondition** class.
For a complete list of the **TDACondition** class members, see the TDACondition Members topic.

Published

Name	Description
Enabled	Indicates whether the condition is enabled or not
Name	The name of the condition

Value	The value of the condition

See Also

- TDACondition Class
- TDACondition Class Members

5.10.1.8.2.1 Enabled Property

Indicates whether the condition is enabled or not

Class

TDACondition

Syntax

```
property Enabled: Boolean default True;
```

5.10.1.8.2.2 Name Property

The name of the condition

Class

TDACondition

Syntax

```
property Name: string;
```

5.10.1.8.2.3 Value Property

The value of the condition

Class

TDACondition

Syntax

```
property Value: string;
```

5.10.1.8.3 Methods

Methods of the **TDACondition** class.

For a complete list of the **TDACondition** class members, see the TDACondition Members

topic.

Public

Name	Description
Disable	Disables the condition
Enable	Enables the condition

See Also

- TDACondition Class
- TDACondition Class Members

5.10.1.8.3.1 Disable Method

Disables the condition

Class

TDACondition

Syntax

```
procedure Disable;
```

5.10.1.8.3.2 Enable Method

Enables the condition

Class

TDACondition

Syntax

```
procedure Enable;
```

5.10.1.9 TDAConditions Class

Holds a collection of TDACondition objects.
For a list of all members of this type, see TDAConditions members.

Unit

DBAccess

Syntax

```
TDAConditions = class(TCollection);
```

Remarks

The given example code

```
UniTable1.Conditions.Add('1','JOB="MANAGER"');
UniTable1.Conditions.Add('2','SAL>2500');
UniTable1.Conditions.Enable;
UniTable1.Open;
```

will return the following SQL:

```
SELECT * FROM EMP
WHERE (JOB="MANAGER")
and
(SAL<2500)
```

5.10.1.9.1 Members

TDAConditions class overview.

Properties

Name	Description
Condition	Used to iterate through all the conditions.
Enabled	Indicates whether the condition is enabled
Items	Used to iterate through all conditions.
Text	The property returns condition names and values as CONDITION_NAME=CONDITION
WhereSQL	Returns the SQL WHERE condition added in the Conditions property.

Methods

Name	Description
Add	Overloaded. Adds a condition to the WHERE clause of the query.

Delete	Deletes the condition
Disable	Disables the condition
Enable	Enables the condition
Find	Search for TDACondition (the condition) by its name. If found, the TDACondition object is returned, otherwise - nil.
Get	Retrieving a TDACondition object by its name. If found, the TDACondition object is returned, otherwise - an exception is raised.
IndexOf	Retrieving condition index by its name. If found, this condition index is returned, otherwise - the method returns -1.
Remove	Removes the condition

5.10.1.9.2 Properties

Properties of the **TDAConditions** class.
For a complete list of the **TDAConditions** class members, see the TDAConditions Members topic.

Public

Name	Description
Condition	Used to iterate through all the conditions.
Enabled	Indicates whether the condition is enabled
Items	Used to iterate through all conditions.
Text	The property returns condition names and values as CONDITION_NAME=CONDITION

WhereSQL	Returns the SQL WHERE condition added in the Conditions property.

See Also

- TDAConditions Class
- TDAConditions Class Members

5.10.1.9.2.1 Condition Property(Indexer)

Used to iterate through all the conditions.

Class

TDAConditions

Syntax

```
property Condition[Index: Integer]: TDACondition;
```

Parameters

Index

5.10.1.9.2.2 Enabled Property

Indicates whether the condition is enabled

Class

TDAConditions

Syntax

```
property Enabled: Boolean;
```

5.10.1.9.2.3 Items Property(Indexer)

Used to iterate through all conditions.

Class

TDAConditions

Syntax

```
property Items[Index: Integer]: TDACondition; default;
```

Parameters

Index
Holds an index in the range 0..Count - 1.

Remarks

Use the Items property to iterate through all conditions. Index identifies the index in the range 0..Count - 1. Items can reference a particular condition by its index, but the Condition property is preferred in order to avoid depending on the order of the conditions.

5.10.1.9.2.4 Text Property

The property returns condition names and values as CONDITION_NAME=CONDITION

Class

TDAConditions

Syntax

```
property Text: string;
```

5.10.1.9.2.5 WhereSQL Property

Returns the SQL WHERE condition added in the Conditions property.

Class

TDAConditions

Syntax

```
property WhereSQL: string;
```

5.10.1.9.3 Methods

Methods of the **TDAConditions** class.
For a complete list of the **TDAConditions** class members, see the TDAConditions Members topic.

Public

Name	Description
Add	Overloaded. Adds a condition to the WHERE clause of the query.
Delete	Deletes the condition

Disable	Disables the condition
Enable	Enables the condition
Find	Search for TDACondition (the condition) by its name. If found, the TDACondition object is returned, otherwise - nil.
Get	Retrieving a TDACondition object by its name. If found, the TDACondition object is returned, otherwise - an exception is raised.
IndexOf	Retrieving condition index by its name. If found, this condition index is returned, otherwise - the method returns -1.
Remove	Removes the condition

See Also

- TDAConditions Class
- TDAConditions Class Members

5.10.1.9.3.1 Add Method

Adds a condition to the WHERE clause of the query.

Class

TDAConditions

Overload List

Name	Description
Add(**const** Value: **string**; Enabled: Boolean)	Adds a condition to the WHERE clause of the query.
Add(**const** Name: **string**; **const** Value: **string**; Enabled: Boolean)	Adds a condition to the WHERE clause of the query.

Adds a condition to the WHERE clause of the query.

Class

TDAConditions

Syntax

```
function Add(const Value: string; Enabled: Boolean = True):
TDACondition; overload;
```

Parameters

Value

The value of the condition

Enabled

Indicates that the condition is enabled

Remarks

If you want then to access the condition, you should use Add and its name in the Name parameter.

The given example code will return the following SQL:

```
SELECT * FROM EMP
WHERE (JOB="MANAGER")
and
(SAL<2500)
```

Adds a condition to the WHERE clause of the query.

Class

TDAConditions

Syntax

```
function Add(const Name: string; const Value: string; Enabled:
Boolean = True): TDACondition; overload;
```

Parameters

Name

Sets the name of the condition

Value

The value of the condition

Enabled

Indicates that the condition is enabled

Remarks

The given example code will return the following SQL:

```
SELECT * FROM EMP
```

```
WHERE (JOB="MANAGER")
and
(SAL<2500)
```

5.10.1.9.3.2 Delete Method

Deletes the condition

Class

TDAConditions

Syntax

```
procedure Delete(Index: integer);
```

Parameters

Index

Index of the condition

5.10.1.9.3.3 Disable Method

Disables the condition

Class

TDAConditions

Syntax

```
procedure Disable;
```

5.10.1.9.3.4 Enable Method

Enables the condition

Class

TDAConditions

Syntax

```
procedure Enable;
```

5.10.1.9.3.5 Find Method

Search for TDACondition (the condition) by its name. If found, the TDACondition object is returned, otherwise - nil.

Class

TDAConditions

Syntax

```
function Find(const Name: string): TDACondition;
```

Parameters

Name

5.10.1.9.3.6 Get Method

Retrieving a TDACondition object by its name. If found, the TDACondition object is returned, otherwise - an exception is raised.

Class

TDAConditions

Syntax

```
function Get(const Name: string): TDACondition;
```

Parameters

Name

5.10.1.9.3.7 IndexOf Method

Retrieving condition index by its name. If found, this condition index is returned, otherwise - the method returns -1.

Class

TDAConditions

Syntax

```
function IndexOf(const Name: string): Integer;
```

Parameters

Name

5.10.1.9.3.8 Remove Method

Removes the condition

Class

TDAConditions

Syntax

```
procedure Remove(const Name: string);
```

Parameters

Name

Specifies the name of the removed condition

5.10.1.10 TDAConnectionOptions Class

This class allows setting up the behaviour of the TDAConnection class.

For a list of all members of this type, see TDAConnectionOptions members.

Unit

DBAccess

Syntax

```
TDAConnectionOptions = class(TPersistent);
```

5.10.1.10.1 Members

TDAConnectionOptions class overview.

Properties

Name	Description
AllowImplicitConnect	Specifies whether to allow or not implicit connection opening.
DefaultSortType	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode	Used to open a connection only when needed for performing a server call and closes after performing the operation.
KeepDesignConnected	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover	If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover

	operation can be performed after connection breaks.

5.10.1.10.2 Properties

Properties of the **TDAConnectionOptions** class.

For a complete list of the **TDAConnectionOptions** class members, see the TDAConnectionOptions Members topic.

Public

Name	Description
DefaultSortType	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode	Used to open a connection only when needed for performing a server call and closes after performing the operation.
KeepDesignConnected	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover	If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.

Published

Name	Description
AllowImplicitConnect	Specifies whether to allow or not implicit connection opening.

See Also

- TDAConnectionOptions Class
- TDAConnectionOptions Class Members

5.10.1.10.2.1 AllowImplicitConnect Property

Specifies whether to allow or not implicit connection opening.

Class

TDAConnectionOptions

Syntax

```
property AllowImplicitConnect: boolean default True;
```

Remarks

Use the AllowImplicitConnect property to specify whether allow or not implicit connection opening.
If a closed connection has AllowImplicitConnect set to True and a dataset that uses the connection is opened, the connection is opened implicitly to allow opening the dataset.
If a closed connection has AllowImplicitConnect set to False and a dataset that uses the connection is opened, an exception is raised.
The default value is True.

5.10.1.10.2.2 DefaultSortType Property

Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.

Class

TDAConnectionOptions

Syntax

```
property DefaultSortType: TSortType default stCaseSensitive;
```

Remarks

Use the DefaultSortType property to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.

5.10.1.10.2.3 DisconnectedMode Property

Used to open a connection only when needed for performing a server call and closes after performing the operation.

Class

TDAConnectionOptions

Syntax

```
property DisconnectedMode: boolean default False;
```

Remarks

If True, connection opens only when needed for performing a server call and closes after performing the operation. Datasets remain opened when connection closes. May be useful to save server resources and operate in unstable or expensive network. Drawback of using disconnect mode is that each connection establishing requires some time for authorization. If connection is often closed and opened it can slow down the application work. See the Disconnected Mode topic for more information.

5.10.1.10.2.4 KeepDesignConnected Property

Used to prevent an application from establishing a connection at the time of startup.

Class

TDAConnectionOptions

Syntax

```
property KeepDesignConnected: boolean default True;
```

Remarks

At the time of startup prevents application from establishing a connection even if the Connected property was set to True at design-time. Set KeepDesignConnected to False to initialize the connected property to False, even if it was True at design-time.

5.10.1.10.2.5 LocalFailover Property

If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.

Class

TDAConnectionOptions

Syntax

```
property LocalFailover: boolean default False;
```

Remarks

If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks. Read the Working in an Unstable Network topic for more information about using failover.

5.10.1.11 TDADataSetOptions Class

This class allows setting up the behaviour of the TDADataSet class.
For a list of all members of this type, see TDADataSetOptions members.

Unit

DBAccess

Syntax

```
TDADataSetOptions = class(TPersistent);
```

5.10.1.11.1 Members

TDADataSetOptions class overview.

Properties

Name	Description
AutoPrepare	Used to execute automatic TCustomDADataSet.Prepare on the query execution.
CacheCalcFields	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CompressBlobMode	Used to store values of the BLOB fields in compressed form.
DefaultValues	Used to request default values/ expressions from the server and assign them to the DefaultExpression property.
DetailDelay	Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.

FieldsOrigin	Used for TCustomDADataSet to fill the Origin property of the TField objects by appropriate value when opening a dataset.
FlatBuffers	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
InsertAllSetFields	Used to include all set dataset fields in the generated INSERT statement
LocalMasterDetail	Used for TCustomDADataSet to use local filtering to establish master/ detail relationship for detail dataset and does not refer to the server.
LongStrings	Used to represent string fields with the length that is greater than 255 as TStringField.
MasterFieldsNullable	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
NumberRange	Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.
QueryRecCount	Used for TCustomDADataSet to perform additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records.
QuoteNames	Used for TCustomDADataSet to quote all database object names in autogenerated SQL statements such as update SQL.
RemoveOnRefresh	Used for a dataset to locally remove a record that can not be found on the server.
RequiredFields	Used for TCustomDADataSet to set the Required property of the TField objects for the NOT NULL fields.
ReturnParams	Used to return the new value of fields to dataset after insert or update.

SetFieldsReadOnly	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.
StrictUpdate	Used for TCustomDADataSet to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar	Specifies whether to discard all trailing spaces in the string fields of a dataset.
UpdateAllFields	Used to include all dataset fields in the generated UPDATE and INSERT statements.
UpdateBatchSize	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

5.10.1.11.2 Properties

Properties of the **TDADataSetOptions** class.

For a complete list of the **TDADataSetOptions** class members, see the TDADataSetOptions Members topic.

Public

Name	Description
AutoPrepare	Used to execute automatic TCustomDADataSet.Prepare on the query execution.
CacheCalcFields	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CompressBlobMode	Used to store values of the BLOB fields in compressed form.
DefaultValues	Used to request default values/ expressions from the server and assign them to the DefaultExpression property.

DetailDelay	Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.
FieldsOrigin	Used for TCustomDADataSet to fill the Origin property of the TField objects by appropriate value when opening a dataset.
FlatBuffers	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
InsertAllSetFields	Used to include all set dataset fields in the generated INSERT statement
LocalMasterDetail	Used for TCustomDADataSet to use local filtering to establish master/ detail relationship for detail dataset and does not refer to the server.
LongStrings	Used to represent string fields with the length that is greater than 255 as TStringField.
MasterFieldsNullable	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
NumberRange	Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.
QueryRecCount	Used for TCustomDADataSet to perform additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records.
QuoteNames	Used for TCustomDADataSet to quote all database object names in autogenerated SQL statements such as update SQL.
RemoveOnRefresh	Used for a dataset to locally remove a record that can not be found on the server.

RequiredFields	Used for TCustomDADataSet to set the Required property of the TField objects for the NOT NULL fields.
ReturnParams	Used to return the new value of fields to dataset after insert or update.
SetFieldsReadOnly	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.
StrictUpdate	Used for TCustomDADataSet to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar	Specifies whether to discard all trailing spaces in the string fields of a dataset.
UpdateAllFields	Used to include all dataset fields in the generated UPDATE and INSERT statements.
UpdateBatchSize	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

See Also

- TDADataSetOptions Class
- TDADataSetOptions Class Members

5.10.1.11.2.1 AutoPrepare Property

Used to execute automatic TCustomDADataSet.Prepare on the query execution.

Class

TDADataSetOptions

Syntax

```
property AutoPrepare: boolean default False;
```

Remarks

Use the AutoPrepare property to execute automatic TCustomDADataSet.Prepare on the

query execution. Makes sense for cases when a query will be executed several times, for example, in Master/Detail relationships.

5.10.1.11.2.2 CacheCalcFields Property

Used to enable caching of the TField.Calculated and TField.Lookup fields.

Class

TDADataSetOptions

Syntax

```
property CacheCalcFields: boolean default False;
```

Remarks

Use the CacheCalcFields property to enable caching of the TField.Calculated and TField.Lookup fields. It can be useful for reducing CPU usage for calculated fields. Using caching of calculated and lookup fields increases memory usage on the client side.

5.10.1.11.2.3 CompressBlobMode Property

Used to store values of the BLOB fields in compressed form.

Class

TDADataSetOptions

Syntax

```
property CompressBlobMode: TCompressBlobMode default cbNone;
```

Remarks

Use the CompressBlobMode property to store values of the BLOB fields in compressed form. Add the MemData unit to uses list to use this option. Compression rate greatly depends on stored data, for example, usually graphic data compresses badly unlike text.

5.10.1.11.2.4 DefaultValues Property

Used to request default values/expressions from the server and assign them to the DefaultExpression property.

Class

TDADataSetOptions

Syntax

```
property DefaultValues: boolean default False;
```

Remarks

If True, the default values/expressions are requested from the server and assigned to the DefaultExpression property of TField objects replacing already existent values.

5.10.1.11.2.5 DetailDelay Property

Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.

Class

TDADataSetOptions

Syntax

```
property DetailDelay: integer default 0;
```

Remarks

Use the DetailDelay property to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset. If DetailDelay is 0 (the default value) then refreshing of detail dataset occurs immediately. The DetailDelay option should be used for detail dataset.

5.10.1.11.2.6 FieldsOrigin Property

Used for TCustomDADataSet to fill the Origin property of the TField objects by appropriate value when opening a dataset.

Class

TDADataSetOptions

Syntax

```
property FieldsOrigin: boolean default False;
```

Remarks

If True, TCustomDADataSet fills the Origin property of the TField objects by appropriate value when opening a dataset.

5.10.1.11.2.7 FlatBuffers Property

Used to control how a dataset treats data of the ftString and ftVarBytes fields.

Class

TDADataSetOptions

Syntax

```
property FlatBuffers: boolean default False;
```

Remarks

Use the FlatBuffers property to control how a dataset treats data of the ftString and ftVarBytes fields. When set to True, all data fetched from the server is stored in record pdata without unused tails.

5.10.1.11.2.8 InsertAllSetFields Property

Used to include all set dataset fields in the generated INSERT statement

Class

TDADataSetOptions

Syntax

```
property InsertAllSetFields: boolean default False;
```

Remarks

If True, all set dataset fields, including those set to NULL explicitly, will be included in the generated INSERT statements. Otherwise, only set fields containing not NULL values will be included to the generated INSERT statement.

5.10.1.11.2.9 LocalMasterDetail Property

Used for TCustomDADataSet to use local filtering to establish master/detail relationship for detail dataset and does not refer to the server.

Class

TDADataSetOptions

Syntax

```
property LocalMasterDetail: boolean default False;
```

Remarks

If True, for detail dataset in master-detail relationship TCustomDADataSet uses local filtering for establishing master/detail relationship and does not refer to the server. Otherwise detail dataset performs query each time a record is selected in master dataset. This option is useful for reducing server calls number, server resources economy. It can be useful for slow connection. The TMemDataSet.CachedUpdates mode can be used for detail dataset only when this option is set to true. Setting the LocalMasterDetail option to True is not recommended when detail table contains too many rows, because when it is set to False, only records that correspond to the current record in master dataset are fetched.

5.10.1.11.2.10 LongStrings Property

Used to represent string fields with the length that is greater than 255 as TStringField.

Class

TDADataSetOptions

Syntax

```
property LongStrings: boolean default True;
```

Remarks

Use the LongStrings property to represent string fields with the length that is greater than 255 as TStringField, not as TMemoField.

5.10.1.11.2.11 MasterFieldsNullable Property

Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).

Class

TDADataSetOptions

Syntax

```
property MasterFieldsNullable: boolean default False;
```

5.10.1.11.2.12 NumberRange Property

Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.

Class

TDADataSetOptions

Syntax

```
property NumberRange: boolean default False;
```

Remarks

Use the NumberRange property to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.

5.10.1.11.2.13 QueryRecCount Property

Used for TCustomDADataSet to perform additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records.

Class

TDADataSetOptions

Syntax

```
property QueryRecCount: boolean default False;
```

Remarks

If True, and the FetchAll property is False, TCustomDADataSet performs additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records. Does not have any effect if the FetchAll property is True.

5.10.1.11.2.14 QuoteNames Property

Used for TCustomDADataSet to quote all database object names in autogenerated SQL statements such as update SQL.

Class

TDADataSetOptions

Syntax

```
property QuoteNames: boolean default False;
```

Remarks

If True, TCustomDADataSet quotes all database object names in autogenerated SQL statements such as update SQL.

5.10.1.11.2.15 RemoveOnRefresh Property

Used for a dataset to locally remove a record that can not be found on the server.

Class

TDADataSetOptions

Syntax

```
property RemoveOnRefresh: boolean default True;
```

Remarks

When the RefreshRecord procedure can't find necessary record on the server and RemoveOnRefresh is set to True, dataset removes the record locally. Usually RefreshRecord can't find necessary record when someone else dropped the record or changed the key value of it.
This option makes sense only if the StrictUpdate option is set to False. If the StrictUpdate option is True, error will be generated regardless of the RemoveOnRefresh option value.

5.10.1.11.2.16 RequiredFields Property

Used for TCustomDADataSet to set the Required property of the TField objects for the NOT NULL fields.

Class

TDADataSetOptions

Syntax

```
property RequiredFields: boolean default True;
```

Remarks

If True, TCustomDADataSet sets the Required property of the TField objects for the NOT NULL fields. It is useful when table has a trigger which updates the NOT NULL fields.

5.10.1.11.2.17 ReturnParams Property

Used to return the new value of fields to dataset after insert or update.

Class

TDADataSetOptions

Syntax

```
property ReturnParams: boolean default False;
```

Remarks

Use the ReturnParams property to return the new value of fields to dataset after insert or update. The actual value of field after insert or update may be different from the value stored in the local memory if the table has a trigger. When ReturnParams is True, OUT parameters of the SQLInsert and SQLUpdate statements is assigned to the corresponding fields.

5.10.1.11.2.18 SetFieldsReadOnly Property

Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.

Class

TDADataSetOptions

Syntax

```
property SetFieldsReadOnly: boolean default True;
```

Remarks

If True, dataset sets the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated. Set this option for datasets that use automatic generation of the update SQL statements only.

5.10.1.11.2.19 StrictUpdate Property

Used for TCustomDADataSet to raise an exception when the number of updated or deleted records is not equal 1.

Class

TDADataSetOptions

Syntax

```
property StrictUpdate: boolean default True;
```

Remarks

If True, TCustomDADataSet raises an exception when the number of updated or deleted records is not equal 1. Setting this option also causes the exception if the RefreshRecord procedure returns more than one record. The exception does not occur when you execute SQL query, that doesn't return resultset.
Note: There can be problems if this option is set to True and triggers for UPDATE, DELETE, REFRESH commands that are defined for the table. So it is recommended to disable (set to False) this option with triggers.
TrimFixedChar specifies whether to discard all trailing spaces in the string fields of a dataset.

5.10.1.11.2.20 TrimFixedChar Property

Specifies whether to discard all trailing spaces in the string fields of a dataset.

Class

TDADataSetOptions

Syntax

```
property TrimFixedChar: boolean default True;
```

Remarks

Specifies whether to discard all trailing spaces in the string fields of a dataset.

5.10.1.11.2.21 UpdateAllFields Property

Used to include all dataset fields in the generated UPDATE and INSERT statements.

Class

TDADataSetOptions

Syntax

```
property UpdateAllFields: boolean default False;
```

Remarks

If True, all dataset fields will be included in the generated UPDATE and INSERT statements. Unspecified fields will have NULL value in the INSERT statements. Otherwise, only updated fields will be included to the generated update statements.

5.10.1.11.2.22 UpdateBatchSize Property

Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

Class

TDADataSetOptions

Syntax

```
property UpdateBatchSize: Integer default 1;
```

Remarks

Use the UpdateBatchSize property to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch. Takes effect only when updating dataset in the TMemDataSet.CachedUpdates mode. The default value is 1.

5.10.1.12 TDAEncryption Class

Used to specify the options of the data encryption in a dataset.
For a list of all members of this type, see TDAEncryption members.

Unit

DBAccess

Syntax

```
TDAEncryption = class(TPersistent);
```

Remarks

Set the properties of Encryption to specify the options of the data encryption in a dataset.

5.10.1.12.1 Members

TDAEncryption class overview.

Properties

Name	Description
Encryptor	Used to specify the encryptor class that will perform the data encryption.
Fields	Used to set field names for which encryption will be performed.

5.10.1.12.2 Properties

Properties of the **TDAEncryption** class.

For a complete list of the **TDAEncryption** class members, see the TDAEncryption Members topic.

Public

Name	Description
Encryptor	Used to specify the encryptor class that will perform the data encryption.

Published

Name	Description
Fields	Used to set field names for which encryption will be performed.

See Also

- TDAEncryption Class
- TDAEncryption Class Members

5.10.1.12.2.1 Encryptor Property

Used to specify the encryptor class that will perform the data encryption.

Class

TDAEncryption

Syntax

```
property Encryptor: TCREncryptor;
```

Remarks

Use the Encryptor property to specify the encryptor class that will perform the data encryption.

5.10.1.12.2.2 Fields Property

Used to set field names for which encryption will be performed.

Class

TDAEncryption

Syntax

```
property Fields: string;
```

Remarks

Used to set field names for which encryption will be performed. Field names must be separated by semicolons.

5.10.1.13 TDAMapRule Class

Class that formes rules for Data Type Mapping.
For a list of all members of this type, see TDAMapRule members.

Unit

DBAccess

Syntax

```
TDAMapRule = class(TMapRule);
```

Remarks

Using properties of this class, it is possible to change parameter values of the specified rules from the TDAMapRules set.

5.10.1.13.1 Members

TDAMapRule class overview.

Properties

Name	Description
DBLengthMax	Maximum DB field length, until which the rule is applied.
DBLengthMin	Minimum DB field length, starting from which the rule is applied.
DBScaleMax	Maximum DB field scale, until which the rule is applied to the specified DB field.
DBScaleMin	Minimum DB field Scale, starting from which the rule is applied to the

	specified DB field.
DBType	DB field type, that the rule is applied to.
FieldLength	The resultant field length in Delphi.
FieldName	DataSet field name, for which the rule is applied.
FieldScale	The resultant field Scale in Delphi.
FieldType	Delphi field type, that the specified DB type or DataSet field will be mapped to.
IgnoreErrors	Ignoring errors when converting data from DB to Delphi type.

5.10.1.13.2 Properties

Properties of the **TDAMapRule** class.

For a complete list of the **TDAMapRule** class members, see the TDAMapRule Members topic.

Published

Name	Description
DBLengthMax	Maximum DB field length, until which the rule is applied.
DBLengthMin	Minimum DB field length, starting from which the rule is applied.
DBScaleMax	Maximum DB field scale, until which the rule is applied to the specified DB field.
DBScaleMin	Minimum DB field Scale, starting from which the rule is applied to the specified DB field.
DBType	DB field type, that the rule is applied to.
FieldLength	The resultant field length in Delphi.

FieldName	DataSet field name, for which the rule is applied.
FieldScale	The resultant field Scale in Delphi.
FieldType	Delphi field type, that the specified DB type or DataSet field will be mapped to.
IgnoreErrors	Ignoring errors when converting data from DB to Delphi type.

See Also

- TDAMapRule Class
- TDAMapRule Class Members

5.10.1.13.2.1 DBLengthMax Property

Maximum DB field length, until which the rule is applied.

Class

TDAMapRule

Syntax

```
property DBLengthMax default rlAny;
```

Remarks

Setting maximum DB field length, until which the rule is applied to the specified DB field.

5.10.1.13.2.2 DBLengthMin Property

Minimum DB field length, starting from which the rule is applied.

Class

TDAMapRule

Syntax

```
property DBLengthMin default rlAny;
```

Remarks

Setting minimum DB field length, starting from which the rule is applied to the specified DB

field.

5.10.1.13.2.3 DBScaleMax Property

Maximum DB field scale, until which the rule is applied to the specified DB field.

Class

TDAMapRule

Syntax

```
property DBScaleMax default rlAny;
```

Remarks

Setting maximum DB field scale, until which the rule is applied to the specified DB field.

5.10.1.13.2.4 DBScaleMin Property

Minimum DB field Scale, starting from which the rule is applied to the specified DB field.

Class

TDAMapRule

Syntax

```
property DBScaleMin default rlAny;
```

Remarks

Setting minimum DB field Scale, starting from which the rule is applied to the specified DB field.

5.10.1.13.2.5 DBType Property

DB field type, that the rule is applied to.

Class

TDAMapRule

Syntax

```
property DBType default dtUnknown;
```

Remarks

Setting DB field type, that the rule is applied to. If the current rule is set for Connection, the rule will be applied to all fields of the specified type in all DataSets related to this Connection.

5.10.1.13.2.6 FieldLength Property

The resultant field length in Delphi.

Class

TDAMapRule

Syntax

```
property FieldLength default rlAny;
```

Remarks

Setting the Delphi field length after conversion.

5.10.1.13.2.7 FieldName Property

DataSet field name, for which the rule is applied.

Class

TDAMapRule

Syntax

```
property FieldName;
```

Remarks

Specifies the DataSet field name, that the rule is applied to. If the current rule is set for Connection, the rule will be applied to all fields with such name in DataSets related to this Connection.

5.10.1.13.2.8 FieldScale Property

The resultant field Scale in Delphi.

Class

TDAMapRule

Syntax

```
property FieldScale default rlAny;
```

Remarks

Setting the Delphi field Scale after conversion.

5.10.1.13.2.9 FieldType Property

Delphi field type, that the specified DB type or DataSet field will be mapped to.

Class

TDAMapRule

Syntax

```
property FieldType: TFieldType stored IsFieldTypeStored default
ftUnknown;
```

Remarks

Setting Delphi field type, that the specified DB type or DataSet field will be mapped to.

5.10.1.13.2.10 IgnoreErrors Property

Ignoring errors when converting data from DB to Delphi type.

Class

TDAMapRule

Syntax

```
property IgnoreErrors default False;
```

Remarks

Allows to ignore errors while data conversion in case if data or DB data format cannot be recorded to the specified Delphi field type. The default value is false.

5.10.1.14 TDAMapRules Class

Used for adding rules for DataSet fields mapping with both identifying by field name and by field type and Delphi field types.
For a list of all members of this type, see TDAMapRules members.

Unit

DBAccess

Syntax

```
TDAMapRules = class(TMapRules);
```

5.10.1.14.1 Members

TDAMapRules class overview.

Properties

Name	Description
IgnoreInvalidRules	Used to avoid raising exception on mapping rules that can't be applied.

5.10.1.14.2 Properties

Properties of the **TDAMapRules** class.
For a complete list of the **TDAMapRules** class members, see the TDAMapRules Members topic.

Published

Name	Description
IgnoreInvalidRules	Used to avoid raising exception on mapping rules that can't be applied.

See Also

- TDAMapRules Class
- TDAMapRules Class Members

5.10.1.14.2.1 IgnoreInvalidRules Property

Used to avoid raising exception on mapping rules that can't be applied.

Class

TDAMapRules

Syntax

```
property IgnoreInvalidRules: boolean default False;
```

Remarks

Allows to ignore errors (not to raise exception) during data conversion in case if the data or DB data format cannot be recorded to the specified Delphi field type. The default value is false.

Note: In order to ignore errors occurring during data conversion, use the TDAMapRule.IgnoreErrors property

See Also

- TDAMapRule.IgnoreErrors

5.10.1.15 TDAMetaData Class

A class for retrieving metainformation of the specified database objects in the form of dataset. For a list of all members of this type, see TDAMetaData members.

Unit

DBAccess

Syntax

```
TDAMetaData = class(TMemDataSet);
```

Remarks

TDAMetaData is a TDataSet descendant standing for retrieving metainformation of the specified database objects in the form of dataset. First of all you need to specify which kind of metainformation you want to see. For this you need to assign the TDAMetaData.MetaDataKind property. Provide one or more conditions in the TDAMetaData.Restrictions property to diminish the size of the resultset and get only information you are interested in.

Use the TDAMetaData.GetMetaDataKinds method to get the full list of supported kinds of meta data. With the TDAMetaData.GetRestrictions method you can find out what restrictions are applicable to the specified MetaDataKind.

Example

The code below demonstrates how to get information about columns of the 'emp' table:

```
MetaData.Connection := Connection;
MetaData.MetaDataKind := 'Columns';
MetaData.Restrictions.Values['TABLE_NAME'] := 'Emp';
MetaData.Open;
```

Inheritance Hierarchy

TMemDataSet
TDAMetaData

See Also

- TDAMetaData.MetaDataKind
- TDAMetaData.Restrictions
- TDAMetaData.GetMetaDataKinds
- TDAMetaData.GetRestrictions

5.10.1.15.1 Members

TDAMetaData class overview.

Properties

Name	Description
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Connection	Used to specify a connection object to use to connect to a data store.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MetaDataKind	Used to specify which kind of metainformation to show.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.

Restrictions	Used to provide one or more conditions restricting the list of objects to be described.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.

GetMetaDataKinds	Used to get values acceptable in the MetaDataKind property.
GetRestrictions	Used to find out which restrictions are applicable to a certain MetaDataKind.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from **TMemDataSet**)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.

UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from **TMemDataSet**)	Occurs when a single update component can not handle the updates.

5.10.1.15.2 Properties

Properties of the **TDAMetaData** class.

For a complete list of the **TDAMetaData** class members, see the TDAMetaData Members topic.

Public

Name	Description
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Connection	Used to specify a connection object to use to connect to a data store.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.

LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MetaDataKind	Used to specify which kind of metainformation to show.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
Restrictions	Used to provide one or more conditions restricting the list of objects to be described.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

See Also

- TDAMetaData Class
- TDAMetaData Class Members

5.10.1.15.2.1 Connection Property

Used to specify a connection object to use to connect to a data store.

Class

TDAMetaData

Syntax

```
property Connection: TCustomDAConnection;
```

Remarks

Use the Connection property to specify a connection object to use to connect to a data store. Set at design-time by selecting from the list of provided TCustomDAConnection or its descendant class objects.

At runtime, set the Connection property to reference an instanciated TCustomDAConnection

object.

5.10.1.15.2.2 MetaDataKind Property

Used to specify which kind of metainformation to show.

Class

TDAMetaData

Syntax

```
property MetaDataKind: string;
```

Remarks

This string property specifies which kind of metainformation to show. The value of this property should be assigned before activating the component. If MetaDataKind equals to an empty string (the default value), the full value list that this property accepts will be shown. They are described in the table below:

MetaDataKind	Description
Columns	show metainformation about columns of existing tables
Constraints	show metainformation about the constraints defined in the database
IndexColumns	show metainformation about indexed columns
Indexes	show metainformation about indexes in a database
MetaDataKinds	show the acceptable values of this property. You will get the same result if the MetadataKind property is an empty string
ProcedureParameters	show metainformation about parameters of existing procedures
Procedures	show metainformation about existing procedures
Restrictions	generates a dataset that describes which restrictions are applicable to each MetaDataKind
Tables	show metainformation about existing tables
Databases	show metainformation about existing databases

If you provide a value that equals neither of the values described in the table, an error will be raised.

See Also

- Restrictions

5.10.1.15.2.3 Restrictions Property

Used to provide one or more conditions restricting the list of objects to be described.

Class

TDAMetaData

Syntax

```
property Restrictions: TStrings;
```

Remarks

Use the Restriction list to provide one or more conditions restricting the list of objects to be described. To see the full list of restrictions and to which metadata kinds they are applicable, you should assign the Restrictions value to the MetaDataKind property and view the result.

See Also

- MetaDataKind

5.10.1.15.3 Methods

Methods of the **TDAMetaData** class.
For a complete list of the **TDAMetaData** class members, see the TDAMetaData Members topic.

Public

Name	Description
ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.

DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetMetaDataKinds	Used to get values acceptable in the MetaDataKind property.
GetRestrictions	Used to find out which restrictions are applicable to a certain MetaDataKind.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from **TMemDataSet**)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify

	the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- TDAMetaData Class
- TDAMetaData Class Members

5.10.1.15.3.1 GetMetaDataKinds Method

Used to get values acceptable in the MetaDataKind property.

Class

TDAMetaData

Syntax

```
procedure GetMetaDataKinds(List: TStrings);
```

Parameters

List

Holds the object that will be filled with metadata kinds (restrictions).

Remarks

Call the GetMetaDataKinds method to get values acceptable in the MetaDataKind property. The List parameter will be cleared and then filled with values.

See Also

- MetaDataKind

5.10.1.15.3.2 GetRestrictions Method

Used to find out which restrictions are applicable to a certain MetaDataKind.

Class

TDAMetaData

Syntax

```
procedure GetRestrictions(List: TStrings; const MetaDataKind:
string);
```

Parameters

List

Holds the object that will be filled with metadata kinds (restrictions).

MetaDataKind

Holds the metadata kind for which restrictions are returned.

Remarks

Call the GetRestrictions method to find out which restrictions are applicable to a certain MetaDataKind. The List parameter will be cleared and then filled with values.

See Also

- Restrictions
- GetMetaDataKinds

5.10.1.16 TDAParam Class

A class that forms objects to represent the values of the parameters set.
For a list of all members of this type, see TDAParam members.

Unit

DBAccess

Syntax

```
TDAParam = class(TParam);
```

Remarks

Use the properties of TDAParam to set the value of a parameter. Objects that use parameters create TDAParam objects to represent these parameters. For example, TDAParam objects are used by TCustomDASQL, TCustomDADataSet.

TDAParam shares many properties with TField, as both describe the value of a field in a dataset. However, a TField object has several properties to describe the field binding and the way the field is displayed, edited, or calculated, that are not needed in a TDAParam object. Conversely, TDAParam includes properties that indicate how the field value is passed as a parameter.

See Also

- TCustomDADataSet
- TCustomDASQL
- TDAParams

5.10.1.16.1 Members

TDAParam class overview.

Properties

Name	Description
AsBlob	Used to set and read the value of the BLOB parameter as string.
AsBlobRef	Used to set and read the value of the BLOB parameter as a TBlob object.
AsFloat	Used to assign the value for a float field to a parameter.
AsInteger	Used to assign the value for an integer field to the parameter.
AsLargeInt	Used to assign the value for a LargeInteger field to the parameter.
AsMemo	Used to assign the value for a memo field to the parameter.
AsMemoRef	Used to set and read the value of the memo parameter as a TBlob object.
AsSQLTimeStamp	Used to specify the value of the parameter when it represents a SQL timestamp field.
AsString	Used to assign the string value to the parameter.
AsWideString	Used to assign the Unicode string value to the parameter.

DataType	Indicates the data type of the parameter.
IsNull	Used to indicate whether the value assigned to a parameter is NULL.
ParamType	Used to indicate the type of use for a parameter.
Size	Specifies the size of a string type parameter.
Value	Used to represent the value of the parameter as Variant.

Methods

Name	Description
AssignField	Assigns field name and field value to a param.
AssignFieldValue	Assigns the specified field properties and value to a parameter.
LoadFromFile	Places the content of a specified file into a TDAParam object.
LoadFromStream	Places the content from a stream into a TDAParam object.
SetBlobData	Overloaded. Writes the data from a specified buffer to BLOB.

5.10.1.16.2 Properties

Properties of the **TDAParam** class.

For a complete list of the **TDAParam** class members, see the TDAParam Members topic.

Public

Name	Description
AsBlob	Used to set and read the value of the BLOB parameter as string.
AsBlobRef	Used to set and read the value of the BLOB parameter as a TBlob object.

AsFloat	Used to assign the value for a float field to a parameter.
AsInteger	Used to assign the value for an integer field to the parameter.
AsLargeInt	Used to assign the value for a LargeInteger field to the parameter.
AsMemo	Used to assign the value for a memo field to the parameter.
AsMemoRef	Used to set and read the value of the memo parameter as a TBlob object.
AsSQLTimeStamp	Used to specify the value of the parameter when it represents a SQL timestamp field.
AsString	Used to assign the string value to the parameter.
AsWideString	Used to assign the Unicode string value to the parameter.
IsNull	Used to indicate whether the value assigned to a parameter is NULL.

Published

Name	Description
DataType	Indicates the data type of the parameter.
ParamType	Used to indicate the type of use for a parameter.
Size	Specifies the size of a string type parameter.
Value	Used to represent the value of the parameter as Variant.

See Also

- TDAParam Class
- TDAParam Class Members

5.10.1.16.2.1 AsBlob Property

Used to set and read the value of the BLOB parameter as string.

Class

TDAParam

Syntax

```
property AsBlob: TBlobData;
```

Remarks

Use the AsBlob property to set and read the value of the BLOB parameter as string. Setting AsBlob will set the DataType property to ftBlob.

5.10.1.16.2.2 AsBlobRef Property

Used to set and read the value of the BLOB parameter as a TBlob object.

Class

TDAParam

Syntax

```
property AsBlobRef: TBlob;
```

Remarks

Use the AsBlobRef property to set and read the value of the BLOB parameter as a TBlob object. Setting AsBlobRef will set the DataType property to ftBlob.

5.10.1.16.2.3 AsFloat Property

Used to assign the value for a float field to a parameter.

Class

TDAParam

Syntax

```
property AsFloat: double;
```

Remarks

Use the AsFloat property to assign the value for a float field to the parameter. Setting AsFloat

will set the DataType property to dtFloat.
Read the AsFloat property to determine the value that was assigned to an output parameter, represented as Double. The value of the parameter will be converted to the Double value if possible.

5.10.1.16.2.4 AsInteger Property

Used to assign the value for an integer field to the parameter.

Class

TDAParam

Syntax

```
property AsInteger: LongInt;
```

Remarks

Use the AsInteger property to assign the value for an integer field to the parameter. Setting AsInteger will set the DataType property to dtInteger.
Read the AsInteger property to determine the value that was assigned to an output parameter, represented as a 32-bit integer. The value of the parameter will be converted to the Integer value if possible.

5.10.1.16.2.5 AsLargeInt Property

Used to assign the value for a LargeInteger field to the parameter.

Class

TDAParam

Syntax

```
property AsLargeInt: Int64;
```

Remarks

Set the AsLargeInt property to assign the value for an Int64 field to the parameter. Setting AsLargeInt will set the DataType property to dtLargeint.
Read the AsLargeInt property to determine the value that was assigned to an output parameter, represented as a 64-bit integer. The value of the parameter will be converted to the Int64 value if possible.

5.10.1.16.2.6 AsMemo Property

Used to assign the value for a memo field to the parameter.

Class

TDAParam

Syntax

```
property AsMemo: string;
```

Remarks

Use the AsMemo property to assign the value for a memo field to the parameter. Setting AsMemo will set the DataType property to ftMemo.

5.10.1.16.2.7 AsMemoRef Property

Used to set and read the value of the memo parameter as a TBlob object.

Class

TDAParam

Syntax

```
property AsMemoRef: TBlob;
```

Remarks

Use the AsMemoRef property to set and read the value of the memo parameter as a TBlob object. Setting AsMemoRef will set the DataType property to ftMemo.

5.10.1.16.2.8 AsSQLTimeStamp Property

Used to specify the value of the parameter when it represents a SQL timestamp field.

Class

TDAParam

Syntax

```
property AsSQLTimeStamp: TSQLTimeStamp;
```

Remarks

Set the AsSQLTimeStamp property to assign the value for a SQL timestamp field to the

parameter. Setting AsSQLTimeStamp sets the DataType property to ftTimeStamp.

5.10.1.16.2.9 AsString Property

Used to assign the string value to the parameter.

Class

TDAParam

Syntax

```
property AsString: string;
```

Remarks

Use the AsString property to assign the string value to the parameter. Setting AsString will set the DataType property to ftString.
Read the AsString property to determine the value that was assigned to an output parameter represented as a string. The value of the parameter will be converted to a string.

5.10.1.16.2.10 AsWideString Property

Used to assign the Unicode string value to the parameter.

Class

TDAParam

Syntax

```
property AsWideString: string;
```

Remarks

Set AsWideString to assign the Unicode string value to the parameter. Setting AsWideString will set the DataType property to ftWideString.
Read the AsWideString property to determine the value that was assigned to an output parameter, represented as a Unicode string. The value of the parameter will be converted to a Unicode string.

5.10.1.16.2.11 DataType Property

Indicates the data type of the parameter.

Class

TDAParam

Syntax

```
property DataType: TFieldType stored IsDataTypeStored;
```

Remarks

DataType is set automatically when a value is assigned to a parameter. Do not set DataType for bound fields, as this may cause the assigned value to be misinterpreted.
Read DataType to learn the type of data that was assigned to the parameter. Every possible value of DataType corresponds to the type of a database field.

5.10.1.16.2.12 IsNull Property

Used to indicate whether the value assigned to a parameter is NULL.

Class

TDAParam

Syntax

```
property IsNull: boolean;
```

Remarks

Use the IsNull property to indicate whether the value assigned to a parameter is NULL.

5.10.1.16.2.13 ParamType Property

Used to indicate the type of use for a parameter.

Class

TDAParam

Syntax

```
property ParamType default DB . ptUnknown;
```

Remarks

Objects that use TDAParam objects to represent field parameters set ParamType to indicate the type of use for a parameter.
To learn the description of TParamType refer to Delphi Help.

5.10.1.16.2.14 Size Property

Specifies the size of a string type parameter.

Class

TDAParam

Syntax

```
property Size: integer default 0;
```

Remarks

Use the Size property to indicate the maximum number of characters the parameter may contain. Use the Size property only for Output parameters of the **ftString, ftFixedChar, ftBytes, ftVarBytes,** or **ftWideString** type.

5.10.1.16.2.15 Value Property

Used to represent the value of the parameter as Variant.

Class

TDAParam

Syntax

```
property Value: variant stored IsValueStored;
```

Remarks

The Value property represents the value of the parameter as Variant.
Use Value in generic code that manipulates the values of parameters without the need to know the field type the parameter represent.

5.10.1.16.3 Methods

Methods of the **TDAParam** class.
For a complete list of the **TDAParam** class members, see the TDAParam Members topic.

Public

Name	Description
AssignField	Assigns field name and field value to a param.

AssignFieldValue	Assigns the specified field properties and value to a parameter.
LoadFromFile	Places the content of a specified file into a TDAParam object.
LoadFromStream	Places the content from a stream into a TDAParam object.
SetBlobData	Overloaded. Writes the data from a specified buffer to BLOB.

See Also

- TDAParam Class
- TDAParam Class Members

5.10.1.16.3.1 AssignField Method

Assigns field name and field value to a param.

Class

TDAParam

Syntax

```
procedure AssignField(Field: TField);
```

Parameters

Field

Holds the field which name and value should be assigned to the param.

Remarks

Call the AssignField method to assign field name and field value to a param.

5.10.1.16.3.2 AssignFieldValue Method

Assigns the specified field properties and value to a parameter.

Class

TDAParam

Syntax

```
procedure AssignFieldValue(Field: TField; const Value: Variant);
```

```
virtual;
```

Parameters

Field

Holds the field the properties of which will be assigned to the parameter.

Value

Holds the value for the parameter.

Remarks

Call the AssignFieldValue method to assign the specified field properties and value to a parameter.

5.10.1.16.3.3 LoadFromFile Method

Places the content of a specified file into a TDAParam object.

Class

TDAParam

Syntax

```
procedure LoadFromFile(const FileName: string; BlobType:
TBlobType);
```

Parameters

FileName

Holds the name of the file.

BlobType

Holds a value that modifies the DataType property so that this TDAParam object now holds the BLOB value.

Remarks

Use the LoadFromFile method to place the content of a file specified by FileName into a TDAParam object. The BlobType value modifies the DataType property so that this TDAParam object now holds the BLOB value.

See Also

- LoadFromStream

5.10.1.16.3.4 LoadFromStream Method

Places the content from a stream into a TDAParam object.

Class

TDAParam

Syntax

```
procedure LoadFromStream(Stream: TStream; BlobType: TBlobType);
virtual;
```

Parameters

Stream

Holds the stream to copy content from.

BlobType

Holds a value that modifies the DataType property so that this TDAParam object now holds the BLOB value.

Remarks

Call the LoadFromStream method to place the content from a stream into a TDAParam object. The BlobType value modifies the DataType property so that this TDAParam object now holds the BLOB value.

See Also

- LoadFromFile

5.10.1.16.3.5 SetBlobData Method

Writes the data from a specified buffer to BLOB.

Class

TDAParam

Overload List

Name	Description
SetBlobData(Buffer: TValueBuffer)	Writes the data from a specified buffer to BLOB.
SetBlobData(Buffer: IntPtr; Size: Integer)	Writes the data from a specified buffer to BLOB.

Writes the data from a specified buffer to BLOB.

Class

TDAParam

Syntax

```
procedure SetBlobData(Buffer: TValueBuffer); overload;
```

Parameters

Buffer

Holds the pointer to the data.

Writes the data from a specified buffer to BLOB.

Class

TDAParam

Syntax

```
procedure SetBlobData(Buffer: IntPtr; Size: Integer); overload;
```

Parameters

Buffer

Holds the pointer to data.

Size

Holds the number of bytes to read from the buffer.

Remarks

Call the SetBlobData method to write data from a specified buffer to BLOB.

5.10.1.17 TDAParams Class

This class is used to manage a list of TDAParam objects for an object that uses field parameters.
For a list of all members of this type, see TDAParams members.

Unit

DBAccess

Syntax

```
TDAParams = class(TParams);
```

Remarks

Use TDAParams to manage a list of TDAParam objects for an object that uses field parameters. For example, TCustomDADataSet objects and TCustomDASQL objects use TDAParams objects to create and access their parameters.

See Also

- TCustomDADataSet.Params
- TCustomDASQL.Params
- TDAParam

5.10.1.17.1 Members

TDAParams class overview.

Properties

Name	Description
Items	Used to interate through all parameters.

Methods

Name	Description
FindParam	Searches for a parameter with the specified name.
ParamByName	Searches for a parameter with the specified name.

5.10.1.17.2 Properties

Properties of the **TDAParams** class.

For a complete list of the **TDAParams** class members, see the TDAParams Members topic.

Public

Name	Description
Items	Used to interate through all parameters.

See Also

- TDAParams Class
- TDAParams Class Members

5.10.1.17.2.1 Items Property(Indexer)

Used to interate through all parameters.

Class

TDAParams

Syntax

```
property Items[Index: integer]: TDAParam; default;
```

Parameters

Index

Holds an index in the range 0..Count - 1.

Remarks

Use the Items property to iterate through all parameters. Index identifies the index in the range 0..Count - 1. Items can reference a particular parameter by its index, but the ParamByName method is preferred in order to avoid depending on the order of the parameters.

5.10.1.17.3 Methods

Methods of the **TDAParams** class.

For a complete list of the **TDAParams** class members, see the TDAParams Members topic.

Public

Name	Description
FindParam	Searches for a parameter with the specified name.
ParamByName	Searches for a parameter with the specified name.

See Also

- TDAParams Class
- TDAParams Class Members

5.10.1.17.3.1 FindParam Method

Searches for a parameter with the specified name.

Class

TDAParams

Syntax

```
function FindParam(const Value: string): TDAParam;
```

Parameters

Value

Holds the parameter name.

Return Value

a parameter, if a match was found. Nil otherwise.

Remarks

Use the FindParam method to find a parameter with the name passed in Value. If a match is found, FindParam returns the parameter. Otherwise, it returns nil. Use this method rather than a direct reference to the Items property to avoid depending on the order of the entries. To locate more than one parameter at a time by name, use the GetParamList method instead. To get only the value of a named parameter, use the ParamValues property.

5.10.1.17.3.2 ParamByName Method

Searches for a parameter with the specified name.

Class

TDAParams

Syntax

```
function ParamByName(const Value: string): TDAParam;
```

Parameters

Value

Holds the parameter name.

Return Value

a parameter, if the match was found. otherwise an exception is raised.

Remarks

Use the ParamByName method to find a parameter with the name passed in Value. If a

match was found, ParamByName returns the parameter. Otherwise, an exception is raised. Use this method rather than a direct reference to the Items property to avoid depending on the order of the entries.
To locate a parameter by name without raising an exception if the parameter is not found, use the FindParam method.

5.10.1.18 TDATransaction Class

A base class that implements functionality for controlling transactions.
For a list of all members of this type, see TDATransaction members.

Unit

DBAccess

Syntax

```
TDATransaction = class(TComponent);
```

Remarks

TDATransaction is a base class for components implementing functionality for managing transactions.
Do not create instances of TDATransaction. Use descendants of the TDATransaction class instead.

5.10.1.18.1 Members

TDATransaction class overview.

Properties

Name	Description
Active	Used to determine if the transaction is active.
DefaultCloseAction	Used to specify the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

Methods

Name	Description

Commit	Commits the current transaction.
Rollback	Discards all modifications of data associated with the current transaction and ends the transaction.
StartTransaction	Begins a new transaction.

Events

Name	Description
OnCommit	Occurs after the transaction has been successfully committed.
OnCommitRetaining	Occurs after CommitRetaining has been executed.
OnError	Used to process errors that occur during executing a transaction.
OnRollback	Occurs after the transaction has been successfully rolled back.
OnRollbackRetaining	Occurs after RollbackRetaining has been executed.

5.10.1.18.2 Properties

Properties of the **TDATransaction** class.

For a complete list of the **TDATransaction** class members, see the TDATransaction Members topic.

Public

Name	Description
Active	Used to determine if the transaction is active.
DefaultCloseAction	Used to specify the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

See Also

- TDATransaction Class
- TDATransaction Class Members

5.10.1.18.2.1 Active Property

Used to determine if the transaction is active.

Class

TDATransaction

Syntax

```
property Active: boolean;
```

Remarks

Indicates whether the transaction is active. This property is read-only.

5.10.1.18.2.2 DefaultCloseAction Property

Used to specify the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

Class

TDATransaction

Syntax

```
property DefaultCloseAction: TCRTransactionAction default
taRollback;
```

Remarks

Use DefaultCloseAction to specify the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

5.10.1.18.3 Methods

Methods of the **TDATransaction** class.
For a complete list of the **TDATransaction** class members, see the TDATransaction Members topic.

Public

Name	Description
Commit	Commits the current transaction.
Rollback	Discards all modifications of data associated with the current transaction and ends the transaction.
StartTransaction	Begins a new transaction.

See Also

- TDATransaction Class
- TDATransaction Class Members

5.10.1.18.3.1 Commit Method

Commits the current transaction.

Class

TDATransaction

Syntax

```
procedure Commit; virtual;
```

Remarks

Call the Commit method to commit the current transaction. On commit server writes permanently all pending data updates associated with the current transaction to the database, and then finishes the transaction.

See Also

- Rollback
- StartTransaction

5.10.1.18.3.2 Rollback Method

Discards all modifications of data associated with the current transaction and ends the transaction.

Class

TDATransaction

Syntax

```
procedure Rollback; virtual;
```

Remarks

Call Rollback to cancel all data modifications made within the current transaction to the database server, and finish the transaction.

See Also

- Commit
- StartTransaction

5.10.1.18.3.3 StartTransaction Method

Begins a new transaction.

Class

TDATransaction

Syntax

```
procedure StartTransaction; virtual;
```

Remarks

Call the StartTransaction method to begin a new transaction against the database server. Before calling StartTransaction, an application should check the Active property. If TDATransaction.Active is True, indicating that a transaction is already in progress, a subsequent call to StartTransaction will raise EDatabaseError. An active transaction must be finished by call to Commit or Rollback before call to StartTransaction. Call to StartTransaction when connection is closed also will raise EDatabaseError.
Updates, insertions, and deletions that take place after a call to StartTransaction are held by the server until the application calls Commit to save the changes, or Rollback to cancel them.

See Also

- Commit
- Rollback

5.10.1.18.4 Events

Events of the **TDATransaction** class.
For a complete list of the **TDATransaction** class members, see the TDATransaction

Members topic.

Public

Name	Description
OnCommit	Occurs after the transaction has been successfully committed.
OnCommitRetaining	Occurs after CommitRetaining has been executed.
OnError	Used to process errors that occur during executing a transaction.
OnRollback	Occurs after the transaction has been successfully rolled back.
OnRollbackRetaining	Occurs after RollbackRetaining has been executed.

See Also

- TDATransaction Class
- TDATransaction Class Members

5.10.1.18.4.1 OnCommit Event

Occurs after the transaction has been successfully committed.

Class

TDATransaction

Syntax

```
property OnCommit: TNotifyEvent;
```

Remarks

The OnCommit event fires when the M:Devart.Dac.TDATransaction.Commit method is executed, just after the transaction is successfully committed. In order to respond to the M:Devart.SQLiteDac.TLiteTransaction.CommitRetaining() method execution, the OnCommitRetaining event is used. When an error occurs during commit, the OnError event fires.

See Also

- Commit
- M:Devart.SQLiteDac.TLiteTransaction.CommitRetaining()
- OnCommitRetaining
- OnError

5.10.1.18.4.2 OnCommitRetaining Event

Occurs after CommitRetaining has been executed.

Class

TDATransaction

Syntax

```
property OnCommitRetaining: TNotifyEvent;
```

Remarks

The OnCommitRetaining event fires when the M:Devart.SQLiteDac.TLiteTransaction.CommitRetaining() method is executed, just after the transaction is successfully committed. In order to respond to the M:Devart.Dac.TDATransaction.Commit method execution, the OnCommit event is used. When an error occurs during commit, the OnError event fired.

See Also

- M:Devart.SQLiteDac.TLiteTransaction.CommitRetaining()
- Commit
- OnCommit
- OnError

5.10.1.18.4.3 OnError Event

Used to process errors that occur during executing a transaction.

Class

TDATransaction

Syntax

```
property OnError: TDATransactionErrorEvent;
```

Remarks

Add a handler to the OnError event to process errors that occur during executing a transaction control statements such as Commit, Rollback. Check the E parameter to get the error code.

See Also

- Commit
- Rollback
- StartTransaction

5.10.1.18.4.4 OnRollback Event

Occurs after the transaction has been successfully rolled back.

Class

TDATransaction

Syntax

```
property OnRollback: TNotifyEvent;
```

Remarks

The OnRollback event fires when the M:Devart.Dac.TDATransaction.Rollback method is executed, just after the transaction is successfully rolled back. In order to respond to the M:Devart.SQLiteDac.TLiteTransaction.RollbackRetaining() method execution, the OnRollbackRetaining event is used.
When an error occurs during rollback, the OnError event fired.

See Also

- Rollback
- M:Devart.SQLiteDac.TLiteTransaction.RollbackRetaining()
- OnRollbackRetaining
- OnError

5.10.1.18.4.5 OnRollbackRetaining Event

Occurs after RollbackRetaining has been executed.

Class

TDATransaction

Syntax

```
property OnRollbackRetaining: TNotifyEvent;
```

Remarks

The OnRollbackRetaining event fires when the M:Devart.SQLiteDac.TLiteTransaction.RollbackRetaining() method is executed, just after the transaction is successfully rolled back. In order to respond to the M:Devart.Dac.TDATransaction.Rollback method execution, the OnRollback event is used. When an error occurs during rollback, the OnError event fired.

See Also

- Rollback
- M:Devart.SQLiteDac.TLiteTransaction.RollbackRetaining()
- OnRollback
- OnError

5.10.1.19 TMacro Class

Object that represents the value of a macro.
For a list of all members of this type, see TMacro members.

Unit

DBAccess

Syntax

```
TMacro = class(TCollectionItem);
```

Remarks

TMacro object represents the value of a macro. Macro is a variable that holds string value. You just insert **&** MacroName in a SQL query text and change the value of macro by the Macro property editor at design time or the Value property at run time. At the time of opening query macro is replaced by its value.
If by any reason it is not convenient for you to use the ' **&** ' symbol as a character of macro replacement, change the value of the MacroChar variable.

See Also

- TMacros

5.10.1.19.1 Members

TMacro class overview.

Properties

Name	Description
Active	Used to determine if the macro should be expanded.
AsDateTime	Used to set the TDataTime value to a macro.
AsFloat	Used to set the float value to a macro.
AsInteger	Used to set the integer value to a macro.
AsString	Used to assign the string value to a macro.
Name	Used to identify a particular macro.
Value	Used to set the value to a macro.

5.10.1.19.2 Properties

Properties of the **TMacro** class.

For a complete list of the **TMacro** class members, see the TMacro Members topic.

Public

Name	Description
AsDateTime	Used to set the TDataTime value to a macro.
AsFloat	Used to set the float value to a macro.
AsInteger	Used to set the integer value to a macro.
AsString	Used to assign the string value to a macro.

Published

Name	Description
Active	Used to determine if the macro should be expanded.
Name	Used to identify a particular macro.
Value	Used to set the value to a macro.

See Also

- TMacro Class
- TMacro Class Members

5.10.1.19.2.1 Active Property

Used to determine if the macro should be expanded.

Class

TMacro

Syntax

```
property Active: boolean default True;
```

Remarks

When set to True, the macro will be expanded, otherwise macro definition is replaced by null string. You can use the Active property to modify the SQL property.
The default value is True.

Example

```
LiteQuery.SQL.Text := 'SELECT * FROM Dept WHERE DeptNo > 20 &Cond1';
LiteQuery.Macros[0].Value := 'and DName is NULL';
LiteQuery.Macros[0].Active:= False;
```

5.10.1.19.2.2 AsDateTime Property

Used to set the TDataTime value to a macro.

Class

TMacro

Syntax

```
property AsDateTime: TDateTime;
```

Remarks

Use the AsDataTime property to set the TDataTime value to a macro.

5.10.1.19.2.3 AsFloat Property

Used to set the float value to a macro.

Class

TMacro

Syntax

```
property AsFloat: double;
```

Remarks

Use the AsFloat property to set the float value to a macro.

5.10.1.19.2.4 AsInteger Property

Used to set the integer value to a macro.

Class

TMacro

Syntax

```
property AsInteger: integer;
```

Remarks

Use the AsInteger property to set the integer value to a macro.

5.10.1.19.2.5 AsString Property

Used to assign the string value to a macro.

Class

TMacro

Syntax

```
property AsString: string;
```

Remarks

Use the AsString property to assign the string value to a macro. Read the AsString property to determine the value of macro represented as a string.

5.10.1.19.2.6 Name Property

Used to identify a particular macro.

Class

TMacro

Syntax

```
property Name: string;
```

Remarks

Use the Name property to identify a particular macro.

5.10.1.19.2.7 Value Property

Used to set the value to a macro.

Class

TMacro

Syntax

```
property Value: string;
```

Remarks

Use the Value property to set the value to a macro.

5.10.1.20 TMacros Class

Controls a list of TMacro objects for the TCustomDASQL.Macros or TCustomDADataSet components.
For a list of all members of this type, see TMacros members.

Unit

DBAccess

Syntax

```
TMacros = class(TCollection);
```

Remarks

Use TMacros to manage a list of TMacro objects for the TCustomDASQL or TCustomDADataSet components.

See Also

- TMacro

5.10.1.20.1 Members

TMacros class overview.

Properties

Name	Description
Items	Used to iterate through all the macros parameters.

Methods

Name	Description
AssignValues	Copies the macros values and properties from the specified source.
Expand	Changes the macros in the passed SQL statement to their values.
FindMacro	Searches for a TMacro object by its name.
IsEqual	Compares itself with another TMacro object.
MacroByName	Used to search for a macro with the specified name.
Scan	Creates a macros from the passed SQL statement.

5.10.1.20.2 Properties

Properties of the **TMacros** class.

For a complete list of the **TMacros** class members, see the TMacros Members topic.

Public

Name	Description
Items	Used to iterate through all the macros parameters.

See Also

- TMacros Class
- TMacros Class Members

5.10.1.20.2.1 Items Property(Indexer)

Used to iterate through all the macros parameters.

Class

TMacros

Syntax

```
property Items[Index: integer]: TMacro; default;
```

Parameters

Index

Holds the index in the range 0..Count - 1.

Remarks

Use the Items property to iterate through all macros parameters. Index identifies the index in the range 0..Count - 1.

5.10.1.20.3 Methods

Methods of the **TMacros** class.

For a complete list of the **TMacros** class members, see the TMacros Members topic.

Public

Name	Description

AssignValues	Copies the macros values and properties from the specified source.
Expand	Changes the macros in the passed SQL statement to their values.
FindMacro	Searches for a TMacro object by its name.
IsEqual	Compares itself with another TMacro object.
MacroByName	Used to search for a macro with the specified name.
Scan	Creates a macros from the passed SQL statement.

See Also

- TMacros Class
- TMacros Class Members

5.10.1.20.3.1 AssignValues Method

Copies the macros values and properties from the specified source.

Class

TMacros

Syntax

```
procedure AssignValues(Value: TMacros);
```

Parameters

Value

Holds the source to copy the macros values and properties from.

Remarks

The Assign method copies the macros values and properties from the specified source. Macros are not recreated. Only the values of macros with matching names are assigned.

5.10.1.20.3.2 Expand Method

Changes the macros in the passed SQL statement to their values.

Class

TMacros

Syntax

```
procedure Expand(var SQL: string);
```

Parameters

SQL

Holds the passed SQL statement.

Remarks

Call the Expand method to change the macros in the passed SQL statement to their values.

5.10.1.20.3.3 FindMacro Method

Searches for a TMacro object by its name.

Class

TMacros

Syntax

```
function FindMacro(const Value: string): TMacro;
```

Parameters

Value

Holds the value of a macro to search for.

Return Value

TMacro object if a match was found, nil otherwise.

Remarks

Call the FindMacro method to find a macro with the name passed in Value. If a match is found, FindMacro returns the macro. Otherwise, it returns nil. Use this method rather than a direct reference to the Items property to avoid depending on the order of the entries.

5.10.1.20.3.4 IsEqual Method

Compares itself with another TMacro object.

Class

TMacros

Syntax

```
function IsEqual(Value: TMacros): boolean;
```

Parameters

Value

Holds the values of TMacro objects.

Return Value

True, if the number of TMacro objects and the values of all TMacro objects are equal.

Remarks

Call the IsEqual method to compare itself with another TMacro object. Returns True if the number of TMacro objects and the values of all TMacro objects are equal.

5.10.1.20.3.5 MacroByName Method

Used to search for a macro with the specified name.

Class

TMacros

Syntax

```
function MacroByName(const Value: string): TMacro;
```

Parameters

Value

Holds a name of the macro to search for.

Return Value

TMacro object, if a macro with specified name was found.

Remarks

Call the MacroByName method to find a Macro with the name passed in Value. If a match is found, MacroByName returns the Macro. Otherwise, an exception is raised. Use this method rather than a direct reference to the Items property to avoid depending on the order of the entries.

To locate a macro by name without raising an exception if the parameter is not found, use the FindMacro method.

5.10.1.20.3.6 Scan Method

Creates a macros from the passed SQL statement.

Class

TMacros

Syntax

```
procedure Scan(const SQL: string);
```

Parameters

SQL

Holds the passed SQL statement.

Remarks

Call the Scan method to create a macros from the passed SQL statement. On that all existing TMacro objects are cleared.

5.10.1.21 TPoolingOptions Class

This class allows setting up the behaviour of the connection pool.
For a list of all members of this type, see TPoolingOptions members.

Unit

DBAccess

Syntax

```
TPoolingOptions = class(TPersistent);
```

5.10.1.21.1 Members

TPoolingOptions class overview.

Properties

Name	Description
ConnectionLifetime	Used to specify the maximum time during which an opened connection can be used by connection pool.

MaxPoolSize	Used to specify the maximum number of connections that can be opened in connection pool.
MinPoolSize	Used to specify the minimum number of connections that can be opened in the connection pool.
Validate	Used for a connection to be validated when it is returned from the pool.

5.10.1.21.2 Properties

Properties of the **TPoolingOptions** class.

For a complete list of the **TPoolingOptions** class members, see the TPoolingOptions Members topic.

Published

Name	Description
ConnectionLifetime	Used to specify the maximum time during which an opened connection can be used by connection pool.
MaxPoolSize	Used to specify the maximum number of connections that can be opened in connection pool.
MinPoolSize	Used to specify the minimum number of connections that can be opened in the connection pool.
Validate	Used for a connection to be validated when it is returned from the pool.

See Also

- TPoolingOptions Class
- TPoolingOptions Class Members

5.10.1.21.2.1 ConnectionLifetime Property

Used to specify the maximum time during which an opened connection can be used by connection pool.

Class

`TPoolingOptions`

Syntax

```
property ConnectionLifetime: integer default
DefValConnectionLifetime;
```

Remarks

Use the ConnectionLifeTime property to specify the maximum time during which an opened connection can be used by connection pool. Measured in milliseconds. Pool deletes connections with exceeded connection lifetime when TCustomDAConnection is about to close. If the ConnectionLifetime property is set to 0 (by default), then the lifetime of connection is infinity. ConnectionLifetime concerns only inactive connections in the pool.

5.10.1.21.2.2 MaxPoolSize Property

Used to specify the maximum number of connections that can be opened in connection pool.

Class

TPoolingOptions

Syntax

```
property MaxPoolSize: integer default DefValMaxPoolSize;
```

Remarks

Specifies the maximum number of connections that can be opened in connection pool. Once this value is reached, no more connections are opened. The valid values are 1 and higher.

5.10.1.21.2.3 MinPoolSize Property

Used to specify the minimum number of connections that can be opened in the connection pool.

Class

TPoolingOptions

Syntax

```
property MinPoolSize: integer default DefValMinPoolSize;
```

Remarks

Use the MinPoolSize property to specify the minimum number of connections that can be opened in the connection pool.

5.10.1.21.2.4 Validate Property

Used for a connection to be validated when it is returned from the pool.

Class

TPoolingOptions

Syntax

```
property Validate: boolean default DefValValidate;
```

Remarks

If the Validate property is set to True, connection will be validated when it is returned from the pool. By default this option is set to False and pool does not validate connection when it is returned to be used by a TCustomDAConnection component.

5.10.1.22 TSmartFetchOptions Class

Smart fetch options are used to set up the behavior of the SmartFetch mode.
For a list of all members of this type, see TSmartFetchOptions members.

Unit

DBAccess

Syntax

```
TSmartFetchOptions = class(TPersistent);
```

5.10.1.22.1 Members

TSmartFetchOptions class overview.

Properties

Name	Description
Enabled	Sets SmartFetch mode enabled or not.
LiveBlock	Used to minimize memory consumption.
PrefetchedFields	List of fields additional to key fields that will be read from the database on dataset open.

SQLGetKeyValues	SQL query for the read key and prefetched fields from the database.

5.10.1.22.2 Properties

Properties of the **TSmartFetchOptions** class.

For a complete list of the **TSmartFetchOptions** class members, see the TSmartFetchOptions Members topic.

Published

Name	Description
Enabled	Sets SmartFetch mode enabled or not.
LiveBlock	Used to minimize memory consumption.
PrefetchedFields	List of fields additional to key fields that will be read from the database on dataset open.
SQLGetKeyValues	SQL query for the read key and prefetched fields from the database.

See Also

- TSmartFetchOptions Class
- TSmartFetchOptions Class Members

5.10.1.22.2.1 Enabled Property

Sets SmartFetch mode enabled or not.

Class

TSmartFetchOptions

Syntax

```
property Enabled: Boolean default False;
```

5.10.1.22.2.2 LiveBlock Property

Used to minimize memory consumption.

Class

TSmartFetchOptions

Syntax

```
property LiveBlock: Boolean default True;
```

Remarks

If LiveBlock is True, then on navigating through a dataset forward or backward, memory will be allocated for records count defined in the the FetchRows propety, and no additional memory will be allocated. But if you return records that were read from the database before, they will be read from the database again, because when you left block with these records, memory was free. So the LiveBlock mode minimizes memory consumption, but can decrease performance, because it can lead to repeated data reading from the database. The default value of LiveBlock is False.

5.10.1.22.2.3 PrefetchedFields Property

List of fields additional to key fields that will be read from the database on dataset open.

Class

TSmartFetchOptions

Syntax

```
property PrefetchedFields: string;
```

Remarks

If you are going to use locate, filter or sort by some fields, then these fields should be added to the prefetched fields list to avoid excessive reading from the database.

5.10.1.22.2.4 SQLGetKeyValues Property

SQL query for the read key and prefetched fields from the database.

Class

TSmartFetchOptions

Syntax

```
property SQLGetKeyValues: TStrings;
```

Remarks

SQLGetKeyValues is used when the basic SQL query is complex and the query for reading the key and prefetched fields can't be generated automatically.

5.10.2 Types

Types in the **DBAccess** unit.

Types

Name	Description
TAfterExecuteEvent	This type is used for the TCustomDADataSet.AfterExecute and TCustomDASQL.AfterExecute events.
TAfterFetchEvent	This type is used for the TCustomDADataSet.AfterFetch event.
TBeforeFetchEvent	This type is used for the TCustomDADataSet.BeforeFetch event.
TConnectionLostEvent	This type is used for the TCustomDAConnection.OnConnectionLost event.
TDAConnectionErrorEvent	This type is used for the TCustomDAConnection.OnError event.
TDATransactionErrorEvent	This type is used for the TDATransaction.OnError event.
TRefreshOptions	Represents the set of TRefreshOption.
TUpdateExecuteEvent	This type is used for the TCustomDADataSet.AfterUpdateExecute and TCustomDADataSet.BeforeUpdateExecute events.

5.10.2.1 TAfterExecuteEvent Procedure Reference

This type is used for the TCustomDADataSet.AfterExecute and TCustomDASQL.AfterExecute events.

Unit

DBAccess

Syntax

```
TAfterExecuteEvent = procedure (Sender: TObject; Result: boolean)
of object;
```

Parameters

Sender

An object that raised the event.

Result

The result is True if SQL statement is executed successfully. False otherwise.

5.10.2.2 TAfterFetchEvent Procedure Reference

This type is used for the TCustomDADataSet.AfterFetch event.

Unit

DBAccess

Syntax

```
TAfterFetchEvent = procedure (DataSet: TCustomDADataSet) of
object;
```

Parameters

DataSet

Holds the TCustomDADataSet descendant to synchronize the record position with.

5.10.2.3 TBeforeFetchEvent Procedure Reference

This type is used for the TCustomDADataSet.BeforeFetch event.

Unit

DBAccess

Syntax

```
TBeforeFetchEvent = procedure (DataSet: TCustomDADataSet; var
Cancel: boolean) of object;
```

Parameters

DataSet

Holds the TCustomDADataSet descendant to synchronize the record position with.

Cancel

True, if the current fetch operation should be aborted.

5.10.2.4 TConnectionLostEvent Procedure Reference

This type is used for the TCustomDAConnection.OnConnectionLost event.

Unit

DBAccess

Syntax

```
TConnectionLostEvent = procedure (Sender: TObject; Component:
TComponent; ConnLostCause: TConnLostCause; var RetryMode:
TRetryMode) of object;
```

Parameters

Sender
An object that raised the event.

Component

ConnLostCause
The reason of the connection loss.

RetryMode
The application behavior when connection is lost.

5.10.2.5 TDAConnectionErrorEvent Procedure Reference

This type is used for the TCustomDAConnection.OnError event.

Unit

DBAccess

Syntax

```
TDAConnectionErrorEvent = procedure (Sender: TObject; E: EDAError;
var Fail: boolean) of object;
```

Parameters

Sender
An object that raised the event.

E
The error information.

Fail
False, if an error dialog should be prevented from being displayed and EAbort exception should be raised to cancel current operation .

5.10.2.6 TDATransactionErrorEvent Procedure Reference

This type is used for the TDATransaction.OnError event.

Unit

DBAccess

Syntax

```
TDATransactionErrorEvent = procedure (Sender: TObject; E:
EDAError; var Fail: boolean) of object;
```

Parameters

Sender

An object that raised the event.

E

The error code.

Fail

False, if an error dialog should be prevented from being displayed and EAbort exception to cancel the current operation should be raised.

5.10.2.7 TRefreshOptions Set

Represents the set of TRefreshOption.

Unit

DBAccess

Syntax

```
TRefreshOptions = set of TRefreshOption;
```

5.10.2.8 TUpdateExecuteEvent Procedure Reference

This type is used for the TCustomDADataSet.AfterUpdateExecute and TCustomDADataSet.BeforeUpdateExecute events.

Unit

DBAccess

Syntax

```
TUpdateExecuteEvent = procedure (Sender: TDataSet; StatementTypes:
TStatementTypes; Params: TDAParams) of object;
```

Parameters

Sender
An object that raised the event.

StatementTypes
Holds the type of the SQL statement being executed.

Params
Holds the parameters with which the SQL statement will be executed.

5.10.3 Enumerations

Enumerations in the **DBAccess** unit.

Enumerations

Name	Description
TLabelSet	Sets the languauge of labels in the connect dialog.
TRefreshOption	Indicates when the editing record will be refreshed.
TRetryMode	Specifies the application behavior when connection is lost.

5.10.3.1 TLabelSet Enumeration

Sets the languauge of labels in the connect dialog.

Unit

DBAccess

Syntax

```
TLabelSet = (lsCustom, lsEnglish, lsFrench, lsGerman, lsItalian,
lsPolish, lsPortuguese, lsRussian, lsSpanish);
```

Values

Value	Meaning
lsCustom	Set the language of labels in the connect dialog manually.
lsEnglish	Set English as the language of labels in the connect dialog.
lsFrench	Set French as the language of labels in the connect dialog.
lsGerman	Set German as the language of labels in the connect dialog.

IsItalian	Set Italian as the language of labels in the connect dialog.
IsPolish	Set Polish as the language of labels in the connect dialog.
IsPortuguese	Set Portuguese as the language of labels in the connect dialog.
IsRussian	Set Russian as the language of labels in the connect dialog.
IsSpanish	Set Spanish as the language of labels in the connect dialog.

5.10.3.2 TRefreshOption Enumeration

Indicates when the editing record will be refreshed.

Unit

DBAccess

Syntax

```
TRefreshOption = (roAfterInsert, roAfterUpdate, roBeforeEdit);
```

Values

Value	Meaning
roAfterInsert	Refresh is performed after inserting.
roAfterUpdate	Refresh is performed after updating.
roBeforeEdit	Refresh is performed by Edit method.

5.10.3.3 TRetryMode Enumeration

Specifies the application behavior when connection is lost.

Unit

DBAccess

Syntax

```
TRetryMode = (rmRaise, rmReconnect, rmReconnectExecute);
```

Values

Value	Meaning
rmRaise	An exception is raised.
rmReconnect	Reconnect is performed and then exception is raised.
rmReconnectExecute	Reconnect is performed and abortive operation is reexecuted. Exception is not raised.

5.10.4 Variables

Variables in the **DBAccess** unit.

Variables

Name	Description
BaseSQLOldBehavior	After assigning SQL text and modifying it by AddWhere, DeleteWhere, and SetOrderBy, all subsequent changes of the SQL property will not be reflected in the BaseSQL property.
ChangeCursor	When set to True allows data access components to change screen cursor for the execution time.
SQLGeneratorCompatibility	The value of the TCustomDADataSet.BaseSQL property is used to complete the refresh SQL statement, if the manually assigned TCustomDAUpdateSQL.RefreshSQL property contains only WHERE clause.

5.10.4.1 BaseSQLOldBehavior Variable

After assigning SQL text and modifying it by AddWhere, DeleteWhere, and SetOrderBy, all subsequent changes of the SQL property will not be reflected in the BaseSQL property.

Unit

DBAccess

Syntax

```
BaseSQLOldBehavior: boolean = False;
```

Remarks

The BaseSQL property is similar to the SQL property, but it does not store changes made by the AddWhere, DeleteWhere, and SetOrderBy methods. After assigning SQL text and modifying it by one of these methods, all subsequent changes of the SQL property will not be reflected in the BaseSQL property. This behavior was changed in LiteDAC . To restore old behavior, set the BaseSQLOldBehavior variable to True.

5.10.4.2 ChangeCursor Variable

When set to True allows data access components to change screen cursor for the execution time.

Unit

DBAccess

Syntax

```
ChangeCursor: boolean = True;
```

5.10.4.3 SQLGeneratorCompatibility Variable

The value of the TCustomDADataSet.BaseSQL property is used to complete the refresh SQL statement, if the manually assigned TCustomDAUpdateSQL.RefreshSQL property contains only WHERE clause.

Unit

DBAccess

Syntax

```
SQLGeneratorCompatibility: boolean = False;
```

Remarks

If the manually assigned TCustomDAUpdateSQL.RefreshSQL property contains only WHERE clause, LiteDAC uses the value of the TCustomDADataSet.BaseSQL property to complete the refresh SQL statement. In this situation all modifications applied to the SELECT query by functions TCustomDADataSet.AddWhere, TCustomDADataSet.DeleteWhere are not taken into account. This behavior was changed in LiteDAC . To restore the old behavior, set the BaseSQLOldBehavior variable to True.

5.11 LiteAccess

This unit contains main components of LiteDAC

Classes

Name	Description
TCustomLiteDataSet	A base class that defines SQLite functionality for a dataset.

TCustomLiteTable	A base class that defines functionality for descendant classes which access data in a single table without writing SQL statements.
TCustomLiteUserCollation	A base class that provides SQLite functionality for working with user-defined collations.
TCustomLiteUserFunction	A base class that defines SQLite functionality for working with user-defined functions.
TLiteBackup	Implements SQLite Online Backup API functionality for performing backup (copying) the contents of one database into another database, overwriting the original content of the target database.
TLiteConnection	Represents an open connection to a SQLite database.
TLiteConnectionOptions	This class allows setting up the behaviour of the TLiteConnection class.
TLiteDataSetOptions	This class allows setting up the behaviour of the TCustomLiteDataSet class.
TLiteDataSource	TLiteDataSource provides an interface between a LiteDAC dataset components and data-aware controls on a form.
TLiteEncryptor	The class that performs encrypting and decrypting of data.
TLiteMetaData	A component for obtaining metainformation about database objects.
TLiteQuery	A component for executing queries and operating record sets. It also provides flexible way to update data.
TLiteSQL	A component for executing SQL statements.
TLiteTable	Accesses data in a single table without writing SQL statements.
TLiteUpdateSQL	Lets you tune update operations for the DataSet component.

TLiteUserCollation	A base class that provides SQLite functionality for working with user-defined collations.
TLiteUserFunction	A component for defining a custom function for future use in SQL-statements. Also, can be used for overriding built-in SQLite functions.

Types

Name	Description
TLiteCollationEvent	This type is used for the TCustomLiteUserCollation.OnCollate event.
TLiteFunctionExecuteEvent	This type is used for the TCustomLiteUserFunction.OnExecute event.
TLiteFunctionFinalEvent	This type is used for the TCustomLiteUserFunction.OnFinal event.
TLiteFunctionStepEvent	This type is used for the TCustomLiteUserFunction.OnStep event.

Enumerations

Name	Description
TLiteFunctionKind	Specifies the kind of the used-defined function.
TLiteIsolationLevel	Specifies the way the transactions containing database modifications are handled.

5.11.1 Classes

Classes in the **LiteAccess** unit.

Classes

Name	Description
TCustomLiteDataSet	A base class that defines SQLite functionality for a dataset.

TCustomLiteTable	A base class that defines functionality for descendant classes which access data in a single table without writing SQL statements.
TCustomLiteUserCollation	A base class that provides SQLite functionality for working with user-defined collations.
TCustomLiteUserFunction	A base class that defines SQLite functionality for working with user-defined functions.
TLiteBackup	Implements SQLite Online Backup API functionality for performing backup (copying) the contents of one database into another database, overwriting the original content of the target database.
TLiteConnection	Represents an open connection to a SQLite database.
TLiteConnectionOptions	This class allows setting up the behaviour of the TLiteConnection class.
TLiteDataSetOptions	This class allows setting up the behaviour of the TCustomLiteDataSet class.
TLiteDataSource	TLiteDataSource provides an interface between a LiteDAC dataset components and data-aware controls on a form.
TLiteEncryptor	The class that performs encrypting and decrypting of data.
TLiteMetaData	A component for obtaining metainformation about database objects.
TLiteQuery	A component for executing queries and operating record sets. It also provides flexible way to update data.
TLiteSQL	A component for executing SQL statements.
TLiteTable	Accesses data in a single table without writing SQL statements.
TLiteUpdateSQL	Lets you tune update operations for the DataSet component.

TLiteUserCollation	A base class that provides SQLite functionality for working with user-defined collations.
TLiteUserFunction	A component for defining a custom function for future use in SQL-statements. Also, can be used for overriding built-in SQLite functions.

5.11.1.1 TCustomLiteDataSet Class

A base class that defines SQLite functionality for a dataset.
For a list of all members of this type, see TCustomLiteDataSet members.

Unit

LiteAccess

Syntax

```
TCustomLiteDataSet = class(TCustomDADataSet);
```

Remarks

TCustomLiteDataSet is a base dataset component that defines functionality for classes derived from it. Applications never use TCustomLiteDataSet objects directly. Instead they use descendants of TCustomLiteDataSet, such as TLiteQuery and TLiteTable that inherit its dataset-related properties and methods.

Inheritance Hierarchy

TMemDataSet
  TCustomDADataSet
    TCustomLiteDataSet

See Also

-
-

5.11.1.1.1 Members

TCustomLiteDataSet class overview.

Properties

Name	Description

BaseSQL (inherited from **TCustomDADataSet**)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Conditions (inherited from **TCustomDADataSet**)	Used to add WHERE conditions to a query
Connection	Used to specify a connection object that will be used to connect to a data store.
DataTypeMap (inherited from **TCustomDADataSet**)	Used to set data type mapping rules
Debug (inherited from **TCustomDADataSet**)	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields (inherited from **TCustomDADataSet**)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from **TCustomDADataSet**)	Used to keep dataset opened after connection is closed.
Encryption	Used to specify encryption options in a dataset.
FetchRows (inherited from **TCustomDADataSet**)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from **TCustomDADataSet**)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from **TCustomDADataSet**)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.

IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from **TCustomDADataSet**)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from **TCustomDADataSet**)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from **TCustomDADataSet**)	Used to get the number of macros associated with the Macros property.
Macros (inherited from **TCustomDADataSet**)	Makes it possible to change SQL queries easily.
MasterFields (inherited from **TCustomDADataSet**)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from **TCustomDADataSet**)	Used to specify the data source component which binds current dataset to the master one.
Options	Specifies the behaviour of TCustomLiteDataSet object.
ParamCheck (inherited from **TCustomDADataSet**)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.

ParamCount (inherited from **TCustomDADataSet**)	Used to indicate how many parameters are there in the Params property.
Params (inherited from **TCustomDADataSet**)	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from **TCustomDADataSet**)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from **TCustomDADataSet**)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from **TCustomDADataSet**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from **TCustomDADataSet**)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to perform a record lock.

SQLRecCount (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from **TCustomDADataSet**)	Used if an application does not need bidirectional access to records in the result set.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Methods

Name	Description
AddWhere (inherited from **TCustomDADataSet**)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from **TCustomDADataSet**)	Breaks execution of the SQL statement on the server.

CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
CreateBlobStream (inherited from **TCustomDADataSet**)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
DeleteWhere (inherited from **TCustomDADataSet**)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
Execute (inherited from **TCustomDADataSet**)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from **TCustomDADataSet**)	Indicates whether SQL statement is still being executed.
Fetched (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet has already fetched all rows.
Fetching (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet is still fetching rows.

FetchingAll (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet is fetching all rows to the end.
FindKey (inherited from **TCustomDADataSet**)	Searches for a record which contains specified field values.
FindMacro (inherited from **TCustomDADataSet**)	Description is not available at the moment.
FindNearest (inherited from **TCustomDADataSet**)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from **TCustomDADataSet**)	Determines if a parameter with the specified name exists in a dataset.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from **TCustomDADataSet**)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from **TCustomDADataSet**)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from **TCustomDADataSet**)	Retrieves the precision of a number field.
GetFieldScale (inherited from **TCustomDADataSet**)	Retrieves the scale of a number field.
GetKeyFieldNames (inherited from **TCustomDADataSet**)	Provides a list of available key field names.

GetOrderBy (inherited from **TCustomDADataSet**)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from **TCustomDADataSet**)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock (inherited from **TCustomDADataSet**)	Locks the current record.
MacroByName (inherited from **TCustomDADataSet**)	Finds a Macro with the name passed in Name.
ParamByName (inherited from **TCustomDADataSet**)	Sets or uses parameter information for a specific parameter based on its name.
Prepare (inherited from **TCustomDADataSet**)	Allocates, opens, and parses cursor for a query.
RefreshRecord (inherited from **TCustomDADataSet**)	Actualizes field values for the current record.
RestoreSQL (inherited from **TCustomDADataSet**)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.

SaveSQL (inherited from **TCustomDADataSet**)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from **TCustomDADataSet**)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from **TCustomDADataSet**)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from **TCustomDADataSet**)	Releases a record lock.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description

AfterExecute (inherited from **TCustomDADataSet**)	Occurs after a component has executed a query to database.
AfterFetch (inherited from **TCustomDADataSet**)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute (inherited from **TCustomDADataSet**)	Occurs after executing insert, delete, update, lock and refresh operations.
BeforeFetch (inherited from **TCustomDADataSet**)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute (inherited from **TCustomDADataSet**)	Occurs before executing insert, delete, update, lock, and refresh operations.
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from **TMemDataSet**)	Occurs when a single update component can not handle the updates.

5.11.1.1.2 Properties

Properties of the **TCustomLiteDataSet** class.

For a complete list of the **TCustomLiteDataSet** class members, see the TCustomLiteDataSet Members topic.

Public

Name	Description
BaseSQL (inherited from **TCustomDADataSet**)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from	Used to enable or disable the use of cached updates for a dataset.

TMemDataSet)	
Conditions (inherited from **TCustomDADataSet**)	Used to add WHERE conditions to a query
Connection	Used to specify a connection object that will be used to connect to a data store.
DataTypeMap (inherited from **TCustomDADataSet**)	Used to set data type mapping rules
Debug (inherited from **TCustomDADataSet**)	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields (inherited from **TCustomDADataSet**)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from **TCustomDADataSet**)	Used to keep dataset opened after connection is closed.
Encryption	Used to specify encryption options in a dataset.
FetchRows (inherited from **TCustomDADataSet**)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from **TCustomDADataSet**)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from **TCustomDADataSet**)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.

IsQuery (inherited from **TCustomDADataSet**)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from **TCustomDADataSet**)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from **TCustomDADataSet**)	Used to get the number of macros associated with the Macros property.
Macros (inherited from **TCustomDADataSet**)	Makes it possible to change SQL queries easily.
MasterFields (inherited from **TCustomDADataSet**)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from **TCustomDADataSet**)	Used to specify the data source component which binds current dataset to the master one.
Options	Specifies the behaviour of TCustomLiteDataSet object.
ParamCheck (inherited from **TCustomDADataSet**)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from **TCustomDADataSet**)	Used to indicate how many parameters are there in the Params property.

Params (inherited from **TCustomDADataSet**)	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from **TCustomDADataSet**)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from **TCustomDADataSet**)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from **TCustomDADataSet**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from **TCustomDADataSet**)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that is used to get the record count when opening a dataset.

SQLRefresh (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from **TCustomDADataSet**)	Used if an application does not need bidirectional access to records in the result set.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

See Also

- TCustomLiteDataSet Class
- TCustomLiteDataSet Class Members

5.11.1.1.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TCustomLiteDataSet

Syntax

```
property Connection: TLiteConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store. Set at design-time by selecting from the list of provided TLiteConnection objects. At runtime, set the Connection property to reference an existing TLiteConnection object.

See Also

-

5.11.1.1.2.2 Encryption Property

Used to specify encryption options in a dataset.

Class

TCustomLiteDataSet

Syntax

```
property Encryption: TLiteEncryption;
```

Remarks

Set the Encryption options for using encryption in a dataset.

5.11.1.1.2.3 Options Property

Specifies the behaviour of TCustomLiteDataSet object.

Class

TCustomLiteDataSet

Syntax

```
property Options: TLiteDataSetOptions;
```

Remarks

Set the properties of Options to specify the behaviour of a TCustomLiteDataSet object.

5.11.1.1.2.4 SmartFetch Property

The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.

Class

TCustomLiteDataSet

Syntax

```
property SmartFetch: TSmartFetchOptions;
```

See Also

- TSmartFetchOptions

5.11.1.2 TCustomLiteTable Class

A base class that defines functionality for descendant classes which access data in a single table without writing SQL statements.
For a list of all members of this type, see TCustomLiteTable members.

Unit

LiteAccess

Syntax

```
TCustomLiteTable = class(TCustomLiteDataSet);
```

Remarks

TCustomLiteTable implements functionality to access data in a table. Use TCustomLiteTable properties and methods to gain direct access to records and fields in an underlying database without writing SQL statements.

Inheritance Hierarchy

TMemDataSet
  TCustomDADataSet
    TCustomLiteDataSet
      TCustomLiteTable

See Also

-
-
-

5.11.1.2.1 Members

TCustomLiteTable class overview.

Properties

Name	Description
BaseSQL (inherited from **TCustomDADataSet**)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.

CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Conditions (inherited from **TCustomDADataSet**)	Used to add WHERE conditions to a query
Connection (inherited from **TCustomLiteDataSet**)	Used to specify a connection object that will be used to connect to a data store.
DataTypeMap (inherited from **TCustomDADataSet**)	Used to set data type mapping rules
Debug (inherited from **TCustomDADataSet**)	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields (inherited from **TCustomDADataSet**)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from **TCustomDADataSet**)	Used to keep dataset opened after connection is closed.
Encryption (inherited from **TCustomLiteDataSet**)	Used to specify encryption options in a dataset.
FetchRows (inherited from **TCustomDADataSet**)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from **TCustomDADataSet**)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from **TCustomDADataSet**)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.

IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from **TCustomDADataSet**)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from **TCustomDADataSet**)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
Limit	Used to set the number of rows retrieved from the table.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from **TCustomDADataSet**)	Used to get the number of macros associated with the Macros property.
Macros (inherited from **TCustomDADataSet**)	Makes it possible to change SQL queries easily.
MasterFields (inherited from **TCustomDADataSet**)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from **TCustomDADataSet**)	Used to specify the data source component which binds current dataset to the master one.
Offset	Used to allow retrieving data from the database starting from the specified row.
Options (inherited from	Specifies the behaviour of TCustomLiteDataSet object.

TCustomLiteDataSet)	
OrderFields	Used to build ORDER BY clause of SQL statements.
ParamCheck (inherited from **TCustomDADataSet**)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from **TCustomDADataSet**)	Used to indicate how many parameters are there in the Params property.
Params (inherited from **TCustomDADataSet**)	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from **TCustomDADataSet**)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from **TCustomDADataSet**)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from **TCustomDADataSet**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from **TCustomLiteDataSet**)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from **TCustomDADataSet**)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying a deletion to a record.

SQLInsert (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying an update to a dataset.
TableName	Used to specify the name of the database table this component encapsulates.
UniDirectional (inherited from **TCustomDADataSet**)	Used if an application does not need bidirectional access to records in the result set.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Methods

Name	Description
AddWhere (inherited from **TCustomDADataSet**)	Adds condition to the WHERE clause of SELECT statement in the SQL property.

ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from **TCustomDADataSet**)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
CreateBlobStream (inherited from **TCustomDADataSet**)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
DeleteWhere (inherited from **TCustomDADataSet**)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
Execute (inherited from **TCustomDADataSet**)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from	Indicates whether SQL statement is still being executed.

TCustomDADataSet)	
Fetched (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet has already fetched all rows.
Fetching (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet is still fetching rows.
FetchingAll (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet is fetching all rows to the end.
FindKey (inherited from **TCustomDADataSet**)	Searches for a record which contains specified field values.
FindMacro (inherited from **TCustomDADataSet**)	Description is not available at the moment.
FindNearest (inherited from **TCustomDADataSet**)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from **TCustomDADataSet**)	Determines if a parameter with the specified name exists in a dataset.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from **TCustomDADataSet**)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from **TCustomDADataSet**)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from	Retrieves the precision of a number field.

TCustomDADataSet)	
GetFieldScale (inherited from **TCustomDADataSet**)	Retrieves the scale of a number field.
GetKeyFieldNames (inherited from **TCustomDADataSet**)	Provides a list of available key field names.
GetOrderBy (inherited from **TCustomDADataSet**)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from **TCustomDADataSet**)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock (inherited from **TCustomDADataSet**)	Locks the current record.
MacroByName (inherited from **TCustomDADataSet**)	Finds a Macro with the name passed in Name.
ParamByName (inherited from **TCustomDADataSet**)	Sets or uses parameter information for a specific parameter based on its name.
Prepare (inherited from **TCustomDADataSet**)	Allocates, opens, and parses cursor for a query.
RefreshRecord (inherited from **TCustomDADataSet**)	Actualizes field values for the current record.

RestoreSQL (inherited from **TCustomDADataSet**)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from **TCustomDADataSet**)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from **TCustomDADataSet**)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from **TCustomDADataSet**)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from **TCustomDADataSet**)	Releases a record lock.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.

UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
AfterExecute (inherited from **TCustomDADataSet**)	Occurs after a component has executed a query to database.
AfterFetch (inherited from **TCustomDADataSet**)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute (inherited from **TCustomDADataSet**)	Occurs after executing insert, delete, update, lock and refresh operations.
BeforeFetch (inherited from **TCustomDADataSet**)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute (inherited from **TCustomDADataSet**)	Occurs before executing insert, delete, update, lock, and refresh operations.
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from **TMemDataSet**)	Occurs when a single update component can not handle the updates.

5.11.1.2.2 Properties

Properties of the **TCustomLiteTable** class.

For a complete list of the **TCustomLiteTable** class members, see the TCustomLiteTable Members topic.

Public

Name	Description
BaseSQL (inherited from **TCustomDADataSet**)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Conditions (inherited from **TCustomDADataSet**)	Used to add WHERE conditions to a query
Connection (inherited from **TCustomLiteDataSet**)	Used to specify a connection object that will be used to connect to a data store.
DataTypeMap (inherited from **TCustomDADataSet**)	Used to set data type mapping rules
Debug (inherited from **TCustomDADataSet**)	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields (inherited from **TCustomDADataSet**)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from **TCustomDADataSet**)	Used to keep dataset opened after connection is closed.
Encryption (inherited from **TCustomLiteDataSet**)	Used to specify encryption options in a dataset.
FetchRows (inherited from **TCustomDADataSet**)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from	Used to change the WHERE clause of SELECT statement and reopen a query.

TCustomDADataSet)	
FinalSQL (inherited from **TCustomDADataSet**)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from **TCustomDADataSet**)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from **TCustomDADataSet**)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
Limit	Used to set the number of rows retrieved from the table.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from **TCustomDADataSet**)	Used to get the number of macros associated with the Macros property.
Macros (inherited from **TCustomDADataSet**)	Makes it possible to change SQL queries easily.
MasterFields (inherited from **TCustomDADataSet**)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from	Used to specify the data source component which binds current dataset to the master one.

TCustomDADataSet)	
Offset	Used to allow retrieving data from the database starting from the specified row.
Options (inherited from **TCustomLiteDataSet**)	Specifies the behaviour of TCustomLiteDataSet object.
OrderFields	Used to build ORDER BY clause of SQL statements.
ParamCheck (inherited from **TCustomDADataSet**)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from **TCustomDADataSet**)	Used to indicate how many parameters are there in the Params property.
Params (inherited from **TCustomDADataSet**)	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from **TCustomDADataSet**)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from **TCustomDADataSet**)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from **TCustomDADataSet**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from **TCustomLiteDataSet**)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.

SQL (inherited from **TCustomDADataSet**)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying an update to a dataset.
TableName	Used to specify the name of the database table this component encapsulates.
UniDirectional (inherited from **TCustomDADataSet**)	Used if an application does not need bidirectional access to records in the result set.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

See Also

- TCustomLiteTable Class
- TCustomLiteTable Class Members

5.11.1.2.2.1 Limit Property

Used to set the number of rows retrieved from the table.

Class

TCustomLiteTable

Syntax

```
property Limit: integer default - 1;
```

Remarks

Use the Limit property to set the number of rows retrieved from the table. If Limit is -1, all records will be obtained. The default value is -1.

See Also

-

5.11.1.2.2.2 Offset Property

Used to allow retrieving data from the database starting from the specified row.

Class

TCustomLiteTable

Syntax

```
property Offset: integer default 0;
```

Remarks

Use the Offset property to allow retrieving data from the database starting from the specified row. The default value is 0.

See Also

-

5.11.1.2.2.3 OrderFields Property

Used to build ORDER BY clause of SQL statements.

Class

TCustomLiteTable

Syntax

```
property OrderFields: string;
```

Remarks

TCustomLiteTable uses the OrderFields property to build ORDER BY clause of SQL statements. To set several field names to this property separate them with commas. TCustomLiteTable is reopened when OrderFields is being changed.

See Also

•

5.11.1.2.2.4 TableName Property

Used to specify the name of the database table this component encapsulates.

Class

TCustomLiteTable

Syntax

```
property TableName: string;
```

Remarks

Use the TableName property to specify the name of the database table this component encapsulates. If TCustomLiteDataSet.Connection is assigned at design time,select a valid table name from the TableName drop-down list in Object Inspector.

5.11.1.3 TCustomLiteUserCollation Class

A base class that provides SQLite functionality for working with user-defined collations. For a list of all members of this type, see TCustomLiteUserCollation members.

Unit

LiteAccess

Syntax

```
TCustomLiteUserCollation = class(TComponent);
```

Remarks

TCustomLiteUserCollation is a base component that provides functionality for classes derived from it. Applications never use TCustomLiteUserCollation objects directly. Instead they use TLiteUserCollation that inherit its properties and methods.

5.11.1.3.1 Members

TCustomLiteUserCollation class overview.

Properties

Name	Description
CollationName	Used to specify the name of the collation.
Connection	Used to specify a connection object that will be used to connect to a data store.

Events

Name	Description
OnCollate	Occurs when the collation is called in the SQL-statement.

5.11.1.3.2 Properties

Properties of the **TCustomLiteUserCollation** class.

For a complete list of the **TCustomLiteUserCollation** class members, see the TCustomLiteUserCollation Members topic.

Public

Name	Description
CollationName	Used to specify the name of the collation.
Connection	Used to specify a connection object that will be used to connect to a data

	store.

See Also

- TCustomLiteUserCollation Class
- TCustomLiteUserCollation Class Members

5.11.1.3.2.1 CollationName Property

Used to specify the name of the collation.

Class

TCustomLiteUserCollation

Syntax

```
property CollationName: string;
```

Remarks

Use the CollationName property to specify the name of the collation. The name is case-insensitive.

5.11.1.3.2.2 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TCustomLiteUserCollation

Syntax

```
property Connection: TLiteConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store. Set at design-time by selecting from the list of provided TLiteConnection objects. At runtime, set the Connection property to reference an existing TLiteConnection object.

5.11.1.3.3 Events

Events of the **TCustomLiteUserCollation** class.
For a complete list of the **TCustomLiteUserCollation** class members, see the TCustomLiteUserCollation Members topic.

Public

Name	Description
OnCollate	Occurs when the collation is called in the SQL-statement.

See Also

- TCustomLiteUserCollation Class
- TCustomLiteUserCollation Class Members

5.11.1.3.3.1 OnCollate Event

Occurs when the collation is called in the SQL-statement.

Class

TCustomLiteUserCollation

Syntax

```
property OnCollate: TLiteCollationEvent;
```

Remarks

Use the OnCollate event handler to define the implementation of the collating function. The collating function must return an integer that is negative, zero, or positive if the first string is less than, equal to, or greater than the second, respectively.

5.11.1.4 TCustomLiteUserFunction Class

A base class that defines SQLite functionality for working with user-defined functions.
For a list of all members of this type, see TCustomLiteUserFunction members.

Unit

LiteAccess

Syntax

```
TCustomLiteUserFunction = class(TComponent);
```

Remarks

TCustomLiteUserFunction is a base dataset component that defines functionality for classes derived from it. Applications never use TCustomLiteUserFunction objects directly. Instead

they use TLiteUserFunction that inherit its properties and methods.

See Also

- TLiteUserFunction

5.11.1.4.1 Members

TCustomLiteUserFunction class overview.

Properties

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
FunctionKind	Used to specify the kind of the function that will be defined.
FunctionName	Used to specify the name of the function that will be defined.
Params	Used to specify the list of function parameters.

Events

Name	Description
OnExecute	Occurs when the user function is called in the SQL-statement.
OnFinal	Used to return a result of the user-defined aggregate function in the SQL statement.
OnStep	Occurs during execution of the user-defined aggregate function in the SQL statement.

5.11.1.4.2 Properties

Properties of the **TCustomLiteUserFunction** class.

For a complete list of the **TCustomLiteUserFunction** class members, see the TCustomLiteUserFunction Members topic.

Public

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
FunctionKind	Used to specify the kind of the function that will be defined.
FunctionName	Used to specify the name of the function that will be defined.
Params	Used to specify the list of function parameters.

See Also

- TCustomLiteUserFunction Class
- TCustomLiteUserFunction Class Members

5.11.1.4.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TCustomLiteUserFunction

Syntax

```
property Connection: TLiteConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store. Set at design-time by selecting from the list of provided TLiteConnection objects. At runtime, set the Connection property to reference an existing TLiteConnection object.

See Also

- TLiteConnection

5.11.1.4.2.2 FunctionKind Property

Used to specify the kind of the function that will be defined.

Class

TCustomLiteUserFunction

Syntax

```
property FunctionKind: TLiteFunctionKind default fkScalar;
```

Remarks

Use the FunctionKind property to specify the kind of the function that will be defined for future use in SQL statements. The list of function parameters can be set using the Params property. When fkScalar, the implementation of the function has to be defined in theOnExecute event handler. When fkAggregate, the implementation of the function has to be defined in the OnStep event handler, and a result has to be passed back in the OnFinal event handler. Default value is fkScalar.

See Also

- FunctionName
- Params

5.11.1.4.2.3 FunctionName Property

Used to specify the name of the function that will be defined.

Class

TCustomLiteUserFunction

Syntax

```
property FunctionName: string;
```

Remarks

Use the FunctionName property to specify the name of the function that will be defined for future use in SQL statements. The list of function parameters can be set using the Params property. The implementation of the function has to be defined in the OnExecute event handler.

See Also

- Params
- FunctionKind

5.11.1.4.2.4 Params Property

Used to specify the list of function parameters.

Class

TCustomLiteUserFunction

Syntax

```
property Params: TLiteUserFunctionParams;
```

Remarks

At design-time use the Parameters editor to set the list of parameters of the function. Use the Params property in the OnExecute event handler at runtime to get parameter values that were passed to the function. Params is a zero-based array of parameter records. Index specifies the array element to access. An easier way to set and retrieve parameter values when the name of each parameter is known is to call ParamByName.

See Also

- OnExecute

5.11.1.4.3 Events

Events of the **TCustomLiteUserFunction** class.
For a complete list of the **TCustomLiteUserFunction** class members, see the TCustomLiteUserFunction Members topic.

Public

Name	Description
OnExecute	Occurs when the user function is called in the SQL-statement.
OnFinal	Used to return a result of the user-defined aggregate function in the SQL statement.
OnStep	Occurs during execution of the user-defined aggregate function in the SQL statement.

See Also

- TCustomLiteUserFunction Class
- TCustomLiteUserFunction Class Members

5.11.1.4.3.1 OnExecute Event

Occurs when the user function is called in the SQL-statement.

Class

TCustomLiteUserFunction

Syntax

```
property OnExecute: TLiteFunctionExecuteEvent;
```

Remarks

Use the OnExecute event handler to define the implementation of the function. Parameters that were passed to the function when it was called in an SQL statement, are accessible through the Params property. The resulting value of the function has to be passed back using the ResultValue variable.

See Also

- Params
- OnExecute

5.11.1.4.3.2 OnFinal Event

Used to return a result of the user-defined aggregate function in the SQL statement.

Class

TCustomLiteUserFunction

Syntax

```
property OnFinal: TLiteFunctionFinalEvent;
```

Remarks

Use the OnFinal event handler to return a result of the function. The resulting value of the function has to be passed back using the ResultValue variable.

See Also

- OnStep

5.11.1.4.3.3 OnStep Event

Occurs during execution of the user-defined aggregate function in the SQL statement.

Class

TCustomLiteUserFunction

Syntax

```
property OnStep: TLiteFunctionStepEvent;
```

Remarks

Use the OnStep event handler to define the implementation of the function. Parameters that were passed to the function when it was executed in a SQL-statement, are accessible through the Params argument. The resulting value of the function has to be passed back using the OnFinal event handler.

See Also

- OnFinal

5.11.1.5 TLiteBackup Class

Implements SQLite Online Backup API functionality for performing backup (copying) the contents of one database into another database, overwriting the original content of the target database.
For a list of all members of this type, see TLiteBackup members.

Unit

LiteAccess

Syntax

```
TLiteBackup = class(TComponent);
```

5.11.1.5.1 Members

TLiteBackup class overview.

Properties

Name	Description
DestinationConnection	Specifies the destination connection for the backup.

DestinationDatabaseName	Specifies the name of the destination database.
PagesPerStep	Specifies the number of database pages to be copied in one step.
SourceConnection	Specifies the source connection for the backup.
SourceDatabaseName	Specifies the name of the source database.
WaitDelay	Specifies the wait delay during which the backup process waits until the source database lock is released.
WaitTimeout	Specifies the total wait time for which the backup process waits until the source database lock is released.
WaitWhenLocked	Specifies, whether the backup process waits until the source database becomes unlocked.

Methods

Name	Description
Backup	Starts the backup process

Events

Name	Description
OnProgress	Occurs during the backup process after copying a portion of database pages.

5.11.1.5.2 Properties

Properties of the **TLiteBackup** class.

For a complete list of the **TLiteBackup** class members, see the TLiteBackup Members topic.

Published

Name	Description

DestinationConnection	Specifies the destination connection for the backup.
DestinationDatabaseName	Specifies the name of the destination database.
PagesPerStep	Specifies the number of database pages to be copied in one step.
SourceConnection	Specifies the source connection for the backup.
SourceDatabaseName	Specifies the name of the source database.
WaitDelay	Specifies the wait delay during which the backup process waits until the source database lock is released.
WaitTimeout	Specifies the total wait time for which the backup process waits until the source database lock is released.
WaitWhenLocked	Specifies, whether the backup process waits until the source database becomes unlocked.

See Also

- TLiteBackup Class
- TLiteBackup Class Members

5.11.1.5.2.1 DestinationConnection Property

Specifies the destination connection for the backup.

Class

TLiteBackup

Syntax

```
property DestinationConnection: TLiteConnection;
```

Remarks

Set the DestinationConnection property to specify the destination TLiteConnection for the backup (the connection to the target database). Read the property value to access the destination connection.

The actual name of the target database is specified using the DestinationDatabaseName

property.
The source connection (the connection to the database to be copied) for the backup is accessible using the SourceConnection property.
Both source and destination connection have to be specified and connected to perform a backup. Otherwise, the appropriate exception will be raised.

See Also

- TLiteConnection
- DestinationDatabaseName
- SourceConnection

5.11.1.5.2.2 DestinationDatabaseName Property

Specifies the name of the destination database.

Class

TLiteBackup

Syntax

```
property DestinationDatabaseName: string;
```

Remarks

Set the DestinationDatabaseName property to specify the name of the destination (target) database. Read the property value to determine the destination database name.
The database name is 'main' or an empty string for the main database, 'temp' for the temporary database, or the name specified after the AS keyword in an ATTACH statement for an attached database. The default value is an empty string.
The name of the source database for the backup is accessible using the SourceDatabaseName property.

See Also

- SourceDatabaseName

5.11.1.5.2.3 PagesPerStep Property

Specifies the number of database pages to be copied in one step.

Class

TLiteBackup

Syntax

```
property PagesPerStep: integer default - 1;
```

Remarks

Set the PagesPerStep property to specify the number of database pages to be copied between the source and destination databases in one step of the backup process. If there are still more pages to be copied, then the OnProgress event is triggered, and the backup process continues. Otherwise, the backup process is finished. The copying process is described in detail in the Backup article.
The default property value is -1, which means that the entire database will be copied at once.

See Also

- OnProgress
- Backup

5.11.1.5.2.4 SourceConnection Property

Specifies the source connection for the backup.

Class

TLiteBackup

Syntax

```
property SourceConnection: TLiteConnection;
```

Remarks

Set the SourceConnection property to specify the source TLiteConnection for the backup (the connection to the database to be copied). Read the property value to access the source connection.
The actual name of the database to be copied is specified using the SourceDatabaseName property.
The destination connection (the connection to the target database) for the backup is accessible using the DestinationConnection property.
Both source and destination connection have to be specified and connected to perform a backup. Otherwise, the appropriate exception will be raised.

See Also

- DestinationConnection

- SourceDatabaseName
- TLiteConnection

5.11.1.5.2.5 SourceDatabaseName Property

Specifies the name of the source database.

Class

TLiteBackup

Syntax

```
property SourceDatabaseName: string;
```

Remarks

Set the SourceDatabaseName property to specify the name of the source database (the database to be copied). Read the property value to determine the source database name. The database name is 'main' or an empty string for the main database, 'temp' for the temporary database, or the name specified after the AS keyword in an ATTACH statement for an attached database. The default value is an empty string.
The name of the destination database for the backup is accessible using the DestinationDatabaseName property.

See Also

- DestinationDatabaseName

5.11.1.5.2.6 WaitDelay Property

Specifies the wait delay during which the backup process waits until the source database lock is released.

Class

TLiteBackup

Syntax

```
property WaitDelay: integer default 250;
```

Remarks

Set the WaitDelay property value to specify the number of milliseconds during which the backup process waits until the source database lock is released.
When during the backup process the source database becomes locked by an outside

connection, then if the WaitWhenLocked property is set to True, the backup process waits for WaitDelay milliseconds until WaitTimeout is reached. If the source database lock is released, the backup process continues. Otherwise, the appropriate exception is raised. The default value is 250.

See Also

- WaitWhenLocked
- WaitTimeout

5.11.1.5.2.7 WaitTimeout Property

Specifies the total wait time for which the backup process waits until the source database lock is released.

Class

TLiteBackup

Syntax

```
property WaitTimeout: integer default 0;
```

Remarks

Set the WaitTimeout property value to specify the total number of milliseconds during which the backup process waits until the source database lock is released. When during the backup process the source database becomes locked by an outside connection, then if the WaitWhenLocked property is set to True, the backup process waits for WaitDelay milliseconds until WaitTimeout is reached. If the source database lock is released, the backup process continues. Otherwise, the appropriate exception is raised. The default value is 0.

See Also

- WaitDelay
- WaitWhenLocked

5.11.1.5.2.8 WaitWhenLocked Property

Specifies, whether the backup process waits until the source database becomes unlocked.

Class

TLiteBackup

Syntax

```
property WaitWhenLocked: boolean default True;
```

Remarks

Set the WaitWhenLocked property value to specify, whether the backup process will wait until the source database becomes unlocked, if it is locked by an outside connection.
When the property is True, the backup process waits for WaitDelay milliseconds until WaitTimeout is reached. If the source database lock is released, the backup process continues. Otherwise, the appropriate exception is raised.
When the property is False, the backup process finishes immediately.
The default value is True.

See Also

- WaitDelay
- WaitTimeout

5.11.1.5.3 Methods

Methods of the **TLiteBackup** class.
For a complete list of the **TLiteBackup** class members, see the TLiteBackup Members topic.

Public

Name	Description
Backup	Starts the backup process

See Also

- TLiteBackup Class
- TLiteBackup Class Members

5.11.1.5.3.1 Backup Method

Starts the backup process

Class

TLiteBackup

Syntax

```
procedure Backup;
```

Remarks

Use the method to starts the process of copying the source database into the destination database.

Before starting the backup process, the connection to the source database has to be specified in the SourceConnection property, and the source database name in the SourceDatabaseName property. The connection to the destination database has to be specified in the DestinationConnection property, and the destination database name in the DestinationDatabaseName property.

Both source and destination connection have to be connected to perform a backup. Otherwise, the appropriate exception will be raised.

When the backup is started, the backup mechanism tries to copy up to PagesPerStep database pages between the source and destination databases. If there are still more pages to be copied, then the OnProgress event is triggered, and the backup process continues. Otherwise, the backup process is finished.

When during the backup process the source database becomes locked by an outside connection, then if the WaitWhenLocked property is set to True, the backup process waits for WaitDelay milliseconds until WaitTimeout is reached. If the source database lock is released, the backup process continues. Otherwise, the appropriate exception is raised.

See Also

- SourceConnection
- SourceDatabaseName
- DestinationDatabaseName
- PagesPerStep
- WaitWhenLocked
- WaitDelay
- WaitTimeout

5.11.1.5.4 Events

Events of the **TLiteBackup** class.

For a complete list of the **TLiteBackup** class members, see the TLiteBackup Members topic.

Published

Name	Description

OnProgress	Occurs during the backup process after copying a portion of database pages.

See Also

- TLiteBackup Class
- TLiteBackup Class Members

5.11.1.5.4.1 OnProgress Event

Occurs during the backup process after copying a portion of database pages.

Class

TLiteBackup

Syntax

```
property OnProgress: TLiteBackupProgressEvent;
```

Remarks

Write the OnProgress event handler to be able to respond on the backup process progress. When the backup is started, the backup mechanism tries to copy up to PagesPerStep database pages between the source and destination databases. If there are still more pages to be copied, then the OnProgress event is triggered, and the backup process continues. Otherwise, the backup process is finished. The copying process is described in detail in the Backup article.

Parameters

Sender

The TLiteBackup component that triggers the event

PagesTotal

Total number of pages in the source database

PagesRemaining

Number of pages left to copy

See Also

- PagesPerStep
- Backup

5.11.1.6 TLiteConnection Class

Represents an open connection to a SQLite database.
For a list of all members of this type, see TLiteConnection members.

Unit

LiteAccess

Syntax

```
TLiteConnection = class(TCustomDAConnection);
```

Remarks

The TLiteConnection component is used to maintain connection to the SQLite database. After setting the Database and EncryptionKey (if needed) properties, you can establish a connection to the database by calling Open or Connect methods or setting the Connected property to True. All components which are dedicated to perform data access, such as TLiteTable, TLiteQuery, TLiteSQL, must have their Connection property assigned with one of the TLiteConnection instances.

Inheritance Hierarchy

TCustomDAConnection
  TLiteConnection

5.11.1.6.1 Members

TLiteConnection class overview.

Properties

Name	Description
ClientLibrary	Used to set or get the SQLite client library location.
ClientLibraryVersion	Indicates the version of the SQLite3 client library.
ConnectDialog	Allows to link a TCustomConnectDialog component.

Connected	Used to establish a database connection.
ConnectString (inherited from **TCustomDAConnection**)	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL (inherited from **TCustomDAConnection**)	Allows customizing line breaks in string fields and parameters.
Database	Used to specify the name of the database to be used once a connection is open.
Debug	Used to display SQL statements being executed with their parameter values and data types.
EncryptionKey	Used to specify the encryption key for working with an encrypted database.
InTransaction (inherited from **TCustomDAConnection**)	Indicates whether the transaction is active.
LoginPrompt	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Used to specify the behaviour of the TLiteConnection object.
Pooling	Enables or disables using connection pool.
PoolingOptions	Specifies the behaviour of connection pool.

Methods

Name	Description
ApplyUpdates (inherited from **TCustomDAConnection**)	Overloaded. Applies changes in datasets.
Commit (inherited from	Commits current transaction.

TCustomDAConnection)	
Connect (inherited from **TCustomDAConnection**)	Establishes a connection to the server.
CreateDataSet	Returns a new instance of TLiteQuery class and associates it with the connection object.
CreateMetaData	Returns a new instance of TLiteMetaData class and associates it with the connection object.
CreateSQL	Returns a new instance of TLiteSQL class and associates it with the connection object.
CreateTransaction	Returns a new instance of TLiteTransaction class and associates it with the connection object.
Disconnect (inherited from **TCustomDAConnection**)	Performs disconnect.
EncryptDatabase	Encrypt the connected database with the encryption key specified.
GetKeyFieldNames (inherited from **TCustomDAConnection**)	Provides a list of available key field names.
GetTableNames (inherited from **TCustomDAConnection**)	Provides a list of available tables names.
MonitorMessage (inherited from **TCustomDAConnection**)	Sends a specified message through the TCustomDASQLMonitor component.
Ping (inherited from **TCustomDAConnection**)	Used to check state of connection to the server.
ReleaseSavepoint	Releases the specified savepoint without affecting any work that has been performed after its creation.

RemoveFromPool (inherited from **TCustomDAConnection**)	Marks the connection that should not be returned to the pool after disconnect.
Rollback (inherited from **TCustomDAConnection**)	Discards all current data changes and ends transaction.
RollbackToSavepoint	Cancels all updates for the current transaction.
Savepoint	Defines a point in the transaction to which you can roll back later.
StartTransaction	Overloaded.Description is not available at the moment.

Events

Name	Description
OnConnectionLost	This event occurs when connection was lost.
OnError	This event occurs when an error has arisen in the connection.

5.11.1.6.2 Properties

Properties of the **TLiteConnection** class.

For a complete list of the **TLiteConnection** class members, see the TLiteConnection Members topic.

Public

Name	Description
ClientLibraryVersion	Indicates the version of the SQLite3 client library.
ConnectString (inherited from **TCustomDAConnection**)	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL (inherited from	Allows customizing line breaks in string fields and parameters.

TCustomDAConnection)	
InTransaction (inherited from **TCustomDAConnection**)	Indicates whether the transaction is active.

Published

Name	Description
ClientLibrary	Used to set or get the SQLite client library location.
ConnectDialog	Allows to link a TCustomConnectDialog component.
Connected	Used to establish a database connection.
Database	Used to specify the name of the database to be used once a connection is open.
Debug	Used to display SQL statements being executed with their parameter values and data types.
EncryptionKey	Used to specify the encryption key for working with an encrypted database.
LoginPrompt	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Used to specify the behaviour of the TLiteConnection object.
Pooling	Enables or disables using connection pool.
PoolingOptions	Specifies the behaviour of connection pool.

See Also

- TLiteConnection Class
- TLiteConnection Class Members

5.11.1.6.2.1 ClientLibrary Property

Used to set or get the SQLite client library location.

Class

TLiteConnection

Syntax

```
property ClientLibrary: string;
```

Remarks

Use the ClientLibrary property to manually set the SQLite client library location. When the ClientLibrary property is empty, TLiteConnection tries to find the client library on the system path. When working in Direct mode, the ClientLibrary property is not used. For more information about using direct access in LiteDAC, read the Working In Direct Mode article.

5.11.1.6.2.2 ClientLibraryVersion Property

Indicates the version of the SQLite3 client library.

Class

TLiteConnection

Syntax

```
property ClientLibraryVersion: string;
```

Remarks

The ClientLibraryVersion property is used to indicate the version of the SQLite3 client library. When working in the Direct mode, the property indicates the version of the SQLite3 engine that integrated in LiteDAC.

See Also

-
-

5.11.1.6.2.3 ConnectDialog Property

Allows to link a TCustomConnectDialog component.

Class

TLiteConnection

Syntax

```
property ConnectDialog: TCustomConnectDialog;
```

Remarks

Use the ConnectDialog property to assign to connection a TCustomConnectDialog component.

See Also

•

5.11.1.6.2.4 Connected Property

Used to establish a database connection.

Class

TLiteConnection

Syntax

```
property Connected;
```

Remarks

Indicates whether the database connection is active. Set this property to True to establish a database connection. Setting this property to False will close a connection.

5.11.1.6.2.5 Database Property

Used to specify the name of the database to be used once a connection is open.

Class

TLiteConnection

Syntax

```
property Database: string;
```

Remarks

Use the Database property to specify the name of the database to be used once a connection is open.

If the Database property points to an existent database, the database will be opened.
If the Database property points to a non-existent database in a correct system path, further behavior depends on the value of the TLiteConnectionOptions.ForceCreateDatabase property.
If the Database property is set to ":memory:", a new temporary in-memory database will be created and opened.
If the Database property is empty, a new temporary on-disk database will be created and opened.

See Also

- TLiteConnectionOptions.ForceCreateDatabase

5.11.1.6.2.6 Debug Property

Used to display SQL statements being executed with their parameter values and data types.

Class

TLiteConnection

Syntax

```
property Debug: boolean;
```

Remarks

Set the Debug property to True to display SQL statements being executed with their parameter values and data types. Note: To use this property you should explicitly include unit LiteDacVcl (LiteDacClx under Linux) to your project.

5.11.1.6.2.7 EncryptionKey Property

Used to specify the encryption key for working with an encrypted database.

Class

TLiteConnection

Syntax

```
property EncryptionKey: string stored False;
```

Remarks

Use the EncryptionKey property to specify the encryption key for working with an encrypted database .

When working in Direct mode , the property is used to connect to an encrypted database or to encrypt a database using the EncryptDatabase method.
Otherwize, the appropriate encryption support has to be implemented in the SQLite client library that is used by TLiteConnection.

See Also

- TLiteConnection
- EncryptDatabase
- TLiteConnectionOptions.Direct
- Connecting in the Direct mode
- Database File Encryption

5.11.1.6.2.8 LoginPrompt Property

Specifies whether a login dialog appears immediately before opening a new connection.

Class

TLiteConnection

Syntax

```
property LoginPrompt;
```

Remarks

Specifies whether a login dialog appears immediately before opening a new connection. If ConnectDialog is not specified, the default connect dialog will be shown. The connect dialog will appear only if the LiteDacVcl unit appears to the uses clause.

5.11.1.6.2.9 Options Property

Used to specify the behaviour of the TLiteConnection object.

Class

TLiteConnection

Syntax

```
property Options: TLiteConnectionOptions;
```

Remarks

Set properties of Options to specify the behaviour of a TLiteConnection object. Descriptions of all options are in the table below.

See Also

•

5.11.1.6.2.10 Pooling Property

Enables or disables using connection pool.

Class

TLiteConnection

Syntax

```
property Pooling: boolean;
```

Remarks

Normally, when TLiteConnection establishes connection with the database it takes server memory and time resources for allocating new database connection. For example, pooling can be very useful when using disconnect mode. If an application has wide user activity that forces many connect/disconnect operations, it may spend a lot of time on creating connection. TLiteConnection has software pool which stores open connections with identical parameters. Connection pool uses separate thread that validates the pool every 30 seconds. Pool validation consists of checking each connection in the pool. If a connection is broken due to a network problem or another reason, it is deleted from the pool. The validation procedure removes also connections that are not used for a long time even if they are valid from the pool. Set Pooling to True to enable pooling. Specify correct values for PoolingOptions. Two connections belong to the same pool if they have identical values for the parameters: MinPoolSize, MaxPoolSize, Validate, ConnectionLifeTime, TLiteConnection.Database, TLiteConnection.ClientLibrary, TLiteConnection.EncryptionKey, TLiteConnectionOptions.ASCIIDatabase, TLiteConnectionOptions.DateFormat, TLiteConnectionOptions.TimeFormat, TLiteConnectionOptions.EnableSharedCache, TLiteConnectionOptions.BusyTimeout, TLiteConnectionOptions.ReadUncommitted, TLiteConnectionOptions.DefaultCollations, TLiteConnectionOptions.ForeignKeys, TLiteConnectionOptions.UseUnicode. Note: Using Pooling := True can cause errors with working with temporary tables.

See Also

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5.11.1.6.2.11 PoolingOptions Property

Specifies the behaviour of connection pool.

Class

TLiteConnection

Syntax

```
property PoolingOptions: TPoolingOptions;
```

Remarks

Set the properties of PoolingOptions to specify the behaviour of connection pool.

See Also

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5.11.1.6.3 Methods

Methods of the **TLiteConnection** class.
For a complete list of the **TLiteConnection** class members, see the TLiteConnection Members topic.

Public

Name	Description
ApplyUpdates (inherited from **TCustomDAConnection**)	Overloaded. Applies changes in datasets.
Commit (inherited from **TCustomDAConnection**)	Commits current transaction.
Connect (inherited from **TCustomDAConnection**)	Establishes a connection to the server.
CreateDataSet	Returns a new instance of TLiteQuery class and associates it with the connection object.
CreateMetaData	Returns a new instance of TLiteMetaData class and associates it with the connection object.

CreateSQL	Returns a new instance of TLiteSQL class and associates it with the connection object.
CreateTransaction	Returns a new instance of TLiteTransaction class and associates it with the connection object.
Disconnect (inherited from **TCustomDAConnection**)	Performs disconnect.
EncryptDatabase	Encrypt the connected database with the encryption key specified.
GetKeyFieldNames (inherited from **TCustomDAConnection**)	Provides a list of available key field names.
GetTableNames (inherited from **TCustomDAConnection**)	Provides a list of available tables names.
MonitorMessage (inherited from **TCustomDAConnection**)	Sends a specified message through the TCustomDASQLMonitor component.
Ping (inherited from **TCustomDAConnection**)	Used to check state of connection to the server.
ReleaseSavepoint	Releases the specified savepoint without affecting any work that has been performed after its creation.
RemoveFromPool (inherited from **TCustomDAConnection**)	Marks the connection that should not be returned to the pool after disconnect.
Rollback (inherited from **TCustomDAConnection**)	Discards all current data changes and ends transaction.
RollbackToSavepoint	Cancels all updates for the current transaction.

Savepoint	Defines a point in the transaction to which you can roll back later.
StartTransaction	Overloaded.Description is not available at the moment.

See Also

- TLiteConnection Class
- TLiteConnection Class Members

5.11.1.6.3.1 CreateDataSet Method

Returns a new instance of TLiteQuery class and associates it with the connection object.

Class

TLiteConnection

Syntax

```
function CreateDataSet(AOwner: TComponent = nil):
TCustomDADataSet; override;
```

Return Value

A new instance of TLiteQuery class.

Remarks

The CreateDataSet method returns a new instance of TLiteQuery class and associates it with the connection object.

5.11.1.6.3.2 CreateMetaData Method

Returns a new instance of TLiteMetaData class and associates it with the connection object.

Class

TLiteConnection

Syntax

```
function CreateMetaData: TDAMetaData; override;
```

Return Value

A new instance of TLiteMetaData class.

Remarks

The CreateMetaData method returns a new instance of TLiteMetaData class and associates it with the connection object.

5.11.1.6.3.3 CreateSQL Method

Returns a new instance of TLiteSQL class and associates it with the connection object.

Class

TLiteConnection

Syntax

```
function CreateSQL: TCustomDASQL; override;
```

Return Value

A new instance of TLiteSQL class.

Remarks

The CreateSQL method returns a new instance of TLiteSQL class and associates it with the connection object.

5.11.1.6.3.4 CreateTransaction Method

Returns a new instance of TLiteTransaction class and associates it with the connection object.

Class

TLiteConnection

Syntax

```
function CreateTransaction: TDATransaction; override;
```

Return Value

A new instance of TLiteTransaction class.

Remarks

The CreateTransaction method returns a new instance of TLiteTransaction class and associates it with the connection object.

5.11.1.6.3.5 EncryptDatabase Method

Encrypt the connected database with the encryption key specified.

Class

TLiteConnection

Syntax

```
procedure EncryptDatabase(NewEncryptionKey: string);
```

Parameters

NewEncryptionKey

Holds the encryption key to encrypt the database.

Remarks

When working in the Direct mode , the TLiteConnectionOptions.EncryptionAlgorithm property should be used to specify the encryption algorithm to encrypt the database .
Otherwize, the appropriate encryption support has to be implemented in the SQLite client library that is used by TLiteConnection.
Note: The EncryptDatabase method can be used only for the already connected database.

See Also

- TLiteConnection
- TLiteConnectionOptions.EncryptionAlgorithm
- Connecting in the Direct mode
- Database File Encryption

5.11.1.6.3.6 ReleaseSavepoint Method

Releases the specified savepoint without affecting any work that has been performed after its creation.

Class

TLiteConnection

Syntax

```
procedure ReleaseSavepoint(const Name: string);
```

Parameters

Name

Holds the savepoint name.

Remarks

Call the ReleaseSavepoint method to release the specified savepoint without affecting any work that has been performed after its creation.

See Also

•

5.11.1.6.3.7 RollbackToSavepoint Method

Cancels all updates for the current transaction.

Class

TLiteConnection

Syntax

```
procedure RollbackToSavepoint(const Name: string);
```

Parameters

Name

Holds the name identifying the last defined savepoint.

Remarks

Call the RollbackToSavepoint method to cancel all updates for the current transaction and restore its state up to the moment of the last defined savepoint.

See Also

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5.11.1.6.3.8 Savepoint Method

Defines a point in the transaction to which you can roll back later.

Class

TLiteConnection

Syntax

```
procedure Savepoint(const Name: string);
```

Parameters

Name

Holds the name of the savepoint.

Remarks

Call the Savepoint method to define a point in the transaction to which you can roll back later. As the parameter, you can pass any valid name to identify the savepoint. To roll back to the last savepoint call RollbackToSavepoint.

See Also

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5.11.1.6.3.9 StartTransaction Method

Class

TLiteConnection

Overload List

Name	Description
StartTransaction	Begins a new user transaction.
StartTransaction(IsolationLevel: TLiteIsolationLevel)	Begins a new user transaction with the defined isolation level.

Begins a new user transaction.

Class

TLiteConnection

Syntax

```
procedure StartTransaction; overload; override;
```

Remarks

Call the StartTransaction method to begin a new user transaction against the database. Before calling StartTransaction, an application should check the status of the InTransaction property. If InTransaction is True, indicating that a transaction is already in progress, a subsequent call to StartTransaction without first calling Commit or Rollback to end the current

transaction raises EDatabaseError. Calling StartTransaction when connection is closed also raises EDatabaseError. Updates, insertions, and deletions that take place after a call to StartTransaction are held by the database until an application calls Commit to save the changes, or Rollback to cancel them.

See Also

- Commit
- Rollback
- InTransaction

Begins a new user transaction with the defined isolation level.

Class

TLiteConnection

Syntax

```
procedure StartTransaction(IsolationLevel: TLiteIsolationLevel);
reintroduce; overload;
```

Parameters

IsolationLevel

Remarks

Call the StartTransaction method to begin a new user transaction against the database and to simultaneously define the isolation level for it. Before calling StartTransaction, an application should check the status of the InTransaction property. If InTransaction is True, indicating that a transaction is already in progress, a subsequent call to StartTransaction without first calling Commit or Rollback to end the current transaction raises EDatabaseError. Calling StartTransaction when connection is closed also raises EDatabaseError. Updates, insertions, and deletions that take place after a call to StartTransaction are held by the database until an application calls Commit to save the changes, or Rollback to cancel them.

See Also

- Commit
- Rollback
- InTransaction

5.11.1.6.4 Events

Events of the **TLiteConnection** class.

For a complete list of the **TLiteConnection** class members, see the TLiteConnection Members topic.

Published

Name	Description
OnConnectionLost	This event occurs when connection was lost.
OnError	This event occurs when an error has arisen in the connection.

See Also

- TLiteConnection Class
- TLiteConnection Class Members

5.11.1.6.4.1 OnConnectionLost Event

This event occurs when connection was lost.

Class

TLiteConnection

Syntax

```
property OnConnectionLost: TConnectionLostEvent;
```

Remarks

Write the OnConnectionLost event handler to process fatal errors and perform failover.

Note: you should explicitly add the MemData unit to the 'uses' list to use the OnConnectionLost event handler.

5.11.1.6.4.2 OnError Event

This event occurs when an error has arisen in the connection.

Class

TLiteConnection

Syntax

```
property OnError: TDAConnectionErrorEvent;
```

Remarks

Write the OnError event handler to respond to errors that arise with connection. Check the E parameter to get the error code. Set the Fail parameter to False to prevent an error dialog from being displayed and to raise the EAbort exception to cancel current operation. The default value of Fail is True.

5.11.1.7 TLiteConnectionOptions Class

This class allows setting up the behaviour of the TLiteConnection class.
For a list of all members of this type, see TLiteConnectionOptions members.

Unit

LiteAccess

Syntax

```
TLiteConnectionOptions = class(TDAConnectionOptions);
```

Inheritance Hierarchy

TDAConnectionOptions
  TLiteConnectionOptions

5.11.1.7.1 Members

TLiteConnectionOptions class overview.

Properties

Name	Description
AllowImplicitConnect (inherited from **TDAConnectionOptions**)	Specifies whether to allow or not implicit connection opening.
ASCIIDataBase	Enables or disables ASCII support. The default value is False. **Note:** For this option usage set the UseUnicode option to False.
BusyTimeout	Use the BusyTimeout option to set or get the timeout of waiting for locked

	resource (database or table). If resource is not unlocked during the time specified in BusyTimeout, then SQlite returns the SQLITE_BUSY error. Default value of this option is 0.
DateFormat	Defines the format for storing dates in the database. If it is not specified, the default yyyy-mm-dd format will be used. Default value of this option is blank.
DefaultCollations	Enables or disables automatic default collations registration on connection establishing. List of available default collations: UniNoCase - allows to compare unicode strings case-insensitively. Default value of this option is False.
DefaultSortType (inherited from **TDAConnectionOptions**)	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
Direct	Used to connect to the database directly and without using SQLite3 client library.
DisconnectedMode	Enables or disables direct access to a database, without using of the SQLite client library. For more information about using direct access in LiteDAC, read the Working In Direct Mode article. Default value of this option is False.
EnableBCD	Used to enable currency type. Default value of this option is False.
EnableFMTBCD	Used to enable using FMTBCD instead of float for large integer numbers to keep precision.
EnableLoadExtension	Enables loading and using an SQLite extension:
EnableSharedCache	Enables or disables the Shared-Cache mode for SQLite database. Default value of this option is False.

EncryptionAlgorithm	Used to specify the encryption algorithm for an encrypted database.
ForceCreateDatabase	Used to force TLiteConnection to create a new database before opening a connection, if the database is not exists.
ForeignKeys	Enables or disables of foreign key constraints by the application. By default, foreign key constraints are disabled in SQLite. The ForeignKeys property can be used to enable them without executing the "PRAGMA foreign_keys = ON;" statement manually. Default value of this option is False.
KeepDesignConnected (inherited from **TDAConnectionOptions**)	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover (inherited from **TDAConnectionOptions**)	If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.
ReadUncommitted	Enables or disables Read-Uncommitted isolation mode. A database connection in read-uncommitted mode does not attempt to obtain read-locks before reading from database tables as described above. This can lead to inconsistent query results if another database connection modifies a table while it is being read, but it also means that a read-transaction opened by a connection in read-uncommitted mode can neither block nor be blocked by any other connection. Default value of this option is False.
TimeFormat	Defines the format for storing time in the database. If it is not specified, the default hh:nn:ss format will be used. Default value of this option is blank.

UseUnicode	Enables or disables Unicode support. Affects character data fetched from the server. When set to True, all character data is stored as WideStrings, and TStringField is replaced by TWideStringFiled. Default value of this option is False.

5.11.1.7.2 Properties

Properties of the **TLiteConnectionOptions** class.

For a complete list of the **TLiteConnectionOptions** class members, see the TLiteConnectionOptions Members topic.

Public

Name	Description
DefaultSortType (inherited from **TDAConnectionOptions**)	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
KeepDesignConnected (inherited from **TDAConnectionOptions**)	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover (inherited from **TDAConnectionOptions**)	If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.

Published

Name	Description
AllowImplicitConnect (inherited from **TDAConnectionOptions**)	Specifies whether to allow or not implicit connection opening.
ASCIIDataBase	Enables or disables ASCII support. The default value is False. **Note:** For this option usage set

	the UseUnicode option to False.
BusyTimeout	Use the BusyTimeout option to set or get the timeout of waiting for locked resource (database or table). If resource is not unlocked during the time specified in BusyTimeout, then SQlite returns the SQLITE_BUSY error. Default value of this option is 0.
DateFormat	Defines the format for storing dates in the database. If it is not specified, the default yyyy-mm-dd format will be used. Default value of this option is blank.
DefaultCollations	Enables or disables automatic default collations registration on connection establishing. List of available default collations: UniNoCase - allows to compare unicode strings case-insensitively. Default value of this option is False.
Direct	Used to connect to the database directly and without using SQLite3 client library.
DisconnectedMode	Enables or disables direct access to a database, without using of the SQLite client library. For more information about using direct access in LiteDAC, read the Working In Direct Mode article. Default value of this option is False.
EnableBCD	Used to enable currency type. Default value of this option is False.
EnableFMTBCD	Used to enable using FMTBCD instead of float for large integer numbers to keep precision.
EnableLoadExtension	Enables loading and using an SQLite extension:
EnableSharedCache	Enables or disables the Shared-Cache mode for SQLite database. Default value of this option is False.
EncryptionAlgorithm	Used to specify the encryption algorithm for an encrypted database.

ForceCreateDatabase	Used to force TLiteConnection to create a new database before opening a connection, if the database is not exists.
ForeignKeys	Enables or disables of foreign key constraints by the application. By default, foreign key constraints are disabled in SQLite. The ForeignKeys property can be used to enable them without executing the "PRAGMA foreign_keys = ON;" statement manually. Default value of this option is False.
ReadUncommitted	Enables or disables Read-Uncommitted isolation mode. A database connection in read-uncommitted mode does not attempt to obtain read-locks before reading from database tables as described above. This can lead to inconsistent query results if another database connection modifies a table while it is being read, but it also means that a read-transaction opened by a connection in read-uncommitted mode can neither block nor be blocked by any other connection. Default value of this option is False.
TimeFormat	Defines the format for storing time in the database. If it is not specified, the default hh:nn:ss format will be used. Default value of this option is blank.
UseUnicode	Enables or disables Unicode support. Affects character data fetched from the server. When set to True, all character data is stored as WideStrings, and TStringField is replaced by TWideStringFiled. Default value of this option is False.

See Also

- TLiteConnectionOptions Class
- TLiteConnectionOptions Class Members

5.11.1.7.2.1 ASCIIDataBase Property

Enables or disables ASCII support. The default value is False.
Note: For this option usage set the UseUnicode option to False.

Class

TLiteConnectionOptions

Syntax

```
property ASCIIDataBase: boolean default False;
```

5.11.1.7.2.2 BusyTimeout Property

Use the BusyTimeout option to set or get the timeout of waiting for locked resource (database or table). If resource is not unlocked during the time specified in BusyTimeout, then SQlite returns the SQLITE_BUSY error. Default value of this option is 0.

Class

TLiteConnectionOptions

Syntax

```
property BusyTimeout: integer default 0;
```

5.11.1.7.2.3 DateFormat Property

Defines the format for storing dates in the database. If it is not specified, the default yyyy-mm-dd format will be used. Default value of this option is blank.

Class

TLiteConnectionOptions

Syntax

```
property DateFormat: string;
```

5.11.1.7.2.4 DefaultCollations Property

Enables or disables automatic default collations registration on connection establishing. List of available default collations: UniNoCase - allows to compare unicode strings case-insensitively. Default value of this option is False.

Class

TLiteConnectionOptions

Syntax

```
property DefaultCollations: boolean default True;
```

5.11.1.7.2.5 Direct Property

Used to connect to the database directly and without using SQLite3 client library.

Class

TLiteConnectionOptions

Syntax

```
property Direct: boolean default DefValDirect;
```

Remarks

If the Direct option is set to True, LiteDAC connects to the database directly using embedded SQLite3 engine and does not use SQLite3 client library.
Working in the Direct mode also enables interaction with encrypted databases using the TLiteConnectionOptions.EncryptionAlgorithm option, the TLiteConnection.EncryptionKey property and the TLiteConnection.EncryptDatabase method.

See Also

- EncryptionAlgorithm
- TLiteConnection.EncryptionKey
- TLiteConnection.EncryptDatabase
- Connecting in the Direct mode
- Database File Encryption

5.11.1.7.2.6 DisconnectedMode Property

Enables or disables direct access to a database, without using of the SQLite client library. For more information about using direct access in LiteDAC, read the Working In Direct Mode article. Default value of this option is False.

Class

TLiteConnectionOptions

Syntax

```
property DisconnectedMode: boolean;
```

5.11.1.7.2.7 EnableBCD Property

Used to enable currency type. Default value of this option is False.

Class

TLiteConnectionOptions

Syntax

```
property EnableBCD: boolean;
```

5.11.1.7.2.8 EnableFMTBCD Property

Used to enable using FMTBCD instead of float for large integer numbers to keep precision.

Class

TLiteConnectionOptions

Syntax

```
property EnableFMTBCD: boolean;
```

5.11.1.7.2.9 EnableLoadExtension Property

Enables loading and using an SQLite extension:

Class

TLiteConnectionOptions

Syntax

```
property EnableLoadExtension: boolean default False;
```

Example

```
UniConnection.ExecSQL('SELECT load_extension(''C:\ext.dll'', ''sqlite3_ext_i
```

5.11.1.7.2.10 EnableSharedCache Property

Enables or disables the Shared-Cache mode for SQLite database. Default value of this option is False.

Class

TLiteConnectionOptions

Syntax

```
property EnableSharedCache: boolean default False;
```

5.11.1.7.2.11 EncryptionAlgorithm Property

Used to specify the encryption algorithm for an encrypted database.

Class

TLiteConnectionOptions

Syntax

```
property EncryptionAlgorithm: TLiteEncryptionAlgorithm default
DefaultEncryptionAlgorithm;
```

Remarks

Use the EncryptionAlgorithm property to specify the encryption algorithm when connecting to an encrypted database , or the encryption algorithm that will be used to encrypt a database using the TLiteConnection.EncryptDatabase method. Also, the TLiteConnection.EncryptionKey property is used to specify the encryption key to open/encrypt a database.
Interacting with encrypted database only available in the Direct mode .

See Also

- Direct
- TLiteConnection.EncryptionKey
- TLiteConnection.EncryptDatabase
- Connecting in the Direct mode
- Database File Encryption

5.11.1.7.2.12 ForceCreateDatabase Property

Used to force TLiteConnection to create a new database before opening a connection, if the database is not exists.

Class

TLiteConnectionOptions

Syntax

```
property ForceCreateDatabase: boolean default
```

```
DefValForceCreateDatabase;
```

Remarks

By default, when connecting to a database, SQLite3 does not check whether there exists the specified file. If the TLiteConnection.Database property points to a non-existent database in correct system path, a new empty database will be created and opened, and no warning message will be displayed. In the case if an incorrect database name was entered by mistake, this behavior can lead to misunderstandings and errors in the operation of the software.
If the TLiteConnectionOptions.ForceDatabaseCreate property is set to False, before establishing a connection to the database, TLiteConnection will check whether the specified file exists. If the file does not exist, an appropriate exception will be raised.
If the TLiteConnectionOptions.ForceDatabaseCreate property is set to True, no checking will be performed and a new database will be created.
The default value of the TLiteConnectionOptions.ForceDatabaseCreate property is False.

See Also

- TLiteConnection.Database

5.11.1.7.2.13 ForeignKeys Property

Enables or disables of foreign key constraints by the application. By default, foreign key constraints are disabled in SQLite. The ForeignKeys property can be used to enable them without executing the "PRAGMA foreign_keys = ON;" statement manually. Default value of this option is False.

Class

TLiteConnectionOptions

Syntax

```
property ForeignKeys: boolean default True;
```

5.11.1.7.2.14 ReadUncommitted Property

Enables or disables Read-Uncommitted isolation mode. A database connection in read-uncommitted mode does not attempt to obtain read-locks before reading from database tables as described above. This can lead to inconsistent query results if another database connection modifies a table while it is being read, but it also means that a read-transaction opened by a connection in read-uncommitted mode can neither block nor be blocked by any other connection. Default value of this option is False.

Class

TLiteConnectionOptions

Syntax

```
property ReadUncommitted: boolean default False;
```

5.11.1.7.2.15 TimeFormat Property

Defines the format for storing time in the database. If it is not specified, the default hh:nn:ss format will be used. Default value of this option is blank.

Class

TLiteConnectionOptions

Syntax

```
property TimeFormat: string;
```

5.11.1.7.2.16 UseUnicode Property

Enables or disables Unicode support. Affects character data fetched from the server. When set to True, all character data is stored as WideStrings, and TStringField is replaced by TWideStringFiled. Default value of this option is False.

Class

TLiteConnectionOptions

Syntax

```
property UseUnicode: boolean default DefValUseUnicode;
```

5.11.1.8 TLiteDataSetOptions Class

This class allows setting up the behaviour of the TCustomLiteDataSet class.
For a list of all members of this type, see TLiteDataSetOptions members.

Unit

LiteAccess

Syntax

```
TLiteDataSetOptions = class(TDADataSetOptions);
```

Inheritance Hierarchy

TDADataSetOptions

TLiteDataSetOptions

5.11.1.8.1 Members

TLiteDataSetOptions class overview.

Properties

Name	Description
AutoPrepare (inherited from **TDADataSetOptions**)	Used to execute automatic TCustomDADataSet.Prepare on the query execution.
CacheCalcFields (inherited from **TDADataSetOptions**)	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CompressBlobMode (inherited from **TDADataSetOptions**)	Used to store values of the BLOB fields in compressed form.
DefaultValues (inherited from **TDADataSetOptions**)	Used to request default values/ expressions from the server and assign them to the DefaultExpression property.
DetailDelay (inherited from **TDADataSetOptions**)	Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.
FieldsOrigin (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to fill the Origin property of the TField objects by appropriate value when opening a dataset.
FlatBuffers (inherited from **TDADataSetOptions**)	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
InsertAllSetFields (inherited from **TDADataSetOptions**)	Used to include all set dataset fields in the generated INSERT statement

LocalMasterDetail (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to use local filtering to establish master/ detail relationship for detail dataset and does not refer to the server.
LongStrings (inherited from **TDADataSetOptions**)	Used to represent string fields with the length that is greater than 255 as TStringField.
MasterFieldsNullable (inherited from **TDADataSetOptions**)	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
NumberRange (inherited from **TDADataSetOptions**)	Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.
QueryRecCount (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to perform additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records.
QuoteNames (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to quote all database object names in autogenerated SQL statements such as update SQL.
RemoveOnRefresh (inherited from **TDADataSetOptions**)	Used for a dataset to locally remove a record that can not be found on the server.
RequiredFields (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to set the Required property of the TField objects for the NOT NULL fields.
ReturnParams (inherited from **TDADataSetOptions**)	Used to return the new value of fields to dataset after insert or update.
SetFieldsReadOnly (inherited from **TDADataSetOptions**)	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.

StrictUpdate (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar (inherited from **TDADataSetOptions**)	Specifies whether to discard all trailing spaces in the string fields of a dataset.
UnknownAsString	Used to map fields of unknown data types to TStringField (TWideStringField).
UpdateAllFields (inherited from **TDADataSetOptions**)	Used to include all dataset fields in the generated UPDATE and INSERT statements.
UpdateBatchSize (inherited from **TDADataSetOptions**)	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

5.11.1.8.2 Properties

Properties of the **TLiteDataSetOptions** class.

For a complete list of the **TLiteDataSetOptions** class members, see the TLiteDataSetOptions Members topic.

Public

Name	Description
AutoPrepare (inherited from **TDADataSetOptions**)	Used to execute automatic TCustomDADataSet.Prepare on the query execution.
CacheCalcFields (inherited from **TDADataSetOptions**)	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CompressBlobMode (inherited from **TDADataSetOptions**)	Used to store values of the BLOB fields in compressed form.
DefaultValues (inherited from	Used to request default values/ expressions from the server and assign them to the DefaultExpression

TDADataSetOptions)	property.
DetailDelay (inherited from **TDADataSetOptions**)	Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.
FieldsOrigin (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to fill the Origin property of the TField objects by appropriate value when opening a dataset.
FlatBuffers (inherited from **TDADataSetOptions**)	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
InsertAllSetFields (inherited from **TDADataSetOptions**)	Used to include all set dataset fields in the generated INSERT statement
LocalMasterDetail (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to use local filtering to establish master/ detail relationship for detail dataset and does not refer to the server.
LongStrings (inherited from **TDADataSetOptions**)	Used to represent string fields with the length that is greater than 255 as TStringField.
MasterFieldsNullable (inherited from **TDADataSetOptions**)	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
NumberRange (inherited from **TDADataSetOptions**)	Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.
QueryRecCount (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to perform additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records.
QuoteNames (inherited from	Used for TCustomDADataSet to quote all database object names in autogenerated SQL statements such

TDADataSetOptions)	as update SQL.
RemoveOnRefresh (inherited from **TDADataSetOptions**)	Used for a dataset to locally remove a record that can not be found on the server.
RequiredFields (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to set the Required property of the TField objects for the NOT NULL fields.
ReturnParams (inherited from **TDADataSetOptions**)	Used to return the new value of fields to dataset after insert or update.
SetFieldsReadOnly (inherited from **TDADataSetOptions**)	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.
StrictUpdate (inherited from **TDADataSetOptions**)	Used for TCustomDADataSet to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar (inherited from **TDADataSetOptions**)	Specifies whether to discard all trailing spaces in the string fields of a dataset.
UpdateAllFields (inherited from **TDADataSetOptions**)	Used to include all dataset fields in the generated UPDATE and INSERT statements.
UpdateBatchSize (inherited from **TDADataSetOptions**)	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

Published

Name	Description
UnknownAsString	Used to map fields of unknown data types to TStringField (TWideStringField).

See Also

- TLiteDataSetOptions Class
- TLiteDataSetOptions Class Members

5.11.1.8.2.1 UnknownAsString Property

Used to map fields of unknown data types to TStringField (TWideStringField).

Class

TLiteDataSetOptions

Syntax

```
property UnknownAsString: boolean default False;
```

Remarks

Use the UnknownAsString to map fields of unknown data types to TStringField (TWideStringField). If False, fields of unknown data types (for example the ifnull function result) are mapped to TMemoField or TWideMemoField depending on the value of the UseUnicode option. Memo is used because maximum length of values from such fields is unknown. If True, fields of unknown data types are mapped to TStringField or TWideStringField depending on the value of the UseUnicode option. Size of fields is set to 8192. Values larger than this size are truncated. The default value is False.

5.11.1.9 TLiteDataSource Class

TLiteDataSource provides an interface between a LiteDAC dataset components and data-aware controls on a form.
For a list of all members of this type, see TLiteDataSource members.

Unit

LiteAccess

Syntax

```
TLiteDataSource = class(TCRDataSource);
```

Remarks

TLiteDataSource provides an interface between a LiteDAC dataset components and data-aware controls on a form. TLiteDataSource inherits its functionality directly from the TDataSource component. At design-time assign individual data-aware components'

DataSource properties from their drop-down listboxes

Inheritance Hierarchy

TCRDataSource
  TLiteDataSource

5.11.1.9.1 Members

TLiteDataSource class overview.

5.11.1.10 TLiteEncryptor Class

The class that performs encrypting and decrypting of data.
For a list of all members of this type, see TLiteEncryptor members.

Unit

LiteAccess

Syntax

```
TLiteEncryptor = class(TCREncryptor);
```

Inheritance Hierarchy

TCREncryptor
  TLiteEncryptor

5.11.1.10.1 Members

TLiteEncryptor class overview.

Properties

Name	Description
DataHeader (inherited from **TCREncryptor**)	Specifies whether the additional information is stored with the encrypted data.
EncryptionAlgorithm (inherited from **TCREncryptor**)	Specifies the algorithm of data encryption.
HashAlgorithm (inherited from **TCREncryptor**)	Specifies the algorithm of generating hash data.

InvalidHashAction (inherited from **TCREncryptor**)	Specifies the action to perform on data fetching when hash data is invalid.
Password (inherited from **TCREncryptor**)	Used to set a password that is used to generate a key for encryption.

Methods

Name	Description
SetKey (inherited from **TCREncryptor**)	Sets a key, using which data is encrypted.

5.11.1.11 TLiteMetaData Class

A component for obtaining metainformation about database objects.
For a list of all members of this type, see TLiteMetaData members.

Unit

LiteAccess

Syntax

```
TLiteMetaData = class(TDAMetaData);
```

Remarks

The TLiteMetaData component is used to obtain metainformation about objects in the database, such as tables, table columns, indexes, etc.

Inheritance Hierarchy

TMemDataSet
  TDAMetaData
    TLiteMetaData

5.11.1.11.1 Members

TLiteMetaData class overview.

Properties

Name	Description

CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Connection	Used to specify a connection object that will be used to connect to a data store.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MetaDataKind (inherited from **TDAMetaData**)	Used to specify which kind of metainformation to show.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
Restrictions (inherited from **TDAMetaData**)	Used to provide one or more conditions restricting the list of objects to be described.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Methods

Name	Description

ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetMetaDataKinds (inherited from **TDAMetaData**)	Used to get values acceptable in the MetaDataKind property.
GetRestrictions (inherited from **TDAMetaData**)	Used to find out which restrictions are applicable to a certain MetaDataKind.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.

Prepare (inherited from **TMemDataSet**)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from	Occurs when a single update component can not handle the updates.

TMemDataSet)	

5.11.1.11.2 Properties

Properties of the **TLiteMetaData** class.

For a complete list of the **TLiteMetaData** class members, see the TLiteMetaData Members topic.

Public

Name	Description
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MetaDataKind (inherited from **TDAMetaData**)	Used to specify which kind of metainformation to show.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
Restrictions (inherited from **TDAMetaData**)	Used to provide one or more conditions restricting the list of objects to be described.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.

UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Published

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.

See Also

- TLiteMetaData Class
- TLiteMetaData Class Members

5.11.1.11.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TLiteMetaData

Syntax

```
property Connection: TLiteConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store. Set at design-time by selecting from the list of provided TLiteConnection objects. At runtime, set the Connection property to reference an existing TLiteConnection object.

See Also

-

5.11.1.12 TLiteQuery Class

A component for executing queries and operating record sets. It also provides flexible way to update data.
For a list of all members of this type, see TLiteQuery members.

Unit

LiteAccess

Syntax

```
TLiteQuery = class(TCustomLiteDataSet);
```

Remarks

TLiteQuery is a direct descendant of the TCustomLiteDataSet component. It publishes most of its inherited properties and events so that they can be manipulated at design-time.
Use TLiteQuery to perform fetching, insertion, deletion and update of record by dynamically generated SQL statements. TLiteQuery provides automatic blocking of records, their checking before edit and refreshing after post. Set SQL, SQLInsert, SQLDelete, SQLRefresh, and SQLUpdate properties to define SQL statements for subsequent accesses to the database server. There is no restriction to their syntax, so any SQL statement is allowed. Usually you need to use INSERT, DELETE, and UPDATE statements but you also may use stored procedures in more diverse cases.
To modify records, you can specify KeyFields. If they are not specified, TLiteQuery will retrieve primary keys for UpdatingTable from metadata. TLiteQuery can automatically update only one table. Updating table is defined by the UpdatingTable property if this property is set. Otherwise, the table a field of which is the first field in the field list in the SELECT clause is used as an updating table.
The SQLInsert, SQLDelete, SQLUpdate, SQLRefresh properties support automatic binding of parameters which have identical names to fields captions. To retrieve the value of a field as it was before the operation use the field name with the 'OLD_' prefix. This is especially useful when doing field comparisons in the WHERE clause of the statement. Use the TLiteQuery.BeforeUpdateExecute event to assign the value to additional parameters and the TLiteQuery.AfterUpdateExecute event to read them.

Inheritance Hierarchy

TMemDataSet
  TCustomDADataSet
    TCustomLiteDataSet
      TLiteQuery

See Also

•

5.11.1.12.1 Members

TLiteQuery class overview.

Properties

Name	Description
BaseSQL (inherited from **TCustomDADataSet**)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Conditions (inherited from **TCustomDADataSet**)	Used to add WHERE conditions to a query
Connection (inherited from **TCustomLiteDataSet**)	Used to specify a connection object that will be used to connect to a data store.
DataTypeMap (inherited from **TCustomDADataSet**)	Used to set data type mapping rules
Debug (inherited from **TCustomDADataSet**)	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields (inherited from **TCustomDADataSet**)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from **TCustomDADataSet**)	Used to keep dataset opened after connection is closed.
Encryption (inherited from **TCustomLiteDataSet**)	Used to specify encryption options in a dataset.
FetchAll	Defines whether to request all records of the query from database server when the dataset is being opened.

FetchRows (inherited from **TCustomDADataSet**)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from **TCustomDADataSet**)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from **TCustomDADataSet**)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from **TCustomDADataSet**)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from **TCustomDADataSet**)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
LockMode	Used to specify what kind of lock will be performed when editing a record.
MacroCount (inherited from **TCustomDADataSet**)	Used to get the number of macros associated with the Macros property.
Macros (inherited from **TCustomDADataSet**)	Makes it possible to change SQL queries easily.
MasterFields (inherited from **TCustomDADataSet**)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it

	and the dataset specified in MasterSource.
MasterSource (inherited from **TCustomDADataSet**)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from **TCustomLiteDataSet**)	Specifies the behaviour of TCustomLiteDataSet object.
ParamCheck (inherited from **TCustomDADataSet**)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from **TCustomDADataSet**)	Used to indicate how many parameters are there in the Params property.
Params (inherited from **TCustomDADataSet**)	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from **TCustomDADataSet**)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from **TCustomDADataSet**)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from **TCustomDADataSet**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from **TCustomLiteDataSet**)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.

SQL (inherited from **TCustomDADataSet**)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from **TCustomDADataSet**)	Used if an application does not need bidirectional access to records in the result set.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.
UpdatingTable	Used to specify which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.

Methods

Name	Description
AddWhere (inherited from **TCustomDADataSet**)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from **TCustomDADataSet**)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
CreateBlobStream (inherited from **TCustomDADataSet**)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
DeleteWhere (inherited from **TCustomDADataSet**)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from	Enables changing the starting value for an existing range.

TMemDataSet)	
Execute (inherited from **TCustomDADataSet**)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from **TCustomDADataSet**)	Indicates whether SQL statement is still being executed.
Fetched (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet has already fetched all rows.
Fetching (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet is still fetching rows.
FetchingAll (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet is fetching all rows to the end.
FindKey (inherited from **TCustomDADataSet**)	Searches for a record which contains specified field values.
FindMacro (inherited from **TCustomDADataSet**)	Description is not available at the moment.
FindNearest (inherited from **TCustomDADataSet**)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from **TCustomDADataSet**)	Determines if a parameter with the specified name exists in a dataset.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from	Returns internal field types defined in the MemData and accompanying

TCustomDADataSet)	modules.
GetFieldObject (inherited from **TCustomDADataSet**)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from **TCustomDADataSet**)	Retrieves the precision of a number field.
GetFieldScale (inherited from **TCustomDADataSet**)	Retrieves the scale of a number field.
GetKeyFieldNames (inherited from **TCustomDADataSet**)	Provides a list of available key field names.
GetOrderBy (inherited from **TCustomDADataSet**)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from **TCustomDADataSet**)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock (inherited from **TCustomDADataSet**)	Locks the current record.
MacroByName (inherited from **TCustomDADataSet**)	Finds a Macro with the name passed in Name.
ParamByName (inherited from **TCustomDADataSet**)	Sets or uses parameter information for a specific parameter based on its name.

Prepare (inherited from **TCustomDADataSet**)	Allocates, opens, and parses cursor for a query.
RefreshRecord (inherited from **TCustomDADataSet**)	Actualizes field values for the current record.
RestoreSQL (inherited from **TCustomDADataSet**)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from **TCustomDADataSet**)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from **TCustomDADataSet**)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from	Determines if the SQL property value was saved to the BaseSQL property.

TCustomDADataSet)	
UnLock (inherited from **TCustomDADataSet**)	Releases a record lock.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
AfterExecute (inherited from **TCustomDADataSet**)	Occurs after a component has executed a query to database.
AfterFetch (inherited from **TCustomDADataSet**)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute (inherited from **TCustomDADataSet**)	Occurs after executing insert, delete, update, lock and refresh operations.
BeforeFetch (inherited from **TCustomDADataSet**)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute (inherited from **TCustomDADataSet**)	Occurs before executing insert, delete, update, lock, and refresh operations.
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from	Occurs when a single update component can not handle the

TMemDataSet)	updates.

5.11.1.12.2 Properties

Properties of the **TLiteQuery** class.

For a complete list of the **TLiteQuery** class members, see the TLiteQuery Members topic.

Public

Name	Description
BaseSQL (inherited from **TCustomDADataSet**)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Conditions (inherited from **TCustomDADataSet**)	Used to add WHERE conditions to a query
Connection (inherited from **TCustomLiteDataSet**)	Used to specify a connection object that will be used to connect to a data store.
DataTypeMap (inherited from **TCustomDADataSet**)	Used to set data type mapping rules
Debug (inherited from **TCustomDADataSet**)	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields (inherited from **TCustomDADataSet**)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from **TCustomDADataSet**)	Used to keep dataset opened after connection is closed.
Encryption (inherited from	Used to specify encryption options in a dataset.

TCustomLiteDataSet)	
FetchRows (inherited from **TCustomDADataSet**)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from **TCustomDADataSet**)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from **TCustomDADataSet**)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from **TCustomDADataSet**)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from **TCustomDADataSet**)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from **TCustomDADataSet**)	Used to get the number of macros associated with the Macros property.
Macros (inherited from **TCustomDADataSet**)	Makes it possible to change SQL queries easily.
MasterFields (inherited from **TCustomDADataSet**)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it

	and the dataset specified in MasterSource.
MasterSource (inherited from **TCustomDADataSet**)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from **TCustomLiteDataSet**)	Specifies the behaviour of TCustomLiteDataSet object.
ParamCheck (inherited from **TCustomDADataSet**)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from **TCustomDADataSet**)	Used to indicate how many parameters are there in the Params property.
Params (inherited from **TCustomDADataSet**)	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from **TCustomDADataSet**)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from **TCustomDADataSet**)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from **TCustomDADataSet**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from **TCustomLiteDataSet**)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.

SQL (inherited from **TCustomDADataSet**)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from **TCustomDADataSet**)	Used if an application does not need bidirectional access to records in the result set.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Published

Name	Description

FetchAll	Defines whether to request all records of the query from database server when the dataset is being opened.
LockMode	Used to specify what kind of lock will be performed when editing a record.
UpdatingTable	Used to specify which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.

See Also

- TLiteQuery Class
- TLiteQuery Class Members

5.11.1.12.2.1 FetchAll Property

Defines whether to request all records of the query from database server when the dataset is being opened.

Class

TLiteQuery

Syntax

```
property FetchAll: boolean;
```

Remarks

When set to True, all records of the query are requested from database server when the dataset is being opened. When set to False, records are retrieved when a data-aware component or a program requests it. If a query can return a lot of records, set this property to False if initial response time is important.
When the FetchAll property is False, the first call to TMemDataSet.Locate and TMemDataSet.LocateEx methods may take a lot of time to retrieve additional records to the client side.

5.11.1.12.2.2 LockMode Property

Used to specify what kind of lock will be performed when editing a record.

Class

TLiteQuery

Syntax

```
property LockMode: TLockMode;
```

Remarks

Use the LockMode property to define what kind of lock will be performed when editing a record. Locking a record is useful in creating multi-user applications. It prevents modification of a record by several users at the same time.
Locking is performed by the RefreshRecord method.
The default value is lmNone.

See Also

- P:Devart.SQLiteDac.TLiteStoredProc.LockMode
- TLiteTable.LockMode

5.11.1.12.2.3 UpdatingTable Property

Used to specify which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.

Class

TLiteQuery

Syntax

```
property UpdatingTable: string;
```

Remarks

Use the UpdatingTable property to specify which table in a query is assumed to be the target for the subsequent data-modification queries as a result of user incentive to insert, update or delete records.
This property is used on Insert, Update, Delete or RefreshRecord (see also TCustomLiteDataSet.Options) if appropriate SQL (SQLInsert, SQLUpdate or SQLDelete) is not provided.
If UpdatingTable is not set then the first table used in a query is assumed to be the target.

Example

Below are two examples for the query, where:

1. the only allowed value for UpdatingTable property is 'Dept';
2. allowed values for UpdatingTable are 'Dept' and 'Emp'.

In the first case (or by default) editable field is ShipName, in the second

5.11.1.13 TLiteSQL Class

A component for executing SQL statements.
For a list of all members of this type, see TLiteSQL members.

Unit

LiteAccess

Syntax

```
TLiteSQL = class(TCustomDASQL);
```

Remarks

The TLiteSQL component is a direct descendant of the TCustomDASQL class. Use The TLiteSQL component when a client application must execute SQL statement. The SQL statement should not retrieve rows from the database.

Inheritance Hierarchy

TCustomDASQL
  TLiteSQL

5.11.1.13.1 Members

TLiteSQL class overview.

Properties

Name	Description
ChangeCursor (inherited from **TCustomDASQL**)	Enables or disables changing screen cursor when executing commands in the NonBlocking mode.
Connection	Used to specify a connection object that will be used to connect to a data store.
Debug (inherited from **TCustomDASQL**)	Used to display executing statement, all its parameters' values, and the type of parameters.

FinalSQL (inherited from **TCustomDASQL**)	Used to return a SQL statement with expanded macros.
MacroCount (inherited from **TCustomDASQL**)	Used to get the number of macros associated with the Macros property.
Macros (inherited from **TCustomDASQL**)	Makes it possible to change SQL queries easily.
ParamCheck (inherited from **TCustomDASQL**)	Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.
ParamCount (inherited from **TCustomDASQL**)	Indicates the number of parameters in the Params property.
Params (inherited from **TCustomDASQL**)	Used to contain parameters for a SQL statement.
ParamValues (inherited from **TCustomDASQL**)	Used to get or set the values of individual field parameters that are identified by name.
Prepared (inherited from **TCustomDASQL**)	Used to indicate whether a query is prepared for execution.
RowsAffected (inherited from **TCustomDASQL**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL (inherited from **TCustomDASQL**)	Used to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called.

Methods

Name	Description
Execute (inherited from **TCustomDASQL**)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from **TCustomDASQL**)	Checks whether TCustomDASQL still executes a SQL statement.

FindMacro (inherited from **TCustomDASQL**)	Searches for a macro with the specified name.
FindParam (inherited from **TCustomDASQL**)	Finds a parameter with the specified name.
MacroByName (inherited from **TCustomDASQL**)	Finds a Macro with the name passed in Name.
ParamByName (inherited from **TCustomDASQL**)	Finds a parameter with the specified name.
Prepare (inherited from **TCustomDASQL**)	Allocates, opens, and parses cursor for a query.
UnPrepare (inherited from **TCustomDASQL**)	Frees the resources allocated for a previously prepared query on the server and client sides.
WaitExecuting (inherited from **TCustomDASQL**)	Waits until TCustomDASQL executes a SQL statement.

Events

Name	Description
AfterExecute (inherited from **TCustomDASQL**)	Occurs after a SQL statement has been executed.

5.11.1.13.2 Properties

Properties of the **TLiteSQL** class.

For a complete list of the **TLiteSQL** class members, see the TLiteSQL Members topic.

Public

Name	Description
ChangeCursor (inherited from **TCustomDASQL**)	Enables or disables changing screen cursor when executing commands in the NonBlocking mode.

Debug (inherited from **TCustomDASQL**)	Used to display executing statement, all its parameters' values, and the type of parameters.
FinalSQL (inherited from **TCustomDASQL**)	Used to return a SQL statement with expanded macros.
MacroCount (inherited from **TCustomDASQL**)	Used to get the number of macros associated with the Macros property.
Macros (inherited from **TCustomDASQL**)	Makes it possible to change SQL queries easily.
ParamCheck (inherited from **TCustomDASQL**)	Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.
ParamCount (inherited from **TCustomDASQL**)	Indicates the number of parameters in the Params property.
Params (inherited from **TCustomDASQL**)	Used to contain parameters for a SQL statement.
ParamValues (inherited from **TCustomDASQL**)	Used to get or set the values of individual field parameters that are identified by name.
Prepared (inherited from **TCustomDASQL**)	Used to indicate whether a query is prepared for execution.
RowsAffected (inherited from **TCustomDASQL**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL (inherited from **TCustomDASQL**)	Used to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called.

Published

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.

See Also

- TLiteSQL Class
- TLiteSQL Class Members

5.11.1.13.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TLiteSQL

Syntax

```
property Connection: TLiteConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store. Set at design-time by selecting from the list of provided TLiteConnection objects. At runtime, set the Connection property to reference an existing TLiteConnection object.

See Also

-

5.11.1.14 TLiteTable Class

Accesses data in a single table without writing SQL statements.
For a list of all members of this type, see TLiteTable members.

Unit

LiteAccess

Syntax

```
TLiteTable = class(TCustomLiteTable);
```

Inheritance Hierarchy

TMemDataSet
  TCustomDADataSet
    TCustomLiteDataSet
      TCustomLiteTable
        TLiteTable

5.11.1.14.1 Members

TLiteTable class overview.

Properties

Name	Description
BaseSQL (inherited from **TCustomDADataSet**)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Conditions (inherited from **TCustomDADataSet**)	Used to add WHERE conditions to a query
Connection (inherited from **TCustomLiteDataSet**)	Used to specify a connection object that will be used to connect to a data store.
DataTypeMap (inherited from **TCustomDADataSet**)	Used to set data type mapping rules
Debug (inherited from **TCustomDADataSet**)	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields (inherited from **TCustomDADataSet**)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from **TCustomDADataSet**)	Used to keep dataset opened after connection is closed.
Encryption (inherited from **TCustomLiteDataSet**)	Used to specify encryption options in a dataset.
FetchAll	Defines whether to request all records of the query from database server when the dataset is being opened.

FetchRows (inherited from **TCustomDADataSet**)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from **TCustomDADataSet**)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from **TCustomDADataSet**)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from **TCustomDADataSet**)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from **TCustomDADataSet**)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
Limit (inherited from **TCustomLiteTable**)	Used to set the number of rows retrieved from the table.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
LockMode	Used to specify what kind of lock will be performed when editing a record.
MacroCount (inherited from **TCustomDADataSet**)	Used to get the number of macros associated with the Macros property.
Macros (inherited from **TCustomDADataSet**)	Makes it possible to change SQL queries easily.

MasterFields (inherited from **TCustomDADataSet**)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from **TCustomDADataSet**)	Used to specify the data source component which binds current dataset to the master one.
Offset (inherited from **TCustomLiteTable**)	Used to allow retrieving data from the database starting from the specified row.
Options (inherited from **TCustomLiteDataSet**)	Specifies the behaviour of TCustomLiteDataSet object.
OrderFields	Used to build ORDER BY clause of SQL statements.
ParamCheck (inherited from **TCustomDADataSet**)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from **TCustomDADataSet**)	Used to indicate how many parameters are there in the Params property.
Params (inherited from **TCustomDADataSet**)	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from **TCustomDADataSet**)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from **TCustomDADataSet**)	Used to indicate when the editing record is refreshed.

RowsAffected (inherited from **TCustomDADataSet**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from **TCustomLiteDataSet**)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from **TCustomDADataSet**)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying an update to a dataset.
TableName	Used to specify the name of the database table this component encapsulates.
UniDirectional (inherited from **TCustomDADataSet**)	Used if an application does not need bidirectional access to records in the result set.

UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Methods

Name	Description
AddWhere (inherited from **TCustomDADataSet**)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from **TCustomDADataSet**)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
CreateBlobStream (inherited from **TCustomDADataSet**)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.

DeleteWhere (inherited from **TCustomDADataSet**)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
Execute (inherited from **TCustomDADataSet**)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from **TCustomDADataSet**)	Indicates whether SQL statement is still being executed.
Fetched (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet has already fetched all rows.
Fetching (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet is still fetching rows.
FetchingAll (inherited from **TCustomDADataSet**)	Used to learn whether TCustomDADataSet is fetching all rows to the end.
FindKey (inherited from **TCustomDADataSet**)	Searches for a record which contains specified field values.
FindMacro (inherited from **TCustomDADataSet**)	Description is not available at the moment.
FindNearest (inherited from **TCustomDADataSet**)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.

FindParam (inherited from **TCustomDADataSet**)	Determines if a parameter with the specified name exists in a dataset.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from **TCustomDADataSet**)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from **TCustomDADataSet**)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from **TCustomDADataSet**)	Retrieves the precision of a number field.
GetFieldScale (inherited from **TCustomDADataSet**)	Retrieves the scale of a number field.
GetKeyFieldNames (inherited from **TCustomDADataSet**)	Provides a list of available key field names.
GetOrderBy (inherited from **TCustomDADataSet**)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from **TCustomDADataSet**)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock (inherited from **TCustomDADataSet**)	Locks the current record.

MacroByName (inherited from **TCustomDADataSet**)	Finds a Macro with the name passed in Name.
ParamByName (inherited from **TCustomDADataSet**)	Sets or uses parameter information for a specific parameter based on its name.
Prepare (inherited from **TCustomDADataSet**)	Allocates, opens, and parses cursor for a query.
RefreshRecord (inherited from **TCustomDADataSet**)	Actualizes field values for the current record.
RestoreSQL (inherited from **TCustomDADataSet**)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from **TCustomDADataSet**)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from **TCustomDADataSet**)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to

	include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from **TCustomDADataSet**)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from **TCustomDADataSet**)	Releases a record lock.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
AfterExecute (inherited from **TCustomDADataSet**)	Occurs after a component has executed a query to database.
AfterFetch (inherited from **TCustomDADataSet**)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute (inherited from **TCustomDADataSet**)	Occurs after executing insert, delete, update, lock and refresh operations.
BeforeFetch (inherited from **TCustomDADataSet**)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute (inherited from **TCustomDADataSet**)	Occurs before executing insert, delete, update, lock, and refresh operations.

OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from **TMemDataSet**)	Occurs when a single update component can not handle the updates.

5.11.1.14.2 Properties

Properties of the **TLiteTable** class.

For a complete list of the **TLiteTable** class members, see the TLiteTable Members topic.

Public

Name	Description
BaseSQL (inherited from **TCustomDADataSet**)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
Conditions (inherited from **TCustomDADataSet**)	Used to add WHERE conditions to a query
Connection (inherited from **TCustomLiteDataSet**)	Used to specify a connection object that will be used to connect to a data store.
DataTypeMap (inherited from **TCustomDADataSet**)	Used to set data type mapping rules
Debug (inherited from **TCustomDADataSet**)	Used to display executing statement, all its parameters' values, and the type of parameters.
DetailFields (inherited from **TCustomDADataSet**)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.

Disconnected (inherited from **TCustomDADataSet**)	Used to keep dataset opened after connection is closed.
Encryption (inherited from **TCustomLiteDataSet**)	Used to specify encryption options in a dataset.
FetchRows (inherited from **TCustomDADataSet**)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from **TCustomDADataSet**)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from **TCustomDADataSet**)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from **TCustomDADataSet**)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from **TCustomDADataSet**)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
Limit (inherited from **TCustomLiteTable**)	Used to set the number of rows retrieved from the table.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from	Used to get the number of macros associated with the Macros property.

TCustomDADataSet)	
Macros (inherited from **TCustomDADataSet**)	Makes it possible to change SQL queries easily.
MasterFields (inherited from **TCustomDADataSet**)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from **TCustomDADataSet**)	Used to specify the data source component which binds current dataset to the master one.
Offset (inherited from **TCustomLiteTable**)	Used to allow retrieving data from the database starting from the specified row.
Options (inherited from **TCustomLiteDataSet**)	Specifies the behaviour of TCustomLiteDataSet object.
ParamCheck (inherited from **TCustomDADataSet**)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from **TCustomDADataSet**)	Used to indicate how many parameters are there in the Params property.
Params (inherited from **TCustomDADataSet**)	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from **TCustomDADataSet**)	Used to prevent users from updating, inserting, or deleting data in the dataset.

RefreshOptions (inherited from **TCustomDADataSet**)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from **TCustomDADataSet**)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from **TCustomLiteDataSet**)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from **TCustomDADataSet**)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from **TCustomDADataSet**)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataSet.RefreshRecord procedure.
SQLUpdate (inherited from **TCustomDADataSet**)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from **TCustomDADataSet**)	Used if an application does not need bidirectional access to records in the result set.

UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Published

Name	Description
FetchAll	Defines whether to request all records of the query from database server when the dataset is being opened.
LockMode	Used to specify what kind of lock will be performed when editing a record.
OrderFields	Used to build ORDER BY clause of SQL statements.
TableName	Used to specify the name of the database table this component encapsulates.

See Also

- TLiteTable Class
- TLiteTable Class Members

5.11.1.14.2.1 FetchAll Property

Defines whether to request all records of the query from database server when the dataset is being opened.

Class

TLiteTable

Syntax

```
property FetchAll: boolean;
```

Remarks

When set to True, all records of the query are requested from database server when the dataset is being opened. When set to False, records are retrieved when a data-aware component or a program requests it. If a query can return a lot of records, set this property to False if initial response time is important.
When the FetchAll property is False, the first call to TMemDataSet.Locate and TMemDataSet.LocateEx methods may take a lot of time to retrieve additional records to the client side.

5.11.1.14.2.2 LockMode Property

Used to specify what kind of lock will be performed when editing a record.

Class

TLiteTable

Syntax

```
property LockMode: TLockMode;
```

Remarks

Use the LockMode property to define what kind of lock will be performed when editing a record. Locking a record is useful in creating multi-user applications. It prevents modification of a record by several users at the same time.
Locking is performed by the RefreshRecord method.
The default value is lmNone.

See Also

- P:Devart.SQLiteDac.TLiteStoredProc.LockMode
- TLiteQuery.LockMode

5.11.1.14.2.3 OrderFields Property

Used to build ORDER BY clause of SQL statements.

Class

TLiteTable

Syntax

```
property OrderFields: string;
```

Remarks

TLiteTable uses the OrderFields property to build ORDER BY clause of SQL statements. To set several field names to this property separate them with commas.
TLiteTable is reopened when OrderFields is being changed.

See Also

- TLiteTable

5.11.1.14.2.4 TableName Property

Used to specify the name of the database table this component encapsulates.

Class

TLiteTable

Syntax

```
property TableName: string;
```

Remarks

Use the TableName property to specify the name of the database table this component encapsulates. If TCustomDADataSet.Connection is assigned at design time,select a valid table name from the TableName drop-down list in Object Inspector.

5.11.1.15 TLiteUpdateSQL Class

Lets you tune update operations for the DataSet component.
For a list of all members of this type, see TLiteUpdateSQL members.

Unit

LiteAccess

Syntax

```
TLiteUpdateSQL = class(TCustomDAUpdateSQL);
```

Inheritance Hierarchy

TCustomDAUpdateSQL
  TLiteUpdateSQL

5.11.1.15.1 Members

TLiteUpdateSQL class overview.

Properties

Name	Description
DataSet (inherited from **TCustomDAUpdateSQL**)	Used to hold a reference to the TCustomDADataSet object that is being updated.
DeleteObject (inherited from **TCustomDAUpdateSQL**)	Provides ability to perform advanced adjustment of the delete operations.
DeleteSQL (inherited from **TCustomDAUpdateSQL**)	Used when deleting a record.
InsertObject (inherited from **TCustomDAUpdateSQL**)	Provides ability to perform advanced adjustment of insert operations.
InsertSQL (inherited from **TCustomDAUpdateSQL**)	Used when inserting a record.
LockObject (inherited from **TCustomDAUpdateSQL**)	Provides ability to perform advanced adjustment of lock operations.
LockSQL (inherited from **TCustomDAUpdateSQL**)	Used to lock the current record.
ModifyObject (inherited from **TCustomDAUpdateSQL**)	Provides ability to perform advanced adjustment of modify operations.
ModifySQL (inherited from **TCustomDAUpdateSQL**)	Used when updating a record.
RefreshObject (inherited from	Provides ability to perform advanced adjustment of refresh operations.

TCustomDAUpdateSQL)	
RefreshSQL (inherited from **TCustomDAUpdateSQL**)	Used to specify an SQL statement that will be used for refreshing the current record by TCustomDADataSet.RefreshRecord procedure.
SQL (inherited from **TCustomDAUpdateSQL**)	Used to return a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties.

Methods

Name	Description
Apply (inherited from **TCustomDAUpdateSQL**)	Sets parameters for a SQL statement and executes it to update a record.
ExecSQL (inherited from **TCustomDAUpdateSQL**)	Executes a SQL statement.

5.11.1.16 TLiteUserCollation Class

A base class that provides SQLite functionality for working with user-defined collations.
For a list of all members of this type, see TLiteUserCollation members.

Unit

LiteAccess

Syntax

```
TLiteUserCollation = class(TCustomLiteUserCollation);
```

Remarks

TCustomLiteUserCollation is a base component that provides functionality for classes derived from it. Applications never use TCustomLiteUserCollation objects directly. Instead they use TLiteUserCollation that inherit its properties and methods.

Inheritance Hierarchy

TCustomLiteUserCollation
TLiteUserCollation

5.11.1.16.1 Members

TLiteUserCollation class overview.

Properties

Name	Description
CollationName	Used to specify the name of the collation.
Connection	Used to specify a connection object that will be used to connect to a data store.

Events

Name	Description
OnCollate	Occurs when the collation is called in the SQL-statement.

5.11.1.16.2 Properties

Properties of the **TLiteUserCollation** class.

For a complete list of the **TLiteUserCollation** class members, see the TLiteUserCollation Members topic.

Published

Name	Description
CollationName	Used to specify the name of the collation.
Connection	Used to specify a connection object that will be used to connect to a data store.

See Also

- TLiteUserCollation Class
- TLiteUserCollation Class Members

5.11.1.16.2.1 CollationName Property

Used to specify the name of the collation.

Class

TLiteUserCollation

Syntax

```
property CollationName: string;
```

Remarks

Use the CollationName property to specify the name of the collation. The name is case-insensitive.

5.11.1.16.2.2 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TLiteUserCollation

Syntax

```
property Connection: TLiteConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store. Set at design-time by selecting from the list of provided TLiteConnection objects. At runtime, set the Connection property to reference an existing TLiteConnection object.

5.11.1.16.3 Events

Events of the **TLiteUserCollation** class.
For a complete list of the **TLiteUserCollation** class members, see the TLiteUserCollation Members topic.

Published

Name	Description
OnCollate	Occurs when the collation is called in the SQL-statement.

See Also

- TLiteUserCollation Class
- TLiteUserCollation Class Members

5.11.1.16.3.1 OnCollate Event

Occurs when the collation is called in the SQL-statement.

Class

TLiteUserCollation

Syntax

```
property OnCollate: TLiteCollationEvent;
```

Remarks

Use the OnCollate event handler to define the implementation of the collating function. The collating function must return an integer that is negative, zero, or positive if the first string is less than, equal to, or greater than the second, respectively.

5.11.1.17 TLiteUserFunction Class

A component for defining a custom function for future use in SQL-statements. Also, can be used for overriding built-in SQLite functions.
For a list of all members of this type, see TLiteUserFunction members.

Unit

LiteAccess

Syntax

```
TLiteUserFunction = class(TCustomLiteUserFunction);
```

Inheritance Hierarchy

TCustomLiteUserFunction
  TLiteUserFunction

5.11.1.17.1 Members

TLiteUserFunction class overview.

Properties

Name	Description
Connection (inherited from **TCustomLiteUserFunction**)	Used to specify a connection object that will be used to connect to a data store.
FunctionKind (inherited from **TCustomLiteUserFunction**)	Used to specify the kind of the function that will be defined.
FunctionName (inherited from **TCustomLiteUserFunction**)	Used to specify the name of the function that will be defined.
Params (inherited from **TCustomLiteUserFunction**)	Used to specify the list of function parameters.

Events

Name	Description
OnExecute (inherited from **TCustomLiteUserFunction**)	Occurs when the user function is called in the SQL-statement.
OnFinal (inherited from **TCustomLiteUserFunction**)	Used to return a result of the user-defined aggregate function in the SQL statement.
OnStep (inherited from **TCustomLiteUserFunction**)	Occurs during execution of the user-defined aggregate function in the SQL statement.

5.11.2 Types

Types in the **LiteAccess** unit.

Types

Name	Description
TLiteCollationEvent	This type is used for the TCustomLiteUserCollation.OnCollate event.

TLiteFunctionExecuteEvent	This type is used for the TCustomLiteUserFunction.OnExecute event.
TLiteFunctionFinalEvent	This type is used for the TCustomLiteUserFunction.OnFinal event.
TLiteFunctionStepEvent	This type is used for the TCustomLiteUserFunction.OnStep event.

5.11.2.1 TLiteCollationEvent Procedure Reference

This type is used for the TCustomLiteUserCollation.OnCollate event.

Unit

LiteAccess

Syntax

```
TLiteCollationEvent = procedure (Sender: TObject; const Str1:
string; const Str2: string; var ResultValue: integer) of object;
```

Parameters

Sender
An object that raised the event.

Str1
The first string to be compared.

Str2
The second string to be compared.

ResultValue
Must return a negative integer value if the first string is less than the second. Zero if strings are equal. Positive if the first string is greater than the second.

5.11.2.2 TLiteFunctionExecuteEvent Procedure Reference

This type is used for the TCustomLiteUserFunction.OnExecute event.

Unit

LiteAccess

Syntax

```
TLiteFunctionExecuteEvent = procedure (Sender: TObject; Params:
TDAParams; var ResultValue: Variant) of object;
```

Parameters

Sender
An object that raised the event.

Params

ResultValue
The resulting value of the function that will be passed back.

See Also

- TCustomLiteUserFunction.OnStep

5.11.2.3 TLiteFunctionFinalEvent Procedure Reference

This type is used for the TCustomLiteUserFunction.OnFinal event.

Unit

LiteAccess

Syntax

```
TLiteFunctionFinalEvent = procedure (Sender: TObject; var
ResultValue: Variant) of object;
```

Parameters

Sender
An object that raised the event.

ResultValue
The resulting value of the function that will be passed back.

5.11.2.4 TLiteFunctionStepEvent Procedure Reference

This type is used for the
TCustomLiteUserFunction.OnStep event.

Unit

LiteAccess

Syntax

```
TLiteFunctionStepEvent = procedure (Sender: TObject; Params:
TDAParams) of object;
```

Parameters

Sender
An object that raised the event.

Params
Parameters that were passed to the function when it was executed in a SQL statement.

5.11.3 Enumerations

Enumerations in the **LiteAccess** unit.

Enumerations

Name	Description
TLiteFunctionKind	Specifies the kind of the used-defined function.
TLiteIsolationLevel	Specifies the way the transactions containing database modifications are handled.

5.11.3.1 TLiteFunctionKind Enumeration

Specifies the kind of the used-defined function.

Unit

LiteAccess

Syntax

```
TLiteFunctionKind = (fkScalar, fkAggregate);
```

Values

Value	Meaning
fkAggregate	Indicates that the function will be an aggregate function.
fkScalar	Indicates that the function will be a scalar function. The default value.

5.11.3.2 TLiteIsolationLevel Enumeration

Specifies the way the transactions containing database modifications are handled.

Unit

LiteAccess

Syntax

```
TLiteIsolationLevel = (lilDeferred, lilImmediate);
```

Values

Value	Meaning
ilIDeferred	If the transaction contains DML that requires row locks held by another transaction, then the DML statement waits until the row locks are released. The default SQLite behavior.
ilIImmediate	Specifies serializable transaction isolation mode as defined in the SQL92 standard. If a serializable transaction contains data manipulation language (DML) that attempts to update any resource that may have been updated in a transaction uncommitted at the start of the serializable transaction, then the DML statement fails.

5.12 LiteDacVcl

This unit contains the visual constituent of LiteDAC.

Classes

Name	Description
TLiteConnectDialog	A class that provides a dialog box for user to supply his login information.

5.12.1 Classes

Classes in the **LiteDacVcl** unit.

Classes

Name	Description
TLiteConnectDialog	A class that provides a dialog box for user to supply his login information.

5.12.1.1 TLiteConnectDialog Class

A class that provides a dialog box for user to supply his login information.
For a list of all members of this type, see TLiteConnectDialog members.

Unit

LiteDacVcl

Syntax

```
TLiteConnectDialog = class(TCustomConnectDialog);
```

Remarks

The TLiteConnectDialog component is a direct descendant of TCustomConnectDialog class. Use TLiteConnectDialog to provide dialog box for user to supply database name and password (encryption key for the encrypted database). You may want to customize appearance of dialog box using this class's properties.

Inheritance Hierarchy

TCustomConnectDialog

TLiteConnectDialog

See Also

•

5.12.1.1.1 Members

TLiteConnectDialog class overview.

Properties

Name	Description
CancelButton (inherited from **TCustomConnectDialog**)	Used to specify the label for the Cancel button.
Caption (inherited from **TCustomConnectDialog**)	Used to set the caption of dialog box.
ConnectButton (inherited from **TCustomConnectDialog**)	Used to specify the label for the Connect button.
DatabaseLabel	Used to specify a prompt for the database edit.
DialogClass (inherited from **TCustomConnectDialog**)	Used to specify the class of the form that will be displayed to enter login information.
LabelSet (inherited from	Used to set the language of buttons and labels captions.

TCustomConnectDialog)	
Retries (inherited from **TCustomConnectDialog**)	Used to indicate the number of retries of failed connections.
SavePassword (inherited from **TCustomConnectDialog**)	Used for the password to be displayed in ConnectDialog in asterisks.
ShowDatabase	Used to hide or show the database edit when the the connect dialog appears.
ShowPassword	Used to hide or show the encryption key edit when the the connect dialog appears.
StoreLogInfo (inherited from **TCustomConnectDialog**)	Used to specify whether the login information should be kept in system registry after a connection was established.

Methods

Name	Description
Execute (inherited from **TCustomConnectDialog**)	Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button.

5.12.1.1.2 Properties

Properties of the **TLiteConnectDialog** class.

For a complete list of the **TLiteConnectDialog** class members, see the TLiteConnectDialog Members topic.

Public

Name	Description
CancelButton (inherited from **TCustomConnectDialog**)	Used to specify the label for the Cancel button.

Caption (inherited from **TCustomConnectDialog**)	Used to set the caption of dialog box.
ConnectButton (inherited from **TCustomConnectDialog**)	Used to specify the label for the Connect button.
DatabaseLabel	Used to specify a prompt for the database edit.
DialogClass (inherited from **TCustomConnectDialog**)	Used to specify the class of the form that will be displayed to enter login information.
LabelSet (inherited from **TCustomConnectDialog**)	Used to set the language of buttons and labels captions.
PasswordLabel (inherited from **TCustomConnectDialog**)	Used to specify a prompt for password edit.
Retries (inherited from **TCustomConnectDialog**)	Used to indicate the number of retries of failed connections.
SavePassword (inherited from **TCustomConnectDialog**)	Used for the password to be displayed in ConnectDialog in asterisks.
ShowDatabase	Used to hide or show the database edit when the the connect dialog appears.
ShowPassword	Used to hide or show the encryption key edit when the the connect dialog appears.
StoreLogInfo (inherited from **TCustomConnectDialog**)	Used to specify whether the login information should be kept in system registry after a connection was established.

See Also

- TLiteConnectDialog Class
- TLiteConnectDialog Class Members

5.12.1.1.2.1 DatabaseLabel Property

Used to specify a prompt for the database edit.

Class

TLiteConnectDialog

Syntax

```
property DatabaseLabel: string;
```

Remarks

Use the DatabaseLabel property to specify a prompt for the database edit.

5.12.1.1.2.2 Show Database Property

Used to hide or show the database edit when the the connect dialog appears.

Class

TLiteConnectDialog

Syntax

```
property ShowDatabase: boolean default True;
```

Remarks

Use the ShowDatabase property to specify whether the database edit will be shown or not when the connect dialog appears.

5.12.1.1.2.3 Show Passw ord Property

Used to hide or show the encryption key edit when the the connect dialog appears.

Class

TLiteConnectDialog

Syntax

```
property ShowPassword: boolean default True;
```

Remarks

Use the ShowDatabase property to specify whether the encryption key edit will be shown or not when the connect dialog appears.

5.13 LiteDump

This unit contains implementation of the TLiteDump component

Classes

Name	Description
TLiteDump	A component for storing database or its parts as a script and also for restoring database from the received script.

Types

Name	Description
TLiteDumpObjects	Represents the set of TLiteDumpObject.

Enumerations

Name	Description
TLiteDumpMode	Specifies the mode of backup performed by TLiteDump.
TLiteDumpObject	Specifies the types of objects that are backuped by TLiteDump.

5.13.1 Classes

Classes in the **LiteDump** unit.

Classes

Name	Description
TLiteDump	A component for storing database or its parts as a script and also for restoring database from the received script.

5.13.1.1 TLiteDump Class

A component for storing database or its parts as a script and also for restoring database from the received script.

For a list of all members of this type, see TLiteDump members.

Unit

LiteDump

Syntax

```
TLiteDump = class(TDADump);
```

Inheritance Hierarchy

TDADump

TLiteDump

5.13.1.1.1 Members

TLiteDump class overview.

Properties

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
Debug (inherited from **TDADump**)	Used to display executing statement, all its parameters' values, and the type of parameters.
Mode	Used to specify the mode of backup performed by TLiteDump.Used to specify the mode of backup performed by TLiteDump.
ObjectTypes	Used to specify the types of objects that are backuped by TLiteDump.
Options (inherited from **TDADump**)	Used to specify the behaviour of a TDADump component.
SQL (inherited from **TDADump**)	Used to set or get the dump script.
TableNames (inherited from **TDADump**)	Used to set the names of the tables to dump.

Methods

Name	Description

Backup (inherited from **TDADump**)	Dumps database objects to the TDADump.SQL property.
BackupQuery (inherited from **TDADump**)	Dumps the results of a particular query.
BackupToFile (inherited from **TDADump**)	Dumps database objects to the specified file.
BackupToStream (inherited from **TDADump**)	Dumps database objects to the stream.
Restore (inherited from **TDADump**)	Executes a script contained in the SQL property.
RestoreFromFile (inherited from **TDADump**)	Executes a script from a file.
RestoreFromStream (inherited from **TDADump**)	Executes a script received from the stream.

Events

Name	Description
OnBackupProgress (inherited from **TDADump**)	Occurs to indicate the TDADump.Backup, M:Devart.Dac.TDADump.BackupToFile(System.String) or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution progress.
OnError (inherited from **TDADump**)	Occurs when SQLite raises some error on TDADump.Restore.
OnRestoreProgress (inherited from **TDADump**)	Occurs to indicate the TDADump.Restore, TDADump.RestoreFromFile, or TDADump.RestoreFromStream method execution progress.

5.13.1.1.2 Properties

Properties of the **TLiteDump** class.

For a complete list of the **TLiteDump** class members, see the TLiteDump Members topic.

Public

Name	Description
Options (inherited from **TDADump**)	Used to specify the behaviour of a TDADump component.

Published

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
Debug (inherited from **TDADump**)	Used to display executing statement, all its parameters' values, and the type of parameters.
Mode	Used to specify the mode of backup performed by TLiteDump.Used to specify the mode of backup performed by TLiteDump.
ObjectTypes	Used to specify the types of objects that are backuped by TLiteDump.
SQL (inherited from **TDADump**)	Used to set or get the dump script.
TableNames (inherited from **TDADump**)	Used to set the names of the tables to dump.

See Also

- TLiteDump Class
- TLiteDump Class Members

5.13.1.1.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TLiteDump

Syntax

```
property Connection: TLiteConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store. Set at design-time by selecting from the list of provided TLiteConnection objects. At runtime, set the Connection property to reference an existing TLiteConnection object.

See Also

•

5.13.1.1.2.2 Mode Property

Used to specify the mode of backup performed by TLiteDump.Used to specify the mode of backup performed by TLiteDump.

Class

TLiteDump

Syntax

```
property Mode: TLiteDumpMode default dmAll;
```

Remarks

Use the Mode property to specify the mode of backup performed by TLiteDump. The default value is dmAll.

5.13.1.1.2.3 ObjectTypes Property

Used to specify the types of objects that are backuped by TLiteDump.

Class

TLiteDump

Syntax

```
property ObjectTypes: TLiteDumpObjects default [doTables,
doViews, doTriggers, doIndexes];
```

Remarks

Use the ObjectTypes property to specify the types of objects that are backuped by TLiteDump.

5.13.2 Types

Types in the **LiteDump** unit.

Types

Name	Description
TLiteDumpObjects	Represents the set of TLiteDumpObject.

5.13.2.1 TLiteDumpObjects Set

Represents the set of TLiteDumpObject.

Unit

LiteDump

Syntax

```
TLiteDumpObjects = set of TLiteDumpObject;
```

5.13.3 Enumerations

Enumerations in the **LiteDump** unit.

Enumerations

Name	Description
TLiteDumpMode	Specifies the mode of backup performed by TLiteDump.
TLiteDumpObject	Specifies the types of objects that are backuped by TLiteDump.

5.13.3.1 TLiteDumpMode Enumeration

Specifies the mode of backup performed by TLiteDump.

Unit

LiteDump

Syntax

```
TLiteDumpMode = (dmAll, dmData, dmSchema);
```

Values

Value	Meaning
dmAll	Backup of schema objects and table data is performed. The default value.
dmData	Backup of table data only is performed.
dmSchema	Backup of schema only is performed.

5.13.3.2 TLiteDumpObject Enumeration

Specifies the types of objects that are backuped by TLiteDump.

Unit

LiteDump

Syntax

```
TLiteDumpObject = (doTables, doViews, doTriggers, doIndexes);
```

Values

Value	Meaning
doIndexes	Backup of indexes is performed.
doTables	Backup of tables is performed.
doTriggers	Backup of triggers is performed.
doViews	Backup of views is performed.

5.14 LiteLoader

This unit contains implementation of the TLiteLoader component

Classes

Name	Description
TLiteLoader	TLiteLoader allows to load external data into the database.
TLiteLoaderOptions	This class allows setting up the behaviour of the TLiteLoader class.

5.14.1 Classes

Classes in the **LiteLoader** unit.

Classes

Name	Description
TLiteLoader	TLiteLoader allows to load external data into the database.
TLiteLoaderOptions	This class allows setting up the behaviour of the TLiteLoader class.

5.14.1.1 TLiteLoader Class

TLiteLoader allows to load external data into the database.
For a list of all members of this type, see TLiteLoader members.

Unit

LiteLoader

Syntax

```
TLiteLoader = class(TDALoader);
```

Remarks

TLiteLoader allows to load external data into the SQLite database. To specify the name of the loading table set the TableName property. Use the Columns property to access individual columns. Write the OnGetColumnData or OnPutData event handler to read external data and pass it to the database. Call the Load method to start loading data.

Inheritance Hierarchy

TDALoader
  TLiteLoader

5.14.1.1.1 Members

TLiteLoader class overview.

Properties

Name	Description

AutoCommit	Used to automatically perform a commit after loading a certain amount of records.
AutoCommitRowCount	Used to specify the number of records, after which the transaction will be commited automatically.
Columns (inherited from **TDALoader**)	Used to add a TDAColumn object for each field that will be loaded.
Connection	Used to specify a connection object that will be used to connect to a data store.
TableName (inherited from **TDALoader**)	Used to specify the name of the table to which data will be loaded.

Methods

Name	Description
CreateColumns (inherited from **TDALoader**)	Creates TDAColumn objects for all fields of the table with the same name as TDALoader.TableName.
Load (inherited from **TDALoader**)	Starts loading data.
LoadFromDataSet (inherited from **TDALoader**)	Loads data from the specified dataset.
PutColumnData (inherited from **TDALoader**)	Overloaded. Puts the value of individual columns.

Events

Name	Description
OnGetColumnData (inherited from **TDALoader**)	Occurs when it is needed to put column values.
OnProgress (inherited from **TDALoader**)	Occurs if handling data loading progress of the TDALoader.LoadFromDataSet method is needed.

OnPutData (inherited from **TDALoader**)	Occurs when putting loading data by rows is needed.

5.14.1.1.2 Properties

Properties of the **TLiteLoader** class.

For a complete list of the **TLiteLoader** class members, see the TLiteLoader Members topic.

Public

Name	Description
Columns (inherited from **TDALoader**)	Used to add a TDAColumn object for each field that will be loaded.
TableName (inherited from **TDALoader**)	Used to specify the name of the table to which data will be loaded.

Published

Name	Description
AutoCommit	Used to automatically perform a commit after loading a certain amount of records.
AutoCommitRowCount	Used to specify the number of records, after which the transaction will be commited automatically.
Connection	Used to specify a connection object that will be used to connect to a data store.

See Also

- TLiteLoader Class
- TLiteLoader Class Members

5.14.1.1.2.1 AutoCommit Property

Used to automatically perform a commit after loading a certain amount of records.

Class

`TLiteLoader`

Syntax

```
property AutoCommit: boolean;
```

Remarks

Use the AutoCommit property to control whether a commit will be performed automatically after loading a number of records, specified by the TLiteLoader.AutoCommitRowCount property. When the property is set to True, a transaction implicitly starts before loading the block of records and commits automatically after records were loaded. This significantly increases the performance in the case of loading a large amount of records, as it is described in the SQLite documentation: http://www.sqlite.org/faq.html#q19 .
The default value is True.

See Also

- AutoCommitRowCount

5.14.1.1.2.2 AutoCommitRow Count Property

Used to specify the number of records, after which the transaction will be commited automatically.

Class

TLiteLoader

Syntax

```
property AutoCommitRowCount: integer default 10000;
```

Remarks

Use the AutoCommitRowCount property to specify the number of records, after which the transaction will be commited automatically when the TLiteLoader.AutoCommit property is set to True.
The default value is 1000.

5.14.1.1.2.3 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TLiteLoader

Syntax

```
property Connection: TLiteConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store. Set at design-time by selecting from the list of provided TLiteConnection objects. At runtime, set the Connection property to reference an existing TLiteConnection object.

See Also

•

5.14.1.2 TLiteLoaderOptions Class

This class allows setting up the behaviour of the TLiteLoader class.
For a list of all members of this type, see TLiteLoaderOptions members.

Unit

LiteLoader

Syntax

```
TLiteLoaderOptions = class(TDALoaderOptions);
```

Inheritance Hierarchy

TDALoaderOptions
  TLiteLoaderOptions

5.14.1.2.1 Members

TLiteLoaderOptions class overview.

Properties

Name	Description
QuoteNames	Used for TDALoader to quote table and column names in Insert SQL statements.
UseBlankValues (inherited from **TDALoaderOptions**)	Forces LiteDAC to fill the buffer with null values after loading a row to the database.

5.14.1.2.2 Properties

Properties of the **TLiteLoaderOptions** class.

For a complete list of the **TLiteLoaderOptions** class members, see the TLiteLoaderOptions Members topic.

Public

Name	Description
UseBlankValues (inherited from **TDALoaderOptions**)	Forces LiteDAC to fill the buffer with null values after loading a row to the database.

Published

Name	Description
QuoteNames	Used for TDALoader to quote table and column names in Insert SQL statements.

See Also

- TLiteLoaderOptions Class
- TLiteLoaderOptions Class Members

5.14.1.2.2.1 QuoteNames Property

Used for TDALoader to quote table and column names in Insert SQL statements.

Class

TLiteLoaderOptions

Syntax

```
property QuoteNames: boolean;
```

5.15 LiteScript

This unit contains implementation of the component.

Classes

Name	Description

TLiteScript	Executes sequences of SQL statements.

5.15.1 Classes

Classes in the **LiteScript** unit.

Classes

Name	Description
TLiteScript	Executes sequences of SQL statements.

5.15.1.1 TLiteScript Class

Executes sequences of SQL statements.
For a list of all members of this type, see TLiteScript members.

Unit

LiteScript

Syntax

```
TLiteScript = class(TDAScript);
```

Inheritance Hierarchy

TDAScript
  TLiteScript

5.15.1.1.1 Members

TLiteScript class overview.

Properties

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
DataSet	Refers to a dataset that holds the result set of query execution.

Debug (inherited from **TDAScript**)	Used to display the script execution and all its parameter values.
Delimiter (inherited from **TDAScript**)	Used to set the delimiter string that separates script statements.
EndLine (inherited from **TDAScript**)	Used to get the current statement last line number in a script.
EndOffset (inherited from **TDAScript**)	Used to get the offset in the last line of the current statement.
EndPos (inherited from **TDAScript**)	Used to get the end position of the current statement.
Macros (inherited from **TDAScript**)	Used to change SQL script text in design- or run-time easily.
SQL (inherited from **TDAScript**)	Used to get or set script text.
StartLine (inherited from **TDAScript**)	Used to get the current statement start line number in a script.
StartOffset (inherited from **TDAScript**)	Used to get the offset in the first line of the current statement.
StartPos (inherited from **TDAScript**)	Used to get the start position of the current statement in a script.
Statements (inherited from **TDAScript**)	Contains a list of statements obtained from the SQL property.

Methods

Name	Description
BreakExec (inherited from **TDAScript**)	Stops script execution.
ErrorOffset (inherited from **TDAScript**)	Used to get the offset of the statement if the Execute method raised an exception.
Execute (inherited from **TDAScript**)	Executes a script.
ExecuteFile (inherited from **TDAScript**)	Executes SQL statements contained in a file.

ExecuteNext (inherited from **TDAScript**)	Executes the next statement in the script and then stops.
ExecuteStream (inherited from **TDAScript**)	Executes SQL statements contained in a stream object.
MacroByName (inherited from **TDAScript**)	Finds a Macro with the name passed in Name.

Events

Name	Description
AfterExecute (inherited from **TDAScript**)	Occurs after a SQL script execution.
BeforeExecute (inherited from **TDAScript**)	Occurs when taking a specific action before executing the current SQL statement is needed.
OnError (inherited from **TDAScript**)	Occurs when SQLite raises an error.

5.15.1.1.2 Properties

Properties of the **TLiteScript** class.

For a complete list of the **TLiteScript** class members, see the TLiteScript Members topic.

Public

Name	Description
EndLine (inherited from **TDAScript**)	Used to get the current statement last line number in a script.
EndOffset (inherited from **TDAScript**)	Used to get the offset in the last line of the current statement.
EndPos (inherited from **TDAScript**)	Used to get the end position of the current statement.
StartLine (inherited from **TDAScript**)	Used to get the current statement start line number in a script.
StartOffset (inherited from **TDAScript**)	Used to get the offset in the first line of the current statement.

StartPos (inherited from **TDAScript**)	Used to get the start position of the current statement in a script.
Statements (inherited from **TDAScript**)	Contains a list of statements obtained from the SQL property.

Published

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
DataSet	Refers to a dataset that holds the result set of query execution.
Debug (inherited from **TDAScript**)	Used to display the script execution and all its parameter values.
Delimiter (inherited from **TDAScript**)	Used to set the delimiter string that separates script statements.
Macros (inherited from **TDAScript**)	Used to change SQL script text in design- or run-time easily.
SQL (inherited from **TDAScript**)	Used to get or set script text.

See Also

- TLiteScript Class
- TLiteScript Class Members

5.15.1.1.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

TLiteScript

Syntax

```
property Connection: TLiteConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store. Set at design-time by selecting from the list of provided TLiteConnection objects. At runtime, set the Connection property to reference an existing TLiteConnection object.

See Also

•

5.15.1.1.2.2 DataSet Property

Refers to a dataset that holds the result set of query execution.

Class

TLiteScript

Syntax

```
property DataSet: TCustomLiteDataSet;
```

Remarks

Set the DataSet property to retrieve the results of the SELECT statements execution inside a script.

5.16 LiteSQLMonitor

This unit contains implementation of the component.

Classes

Name	Description
TLiteSQLMonitor	This component serves for monitoring dynamic SQL execution in LiteDAC-based applications.

5.16.1 Classes

Classes in the **LiteSQLMonitor** unit.

Classes

Name	Description
TLiteSQLMonitor	This component serves for monitoring dynamic SQL execution in LiteDAC-based applications.

5.16.1.1 TLiteSQLMonitor Class

This component serves for monitoring dynamic SQL execution in LiteDAC-based applications.
For a list of all members of this type, see TLiteSQLMonitor members.

Unit

LiteSQLMonitor

Syntax

```
TLiteSQLMonitor = class(TCustomDASQLMonitor);
```

Remarks

Use TLiteSQLMonitor to monitor dynamic SQL execution in LiteDAC-based applications. TLiteSQLMonitor provides two ways of displaying debug information: with dialog window, Using DBMonitor or Borland SQL Monitor. Furthermore to receive debug information the TCustomDASQLMonitor.OnSQL event can be used. Also it is possible to use all these ways at the same time, though an application may have only one TLiteSQLMonitor object. If an application has no TLiteSQLMonitor instance, the Debug window is available to display SQL statements to be sent.

Inheritance Hierarchy

TCustomDASQLMonitor
  TLiteSQLMonitor

5.16.1.1.1 Members

TLiteSQLMonitor class overview.

Properties

Name	Description
Active (inherited from **TCustomDASQLMonitor**)	Used to activate monitoring of SQL.
DBMonitorOptions (inherited from **TCustomDASQLMonitor**)	Used to set options for dbMonitor.

Options (inherited from **TCustomDASQLMonitor**)	Used to include the desired properties for TCustomDASQLMonitor.
TraceFlags (inherited from **TCustomDASQLMonitor**)	Used to specify which database operations the monitor should track in an application at runtime.

Events

Name	Description
OnSQL (inherited from **TCustomDASQLMonitor**)	Occurs when tracing of SQL activity on database components is needed.

5.17 MemData

This unit contains classes for storing data in memory.

Classes

Name	Description
TAttribute	TAttribute is not used in LiteDAC.
TBlob	Holds large object value for field and parameter dtBlob, dtMemo data types.
TCompressedBlob	Holds large object value for field and parameter dtBlob, dtMemo data types and can compress its data.
TDBObject	A base class for classes that work with user-defined data types that have attributes.
TMemData	Implements storing data in memory.
TObjectType	This class is not used.
TSharedObject	A base class that allows to simplify memory management for object referenced by several other objects.

Types

Name	Description
TLocateExOptions	Represents the set of TLocateExOption.
TUpdateRecKinds	Represents the set of TUpdateRecKind.

Enumerations

Name	Description
TCompressBlobMode	Specifies when the values should be compressed and the way they should be stored.
TConnLostCause	Specifies the cause of the connection loss.
TDANumericType	Specifies the format of storing and representing of the NUMERIC (DECIMAL) fields.
TLocateExOption	Allows to set additional search parameters which will be used by the LocateEx method.
TSortType	Specifies a sort type for string fields.
TUpdateRecKind	Indicates records for which the ApplyUpdates method will be performed.

5.17.1 Classes

Classes in the **MemData** unit.

Classes

Name	Description
TAttribute	TAttribute is not used in LiteDAC.
TBlob	Holds large object value for field and parameter dtBlob, dtMemo data types.

TCompressedBlob	Holds large object value for field and parameter dtBlob, dtMemo data types and can compress its data.
TDBObject	A base class for classes that work with user-defined data types that have attributes.
TMemData	Implements storing data in memory.
TObjectType	This class is not used.
TSharedObject	A base class that allows to simplify memory management for object referenced by several other objects.

5.17.1.1 TAttribute Class

TAttribute is not used in LiteDAC.

For a list of all members of this type, see TAttribute members.

Unit

MemData

Syntax

```
TAttribute = class(System.TObject);
```

5.17.1.1.1 Members

TAttribute class overview.

Properties

Name	Description
AttributeNo	Returns an attribute's ordinal position in object.
DataSize	Returns the size of an attribute value in internal representation.
DataType	Returns the type of data that was assigned to the Attribute.
Length	Returns the length of the string for dtString attribute and precision for dtInteger and dtFloat attribute.

ObjectType	Returns a TObjectType object for an object attribute.
Offset	Returns an offset of the attribute value in internal representation.
Owner	Indicates TObjectType that uses the attribute to represent one of its attributes.
Scale	Returns the scale of dtFloat and dtInteger attributes.
Size	Returns the size of an attribute value in external representation.

5.17.1.1.2 Properties

Properties of the **TAttribute** class.

For a complete list of the **TAttribute** class members, see the TAttribute Members topic.

Public

Name	Description
AttributeNo	Returns an attribute's ordinal position in object.
DataSize	Returns the size of an attribute value in internal representation.
DataType	Returns the type of data that was assigned to the Attribute.
Length	Returns the length of the string for dtString attribute and precision for dtInteger and dtFloat attribute.
ObjectType	Returns a TObjectType object for an object attribute.
Offset	Returns an offset of the attribute value in internal representation.
Owner	Indicates TObjectType that uses the attribute to represent one of its attributes.
Scale	Returns the scale of dtFloat and dtInteger attributes.

Size	Returns the size of an attribute value in external representation.

See Also

- TAttribute Class
- TAttribute Class Members

5.17.1.1.2.1 AttributeNo Property

Returns an attribute's ordinal position in object.

Class

TAttribute

Syntax

```
property AttributeNo: Word;
```

Remarks

Use the AttributeNo property to learn an attribute's ordinal position in object, where 1 is the first field.

See Also

- TObjectType.Attributes

5.17.1.1.2.2 DataSize Property

Returns the size of an attribute value in internal representation.

Class

TAttribute

Syntax

```
property DataSize: Integer;
```

Remarks

Use the DataSize property to learn the size of an attribute value in internal representation.

5.17.1.1.2.3 DataType Property

Returns the type of data that was assigned to the Attribute.

Class

TAttribute

Syntax

```
property DataType: Word;
```

Remarks

Use the DataType property to discover the type of data that was assigned to the Attribute. Possible values: dtDate, dtFloat, dtInteger, dtString, dtObject.

5.17.1.1.2.4 Length Property

Returns the length of the string for dtString attribute and precision for dtInteger and dtFloat attribute.

Class

TAttribute

Syntax

```
property Length: Word;
```

Remarks

Use the Length property to learn the length of the string for dtString attribute and precision for dtInteger and dtFloat attribute.

See Also

- Scale

5.17.1.1.2.5 ObjectType Property

Returns a TObjectType object for an object attribute.

Class

TAttribute

Syntax

```
property ObjectType: TObjectType;
```

Remarks

Use the ObjectType property to return a TObjectType object for an object attribute.

5.17.1.1.2.6 Offset Property

Returns an offset of the attribute value in internal representation.

Class

TAttribute

Syntax

```
property Offset: Integer;
```

Remarks

Use the DataSize property to learn an offset of the attribute value in internal representation.

5.17.1.1.2.7 Owner Property

Indicates TObjectType that uses the attribute to represent one of its attributes.

Class

TAttribute

Syntax

```
property Owner: TObjectType;
```

Remarks

Check the value of the Owner property to determine TObjectType that uses the attribute to represent one of its attributes. Applications should not assign the Owner property directly.

5.17.1.1.2.8 Scale Property

Returns the scale of dtFloat and dtInteger attributes.

Class

TAttribute

Syntax

```
property Scale: Word;
```

Remarks

Use the Scale property to learn the scale of dtFloat and dtInteger attributes.

See Also

- Length

5.17.1.1.2.9 Size Property

Returns the size of an attribute value in external representation.

Class

TAttribute

Syntax

```
property Size: Integer;
```

Remarks

Read Size to learn the size of an attribute value in external representation.
For example:

dtDate	8 (sizeof(TDateTime)
dtFloat	8 (sizeof(Double))
dtInteger	4 (sizeof(Integer))

See Also

- DataSize

5.17.1.2 TBlob Class

Holds large object value for field and parameter dtBlob, dtMemo data types.
For a list of all members of this type, see TBlob members.

Unit

MemData

Syntax

```
TBlob = class(TSharedObject);
```

Remarks

Object TBlob holds large object value for the field and parameter dtBlob, dtMemo, dtWideMemo data types.

Inheritance Hierarchy

TSharedObject

TBlob

See Also

- TMemDataSet.GetBlob

5.17.1.2.1 Members

TBlob class overview.

Properties

Name	Description
AsString	Used to manipulate BLOB value as string.
AsWideString	Used to manipulate BLOB value as Unicode string.
IsUnicode	Gives choice of making TBlob store and process data in Unicode format or not.
RefCount (inherited from **TSharedObject**)	Used to return the count of reference to a TSharedObject object.
Size	Used to learn the size of the TBlob value in bytes.

Methods

Name	Description
AddRef (inherited from **TSharedObject**)	Increments the reference count for the number of references dependent on the TSharedObject object.

Assign	Sets BLOB value from another TBlob object.
Clear	Deletes the current value in TBlob object.
LoadFromFile	Loads the contents of a file into a TBlob object.
LoadFromStream	Copies the contents of a stream into the TBlob object.
Read	Acquires a raw sequence of bytes from the data stored in TBlob.
Release (inherited from **TSharedObject**)	Decrements the reference count.
SaveToFile	Saves the contents of the TBlob object to a file.
SaveToStream	Copies the contents of a TBlob object to a stream.
Truncate	Sets new TBlob size and discards all data over it.
Write	Stores a raw sequence of bytes into a TBlob object.

5.17.1.2.2 Properties

Properties of the **TBlob** class.

For a complete list of the **TBlob** class members, see the TBlob Members topic.

Public

Name	Description
AsString	Used to manipulate BLOB value as string.
AsWideString	Used to manipulate BLOB value as Unicode string.
IsUnicode	Gives choice of making TBlob store and process data in Unicode format or not.

RefCount (inherited from **TSharedObject**)	Used to return the count of reference to a TSharedObject object.
Size	Used to learn the size of the TBlob value in bytes.

See Also

- TBlob Class
- TBlob Class Members

5.17.1.2.2.1 AsString Property

Used to manipulate BLOB value as string.

Class

TBlob

Syntax

```
property AsString: string;
```

Remarks

Use the AsString property to manipulate BLOB value as string.

See Also

- Assign
- AsWideString

5.17.1.2.2.2 AsWideString Property

Used to manipulate BLOB value as Unicode string.

Class

TBlob

Syntax

```
property AsWideString: string;
```

Remarks

Use the AsWideString property to manipulate BLOB value as Unicode string.

See Also

- Assign
- AsString

5.17.1.2.3 IsUnicode Property

Gives choice of making TBlob store and process data in Unicode format or not.

Class

TBlob

Syntax

```
property IsUnicode: boolean;
```

Remarks

Set IsUnicode to True if you want TBlob to store and process data in Unicode format.

Note: changing this property raises an exception if TBlob is not empty.

5.17.1.2.4 Size Property

Used to learn the size of the TBlob value in bytes.

Class

TBlob

Syntax

```
property Size: Cardinal;
```

Remarks

Use the Size property to find out the size of the TBlob value in bytes.

5.17.1.2.3 Methods

Methods of the **TBlob** class.

For a complete list of the **TBlob** class members, see the TBlob Members topic.

Public

Name	Description

AddRef (inherited from **TSharedObject**)	Increments the reference count for the number of references dependent on the TSharedObject object.
Assign	Sets BLOB value from another TBlob object.
Clear	Deletes the current value in TBlob object.
LoadFromFile	Loads the contents of a file into a TBlob object.
LoadFromStream	Copies the contents of a stream into the TBlob object.
Read	Acquires a raw sequence of bytes from the data stored in TBlob.
Release (inherited from **TSharedObject**)	Decrements the reference count.
SaveToFile	Saves the contents of the TBlob object to a file.
SaveToStream	Copies the contents of a TBlob object to a stream.
Truncate	Sets new TBlob size and discards all data over it.
Write	Stores a raw sequence of bytes into a TBlob object.

See Also

- TBlob Class
- TBlob Class Members

5.17.1.2.3.1 Assign Method

Sets BLOB value from another TBlob object.

Class

TBlob

Syntax

```
procedure Assign(Source: TBlob);
```

Parameters

Source

Holds the BLOB from which the value to the current object will be assigned.

Remarks

Call the Assign method to set BLOB value from another TBlob object.

See Also

- LoadFromStream
- AsString
- AsWideString

5.17.1.2.3.2 Clear Method

Deletes the current value in TBlob object.

Class

TBlob

Syntax

```
procedure Clear; virtual;
```

Remarks

Call the Clear method to delete the current value in TBlob object.

5.17.1.2.3.3 LoadFromFile Method

Loads the contents of a file into a TBlob object.

Class

TBlob

Syntax

```
procedure LoadFromFile(const FileName: string);
```

Parameters

FileName

Holds the name of the file from which the TBlob value is loaded.

Remarks

Call the LoadFromFile method to load the contents of a file into a TBlob object. Specify the name of the file to load into the field as the value of the FileName parameter.

See Also

- SaveToFile

5.17.1.2.3.4 LoadFromStream Method

Copies the contents of a stream into the TBlob object.

Class

TBlob

Syntax

```
procedure LoadFromStream(Stream: TStream); virtual;
```

Parameters

Stream

Holds the specified stream from which the field's value is copied.

Remarks

Call the LoadFromStream method to copy the contents of a stream into the TBlob object. Specify the stream from which the field's value is copied as the value of the Stream parameter.

See Also

- SaveToStream

5.17.1.2.3.5 Read Method

Acquires a raw sequence of bytes from the data stored in TBlob.

Class

TBlob

Syntax

```
function Read(Position: Cardinal; Count: Cardinal; Dest: IntPtr):
Cardinal; virtual;
```

Parameters

Position

Holds the starting point of the byte sequence.

Count

Holds the size of the sequence in bytes.

Dest

Holds a pointer to the memory area where to store the sequence.

Return Value

Actually read byte count if the sequence crosses object size limit.

Remarks

Call the Read method to acquire a raw sequence of bytes from the data stored in TBlob. The Position parameter is the starting point of byte sequence which lasts Count number of bytes. The Dest parameter is a pointer to the memory area where to store the sequence. If the sequence crosses object size limit, function will return actually read byte count.

See Also

- Write

5.17.1.2.3.6 SaveToFile Method

Saves the contents of the TBlob object to a file.

Class

TBlob

Syntax

```
procedure SaveToFile(const FileName: string);
```

Parameters

FileName

Holds a string that contains the name of the file.

Remarks

Call the SaveToFile method to save the contents of the TBlob object to a file. Specify the name of the file as the value of the FileName parameter.

See Also

- LoadFromFile

5.17.1.2.3.7 SaveToStream Method

Copies the contents of a TBlob object to a stream.

Class

TBlob

Syntax

```
procedure SaveToStream(Stream: TStream); virtual;
```

Parameters

Stream

Holds the name of the stream.

Remarks

Call the SaveToStream method to copy the contents of a TBlob object to a stream. Specify the name of the stream to which the field's value is saved as the value of the Stream parameter.

See Also

- LoadFromStream

5.17.1.2.3.8 Truncate Method

Sets new TBlob size and discards all data over it.

Class

TBlob

Syntax

```
procedure Truncate(NewSize: Cardinal); virtual;
```

Parameters

NewSize

Holds the new size of TBlob.

Remarks

Call the Truncate method to set new TBlob size and discard all data over it. If NewSize is greater or equal TBlob.Size, it does nothing.

5.17.1.2.3.9 Write Method

Stores a raw sequence of bytes into a TBlob object.

Class

TBlob

Syntax

```
procedure Write(Position: Cardinal; Count: Cardinal; Source:
IntPtr); virtual;
```

Parameters

Position

Holds the starting point of the byte sequence.

Count

Holds the size of the sequence in bytes.

Source

Holds a pointer to a source memory area.

Remarks

Call the Write method to store a raw sequence of bytes into a TBlob object.
The Position parameter is the starting point of byte sequence which lasts Count number of bytes. The Source parameter is a pointer to a source memory area.
If the value of the Position parameter crosses current size limit of TBlob object, source data will be appended to the object data.

See Also

- Read

5.17.1.3 TCompressedBlob Class

Holds large object value for field and parameter dtBlob, dtMemo data types and can compress its data.
For a list of all members of this type, see TCompressedBlob members.

Unit

MemData

Syntax

```
TCompressedBlob = class(TBlob);
```

Remarks

TCompressedBlob is a descendant of the TBlob class. It holds large object value for field and parameter dtBlob, dtMemo data types and can compress its data. For more information about using BLOB compression see TCustomDADataSet.Options.

Note: Internal compression functions are available in CodeGear Delphi 2007 for Win32, Borland Developer Studio 2006, Borland Delphi 2005, and Borland Delphi 7. To use BLOB compression under Borland Delphi 6 and Borland C++ Builder you should use your own compression functions. To use them set the CompressProc and UncompressProc variables declared in the MemUtils unit.

Example

```
type
   TCompressProc = function(dest: IntPtr; destLen: IntPtr; const source: In
   TUncompressProc = function(dest: IntPtr; destlen: IntPtr; source: IntPtr
var
   CompressProc: TCompressProc;
   UncompressProc: TUncompressProc;
```

Inheritance Hierarchy

TSharedObject

  TBlob

    TCompressedBlob

See Also

- TBlob
- TMemDataSet.GetBlob
- TCustomDADataSet.Options

5.17.1.3.1 Members

TCompressedBlob class overview.

Properties

Name	Description
AsString (inherited from **TBlob**)	Used to manipulate BLOB value as string.
AsWideString (inherited from **TBlob**)	Used to manipulate BLOB value as Unicode string.

Compressed	Used to indicate if the Blob is compressed.
CompressedSize	Used to indicate compressed size of the Blob data.
IsUnicode (inherited from **TBlob**)	Gives choice of making TBlob store and process data in Unicode format or not.
RefCount (inherited from **TSharedObject**)	Used to return the count of reference to a TSharedObject object.
Size (inherited from **TBlob**)	Used to learn the size of the TBlob value in bytes.

Methods

Name	Description
AddRef (inherited from **TSharedObject**)	Increments the reference count for the number of references dependent on the TSharedObject object.
Assign (inherited from **TBlob**)	Sets BLOB value from another TBlob object.
Clear (inherited from **TBlob**)	Deletes the current value in TBlob object.
LoadFromFile (inherited from **TBlob**)	Loads the contents of a file into a TBlob object.
LoadFromStream (inherited from **TBlob**)	Copies the contents of a stream into the TBlob object.
Read (inherited from **TBlob**)	Acquires a raw sequence of bytes from the data stored in TBlob.
Release (inherited from **TSharedObject**)	Decrements the reference count.
SaveToFile (inherited from **TBlob**)	Saves the contents of the TBlob object to a file.
SaveToStream (inherited from **TBlob**)	Copies the contents of a TBlob object to a stream.
Truncate (inherited from **TBlob**)	Sets new TBlob size and discards all data over it.

Write (inherited from **TBlob**)	Stores a raw sequence of bytes into a TBlob object.

5.17.1.3.2 Properties

Properties of the **TCompressedBlob** class.

For a complete list of the **TCompressedBlob** class members, see the TCompressedBlob Members topic.

Public

Name	Description
AsString (inherited from **TBlob**)	Used to manipulate BLOB value as string.
AsWideString (inherited from **TBlob**)	Used to manipulate BLOB value as Unicode string.
Compressed	Used to indicate if the Blob is compressed.
CompressedSize	Used to indicate compressed size of the Blob data.
IsUnicode (inherited from **TBlob**)	Gives choice of making TBlob store and process data in Unicode format or not.
RefCount (inherited from **TSharedObject**)	Used to return the count of reference to a TSharedObject object.
Size (inherited from **TBlob**)	Used to learn the size of the TBlob value in bytes.

See Also

- TCompressedBlob Class
- TCompressedBlob Class Members

5.17.1.3.2.1 Compressed Property

Used to indicate if the Blob is compressed.

Class

`TCompressedBlob`

Syntax

```
property Compressed: boolean;
```

Remarks

Indicates whether the Blob is compressed. Set this property to True or False to compress or decompress the Blob.

5.17.1.3.2.2 CompressedSize Property

Used to indicate compressed size of the Blob data.

Class

TCompressedBlob

Syntax

```
property CompressedSize: Cardinal;
```

Remarks

Indicates compressed size of the Blob data.

5.17.1.4 TDBObject Class

A base class for classes that work with user-defined data types that have attributes.
For a list of all members of this type, see TDBObject members.

Unit

MemData

Syntax

```
TDBObject = class(TSharedObject);
```

Remarks

TDBObject is a base class for classes that work with user-defined data types that have attributes.

Inheritance Hierarchy

TSharedObject
  TDBObject

5.17.1.4.1 Members

TDBObject class overview.

Properties

Name	Description
RefCount (inherited from **TSharedObject**)	Used to return the count of reference to a TSharedObject object.

Methods

Name	Description
AddRef (inherited from **TSharedObject**)	Increments the reference count for the number of references dependent on the TSharedObject object.
Release (inherited from **TSharedObject**)	Decrements the reference count.

5.17.1.5 TMemData Class

Implements storing data in memory.
For a list of all members of this type, see TMemData members.

Unit

MemData

Syntax

```
TMemData = class(TData);
```

Inheritance Hierarchy

TData
  TMemData

5.17.1.5.1 Members

TMemData class overview.

5.17.1.6 TObjectType Class

This class is not used.
For a list of all members of this type, see TObjectType members.

Unit

MemData

Syntax

```
TObjectType = class(TSharedObject);
```

Inheritance Hierarchy

TSharedObject
  TObjectType

5.17.1.6.1 Members

TObjectType class overview.

Properties

Name	Description
AttributeCount	Used to indicate the number of attributes of type.
Attributes	Used to access separate attributes.
DataType	Used to indicate the type of object dtObject, dtArray or dtTable.
RefCount (inherited from **TSharedObject**)	Used to return the count of reference to a TSharedObject object.
Size	Used to learn the size of an object instance.

Methods

Name	Description
AddRef (inherited from **TSharedObject**)	Increments the reference count for the number of references dependent on the TSharedObject object.
FindAttribute	Indicates whether a specified Attribute component is referenced in the TAttributes object.

Release (inherited from **TSharedObject**)	Decrements the reference count.

5.17.1.6.2 Properties

Properties of the **TObjectType** class.
For a complete list of the **TObjectType** class members, see the TObjectType Members topic.

Public

Name	Description
AttributeCount	Used to indicate the number of attributes of type.
Attributes	Used to access separate attributes.
DataType	Used to indicate the type of object dtObject, dtArray or dtTable.
RefCount (inherited from **TSharedObject**)	Used to return the count of reference to a TSharedObject object.
Size	Used to learn the size of an object instance.

See Also

- TObjectType Class
- TObjectType Class Members

5.17.1.6.2.1 AttributeCount Property

Used to indicate the number of attributes of type.

Class

TObjectType

Syntax

```
property AttributeCount: Integer;
```

Remarks

Use the AttributeCount property to determine the number of attributes of type.

5.17.1.6.2.2 Attributes Property(Indexer)

Used to access separate attributes.

Class

TObjectType

Syntax

```
property Attributes[Index: integer]: TAttribute;
```

Parameters

Index

Holds the attribute's ordinal position.

Remarks

Use the Attributes property to access individual attributes. The value of the Index parameter corresponds to the AttributeNo property of TAttribute.

See Also

- TAttribute
- FindAttribute

5.17.1.6.2.3 DataType Property

Used to indicate the type of object dtObject, dtArray or dtTable.

Class

TObjectType

Syntax

```
property DataType: Word;
```

Remarks

Use the DataType property to determine the type of object dtObject, dtArray or dtTable.

See Also

- T:Devart.Dac.Units.MemData

5.17.1.6.2.4 Size Property

Used to learn the size of an object instance.

Class

TObjectType

Syntax

```
property Size: Integer;
```

Remarks

Use the Size property to find out the size of an object instance. Size is a sum of all attribute sizes.

See Also

- TAttribute.Size

5.17.1.6.3 Methods

Methods of the **TObjectType** class.
For a complete list of the **TObjectType** class members, see the TObjectType Members topic.

Public

Name	Description
AddRef (inherited from **TSharedObject**)	Increments the reference count for the number of references dependent on the TSharedObject object.
FindAttribute	Indicates whether a specified Attribute component is referenced in the TAttributes object.
Release (inherited from **TSharedObject**)	Decrements the reference count.

See Also

- TObjectType Class
- TObjectType Class Members

5.17.1.6.3.1 FindAttribute Method

Indicates whether a specified Attribute component is referenced in the TAttributes object.

Class

TObjectType

Syntax

```
function FindAttribute(const Name: string): TAttribute; virtual;
```

Parameters

Name

Holds the name of the attribute to search for.

Return Value

TAttribute, if an attribute with a matching name was found. Nil Otherwise.

Remarks

Call FindAttribute to determine if a specified Attribute component is referenced in the TAttributes object. Name is the name of the Attribute for which to search. If FindAttribute finds an Attribute with a matching name, it returns the TAttribute. Otherwise it returns nil.

See Also

- TAttribute
- M:Devart.Dac.TObjectType.AttributeByName(System.String)
- Attributes

5.17.1.7 TSharedObject Class

A base class that allows to simplify memory management for object referenced by several other objects.

For a list of all members of this type, see TSharedObject members.

Unit

MemData

Syntax

```
TSharedObject = class(System.TObject);
```

Remarks

TSharedObject allows to simplify memory management for object referenced by several

other objects. TSharedObject holds a count of references to itself. When any object (referer object) is going to use TSharedObject, it calls the TSharedObject.AddRef method. Referer object has to call the TSharedObject.Release method after using TSharedObject.

See Also

- TBlob
- TObjectType

5.17.1.7.1 Members

TSharedObject class overview.

Properties

Name	Description
RefCount	Used to return the count of reference to a TSharedObject object.

Methods

Name	Description
AddRef	Increments the reference count for the number of references dependent on the TSharedObject object.
Release	Decrements the reference count.

5.17.1.7.2 Properties

Properties of the **TSharedObject** class.
For a complete list of the **TSharedObject** class members, see the TSharedObject Members topic.

Public

Name	Description
RefCount	Used to return the count of reference to a TSharedObject object.

See Also

- TSharedObject Class

- TSharedObject Class Members

5.17.1.7.2.1 RefCount Property

Used to return the count of reference to a TSharedObject object.

Class

TSharedObject

Syntax

```
property RefCount: Integer;
```

Remarks

Returns the count of reference to a TSharedObject object.

5.17.1.7.3 Methods

Methods of the **TSharedObject** class.
For a complete list of the **TSharedObject** class members, see the TSharedObject Members topic.

Public

Name	Description
AddRef	Increments the reference count for the number of references dependent on the TSharedObject object.
Release	Decrements the reference count.

See Also

- TSharedObject Class
- TSharedObject Class Members

5.17.1.7.3.1 AddRef Method

Increments the reference count for the number of references dependent on the TSharedObject object.

Class

TSharedObject

Syntax

```
procedure AddRef;
```

Remarks

Increments the reference count for the number of references dependent on the TSharedObject object.

See Also

- Release

5.17.1.7.3.2 Release Method

Decrements the reference count.

Class

TSharedObject

Syntax

```
procedure Release;
```

Remarks

Call the Release method to decrement the reference count. When RefCount is 1, TSharedObject is deleted from memory.

See Also

- AddRef

5.17.2 Types

Types in the **MemData** unit.

Types

Name	Description
TLocateExOptions	Represents the set of TLocateExOption.
TUpdateRecKinds	Represents the set of TUpdateRecKind.

5.17.2.1 TLocateExOptions Set

Represents the set of TLocateExOption.

Unit

MemData

Syntax

```
TLocateExOptions = set of TLocateExOption;
```

5.17.2.2 TUpdateRecKinds Set

Represents the set of TUpdateRecKind.

Unit

MemData

Syntax

```
TUpdateRecKinds = set of TUpdateRecKind;
```

5.17.3 Enumerations

Enumerations in the **MemData** unit.

Enumerations

Name	Description
TCompressBlobMode	Specifies when the values should be compressed and the way they should be stored.
TConnLostCause	Specifies the cause of the connection loss.
TDANumericType	Specifies the format of storing and representing of the NUMERIC (DECIMAL) fields.
TLocateExOption	Allows to set additional search parameters which will be used by the LocateEx method.
TSortType	Specifies a sort type for string fields.
TUpdateRecKind	Indicates records for which the ApplyUpdates method will be

	performed.

5.17.3.1 TCompressBlobMode Enumeration

Specifies when the values should be compressed and the way they should be stored.

Unit

MemData

Syntax

```
TCompressBlobMode = (cbNone, cbClient, cbServer, cbClientServer);
```

Values

Value	Meaning
cbClient	Values are compressed and stored as compressed data at the client side. Before posting data to the server decompression is performed and data at the server side stored in the original form. Allows to reduce used client memory due to increase access time to field values. The time spent on the opening DataSet and executing Post increases.
cbClientServer	Values are compressed and stored in compressed form. Allows to decrease the volume of used memory at client and server sides. Access time to the field values increases as for cbClient. The time spent on opening DataSet and executing Post decreases.**Note:** On using cbServer or cbClientServer data on the server is stored as compressed. Other applications can add records in uncompressed format but can't read and write already compressed data. If compressed BLOB is partially changed by another application (if signature was not changed), DAC will consider its value as NULL.Blob compression is not applied to Memo fields because of possible cutting.
cbNone	Values not compressed. The default value.
cbServer	Values are compressed before passing to the server and store at the server in compressed form. Allows to decrease database size on the server. Access time to the field values does not change. The time spent on opening DataSet and executing Post usually decreases.

5.17.3.2 TConnLostCause Enumeration

Specifies the cause of the connection loss.

Unit

MemData

Syntax

```
TConnLostCause = (clUnknown, clExecute, clOpen, clRefresh, clApply,
clServiceQuery, clTransStart, clConnectionApply, clConnect);
```

Values

Value	Meaning
clApply	Connection loss detected during DataSet.ApplyUpdates (Reconnect/Reexecute possible).
clConnect	Connection loss detected during connection establishing (Reconnect possible).
clConnectionApply	Connection loss detected during Connection.ApplyUpdates (Reconnect/Reexecute possible).
clExecute	Connection loss detected during SQL execution (Reconnect with exception is possible).
clOpen	Connection loss detected during execution of a SELECT statement (Reconnect with exception possible).
clRefresh	Connection loss detected during query opening (Reconnect/ Reexecute possible).
clServiceQuery	Connection loss detected during service information request (Reconnect/Reexecute possible).
clTransStart	Connection loss detected during transaction start (Reconnect/ Reexecute possible). clTransStart has less priority then clConnectionApply.
clUnknown	The connection loss reason is unknown.

5.17.3.3 TDANumericType Enumeration

Specifies the format of storing and representing of the NUMERIC (DECIMAL) fields.

Unit

MemData

Syntax

```
TDANumericType = (ntFloat, ntBCD, ntFmtBCD);
```

Values

Value	Meaning

ntBCD	Data is stored on the client side as currency and represented as TBCDField. This format allows storing data with precision up to 0,0001.
ntFloat	Data stored on the client side is in double format and represented as TFloatField. The default value.
ntFmtBCD	Data is represented as TFMTBCDField. TFMTBCDField gives greater precision and accuracy than TBCDField, but it is slower.

5.17.3.4 TLocateExOption Enumeration

Allows to set additional search parameters which will be used by the LocateEx method.

Unit

MemData

Syntax

```
TLocateExOption = (lxCaseInsensitive, lxPartialKey, lxNearest,
lxNext, lxUp, lxPartialCompare);
```

Values

Value	Meaning
lxCaseInsensitive	Similar to loCaseInsensitive. Key fields and key values are matched without regard to the case.
lxNearest	LocateEx moves the cursor to a specific record in a dataset or to the first record in the dataset that is greater than the values specified in the KeyValues parameter. For this option to work correctly dataset should be sorted by the fields the search is performed in. If dataset is not sorted, the function may return a line that is not connected with the search condition.
lxNext	LocateEx searches from the current record.
lxPartialCompare	Similar to lxPartialKey, but the difference is that it can process value entries in any position. For example, 'HAM' would match both 'HAMM', 'HAMMER.', and also 'MR HAMMER'.
lxPartialKey	Similar to loPartialKey. Key values can include only a part of the matching key field value. For example, 'HAM' would match both 'HAMM' and 'HAMMER.', but not 'MR HAMMER'.
lxUp	LocateEx searches from the current record to the first record.

5.17.3.5 TSortType Enumeration

Specifies a sort type for string fields.

Unit

MemData

Syntax

```
TSortType = (stCaseSensitive, stCaseInsensitive, stBinary);
```

Values

Value	Meaning
stBinary	Sorting by character ordinal values (this comparison is also case sensitive).
stCaseInsensitive	Sorting without case sensitivity.
stCaseSensitive	Sorting with case sensitivity.

5.17.3.6 TUpdateRecKind Enumeration

Indicates records for which the ApplyUpdates method will be performed.

Unit

MemData

Syntax

```
TUpdateRecKind = (ukUpdate, ukInsert, ukDelete);
```

Values

Value	Meaning
ukDelete	ApplyUpdates will be performed for deleted records.
ukInsert	ApplyUpdates will be performed for inserted records.
ukUpdate	ApplyUpdates will be performed for updated records.

5.18 MemDS

This unit contains implementation of the TMemDataSet class.

Classes

Name	Description
TMemDataSet	A base class for working with data and manipulating data in memory.

Variables

Name	Description
DoNotRaiseExcetionOnUaFail	An exception will be raised if the value of the UpdateAction parameter is uaFail.
SendDataSetChangeEventAfterOpen	The DataSetChange event is sent after a dataset gets open. It was necessary to fix a problem with disappeared vertical scrollbar in some types of DB-aware grids.

5.18.1 Classes

Classes in the **MemDS** unit.

Classes

Name	Description
TMemDataSet	A base class for working with data and manipulating data in memory.

5.18.1.1 TMemDataSet Class

A base class for working with data and manipulating data in memory.
For a list of all members of this type, see TMemDataSet members.

Unit

MemDS

Syntax

```
TMemDataSet = class(TDataSet);
```

Remarks

TMemDataSet derives from the TDataSet database-engine independent set of properties, events, and methods for working with data and introduces additional techniques to store and manipulate data in memory.

5.18.1.1.1 Members

TMemDataSet class overview.

Properties

Name	Description
CachedUpdates	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive	Specifies the upper and lower boundaries for a range.
LocalConstraints	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate	Used to prevent implicit update of rows on database server.
Prepared	Determines whether a query is prepared for execution or not.
Ranged	Indicates whether a range is applied to a dataset.
UpdateRecordTypes	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange	Applies a range to the dataset.
ApplyUpdates	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange	Removes any ranges currently in effect for a dataset.

CancelUpdates	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates	Clears the cached updates buffer.
DeferredPost	Makes permanent changes to the database server.
EditRangeEnd	Enables changing the ending value for an existing range.
EditRangeStart	Enables changing the starting value for an existing range.
GetBlob	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
Locate	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare	Allocates resources and creates field components for a dataset.
RestoreUpdates	Marks all records in the cache of updates as unapplied.
RevertRecord	Cancels changes made to the current record when cached updates are enabled.
SaveToXML	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange	Sets the starting and ending values of a range, and applies it.
SetRangeEnd	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart	Indicates that subsequent assignments to field values specify the start of the range of rows to

	include in the dataset.
UnPrepare	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord	Occurs when a single update component can not handle the updates.

5.18.1.1.2 Properties

Properties of the **TMemDataSet** class.

For a complete list of the **TMemDataSet** class members, see the TMemDataSet Members topic.

Public

Name	Description
CachedUpdates	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive	Specifies the upper and lower boundaries for a range.
LocalConstraints	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.

LocalUpdate	Used to prevent implicit update of rows on database server.
Prepared	Determines whether a query is prepared for execution or not.
Ranged	Indicates whether a range is applied to a dataset.
UpdateRecordTypes	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending	Used to check the status of the cached updates buffer.

See Also

- TMemDataSet Class
- TMemDataSet Class Members

5.18.1.1.2.1 CachedUpdates Property

Used to enable or disable the use of cached updates for a dataset.

Class

TMemDataSet

Syntax

```
property CachedUpdates: boolean default False;
```

Remarks

Use the CachedUpdates property to enable or disable the use of cached updates for a dataset. Setting CachedUpdates to True enables updates to a dataset (such as posting changes, inserting new records, or deleting records) to be stored in an internal cache on the client side instead of being written directly to the dataset's underlying database tables. When changes are completed, an application writes all cached changes to the database in the context of a single transaction.

Cached updates are especially useful for client applications working with remote database servers. Enabling cached updates brings up the following benefits:

- Fewer transactions and shorter transaction times.
- Minimized network traffic.

The potential drawbacks of enabling cached updates are:

- Other applications can access and change the actual data on the server while users are editing local copies of data, resulting in an update conflict when cached updates are applied to the database.
- Other applications cannot access data changes made by an application until its cached updates are applied to the database.

The default value is False.

Note: When establishing master/detail relationship the CachedUpdates property of detail dataset works properly only when TDADataSetOptions.LocalMasterDetail is set to True.

See Also

- UpdatesPending
- TMemDataSet.ApplyUpdates
- RestoreUpdates
- CommitUpdates
- CancelUpdates
- UpdateStatus
- TCustomDADataSet.Options

5.18.1.1.2.2 IndexFieldNames Property

Used to get or set the list of fields on which the recordset is sorted.

Class

TMemDataSet

Syntax

```
property IndexFieldNames: string;
```

Remarks

Use the IndexFieldNames property to get or set the list of fields on which the recordset is sorted. Specify the name of each column in IndexFieldNames to use as an index for a table. Ordering of column names is significant. Separate names with semicolon. The specified columns don't need to be indexed. Set IndexFieldNames to an empty string to reset the recordset to the sort order originally used when the recordset's data was first retrieved.
Each field may optionally be followed by the keyword ASC / DESC or CIS / CS / BIN.
Use ASC, DESC keywords to specify a sort direction for the field. If one of these keywords is not used, the default sort direction for the field is ascending.
Use CIS, CS or BIN keywords to specify a sort type for string fields:

CIS - compare without case sensitivity;
CS - compare with case sensitivity;
BIN - compare by character ordinal values (this comparison is also case sensitive).
If a dataset uses a TCustomDAConnection component, the default value of sort type depends on the TCustomDAConnection.Options option of the connection. If a dataset does not use a connection (TVirtualTable dataset), the default is CS.
Read IndexFieldNames to determine the field (or fields) on which the recordset is sorted.
Ordering is processed locally.
Note: You cannot process ordering by BLOB fields.

Example

The following procedure illustrates how to set IndexFieldNames in response to a button click:

```
DataSet1.IndexFieldNames := 'LastName ASC CIS; DateDue DESC';
```

5.18.1.1.2.3 KeyExclusive Property

Specifies the upper and lower boundaries for a range.

Class

TMemDataSet

Syntax

```
property KeyExclusive: Boolean;
```

Remarks

Use KeyExclusive to specify whether a range includes or excludes the records that match its specified starting and ending values.
By default, KeyExclusive is False, meaning that matching values are included.
To restrict a range to those records that are greater than the specified starting value and less than the specified ending value, set KeyExclusive to True.

See Also

- SetRange
- SetRangeEnd
- SetRangeStart

5.18.1.1.2.4 LocalConstraints Property

Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.

Class

TMemDataSet

Syntax

```
property LocalConstraints: boolean default True;
```

Remarks

Use the LocalConstraints property to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet. When LocalConstrains is True, TMemDataSet ignores NOT NULL server constraints. It is useful for tables that have fields updated by triggers.
LocalConstraints is obsolete, and is only included for backward compatibility.
The default value is True.

5.18.1.1.2.5 LocalUpdate Property

Used to prevent implicit update of rows on database server.

Class

TMemDataSet

Syntax

```
property LocalUpdate: boolean default False;
```

Remarks

Set the LocalUpdate property to True to prevent implicit update of rows on database server. Data changes are cached locally in client memory.

5.18.1.1.2.6 Prepared Property

Determines whether a query is prepared for execution or not.

Class

TMemDataSet

Syntax

```
property Prepared: boolean;
```

Remarks

Determines whether a query is prepared for execution or not.

See Also

- Prepare

5.18.1.1.2.7 Ranged Property

Indicates whether a range is applied to a dataset.

Class

TMemDataSet

Syntax

```
property Ranged: Boolean;
```

Remarks

Use the Ranged property to detect whether a range is applied to a dataset.

See Also

- SetRange
- SetRangeEnd
- SetRangeStart

5.18.1.1.2.8 UpdateRecordTypes Property

Used to indicate the update status for the current record when cached updates are enabled.

Class

TMemDataSet

Syntax

```
property UpdateRecordTypes: TUpdateRecordTypes default
[rtModified, rtInserted, rtUnmodified];
```

Remarks

Use the UpdateRecordTypes property to determine the update status for the current record when cached updates are enabled. Update status can change frequently as records are edited, inserted, or deleted. UpdateRecordTypes offers a convenient method for applications to assess the current status before undertaking or completing operations that depend on the update status of records.

See Also

- CachedUpdates

5.18.1.1.2.9 UpdatesPending Property

Used to check the status of the cached updates buffer.

Class

TMemDataSet

Syntax

```
property UpdatesPending: boolean;
```

Remarks

Use the UpdatesPending property to check the status of the cached updates buffer. If UpdatesPending is True, then there are edited, deleted, or inserted records remaining in local cache and not yet applied to the database. If UpdatesPending is False, there are no such records in the cache.

See Also

- CachedUpdates

5.18.1.1.3 Methods

Methods of the **TMemDataSet** class.
For a complete list of the **TMemDataSet** class members, see the TMemDataSet Members topic.

Public

Name	Description
ApplyRange	Applies a range to the dataset.
ApplyUpdates	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange	Removes any ranges currently in effect for a dataset.
CancelUpdates	Clears all pending cached updates from cache and restores dataset in

	its prior state.
CommitUpdates	Clears the cached updates buffer.
DeferredPost	Makes permanent changes to the database server.
EditRangeEnd	Enables changing the ending value for an existing range.
EditRangeStart	Enables changing the starting value for an existing range.
GetBlob	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
Locate	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare	Allocates resources and creates field components for a dataset.
RestoreUpdates	Marks all records in the cache of updates as unapplied.
RevertRecord	Cancels changes made to the current record when cached updates are enabled.
SaveToXML	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange	Sets the starting and ending values of a range, and applies it.
SetRangeEnd	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.

UnPrepare	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- TMemDataSet Class
- TMemDataSet Class Members

5.18.1.1.3.1 ApplyRange Method

Applies a range to the dataset.

Class

TMemDataSet

Syntax

```
procedure ApplyRange;
```

Remarks

Call ApplyRange to cause a range established with SetRangeStart and SetRangeEnd, or EditRangeStart and EditRangeEnd, to take effect.

When a range is in effect, only those records that fall within the range are available to the application for viewing and editing.

After a call to ApplyRange, the cursor is left on the first record in the range.

See Also

- CancelRange
- EditRangeEnd
- EditRangeStart
- IndexFieldNames
- SetRange
- SetRangeEnd
- SetRangeStart

5.18.1.1.3.2 ApplyUpdates Method

Writes dataset's pending cached updates to a database.

Class

TMemDataSet

Overload List

Name	Description
ApplyUpdates	Writes dataset's pending cached updates to a database.
ApplyUpdates(**const** UpdateRecKinds: TUpdateRecKinds)	Writes dataset's pending cached updates of specified records to a database.

Writes dataset's pending cached updates to a database.

Class

TMemDataSet

Syntax

```
procedure ApplyUpdates; overload; virtual;
```

Remarks

Call the ApplyUpdates method to write a dataset's pending cached updates to a database. This method passes cached data to the database, but the changes are not committed to the database if there is an active transaction. An application must explicitly call the database component's Commit method to commit the changes to the database if the write is successful, or call the database's Rollback method to undo the changes if there is an error. Following a successful write to the database, and following a successful call to a connection's Commit method, an application should call the CommitUpdates method to clear the cached update buffer.

Note: The preferred method for updating datasets is to call a connection component's ApplyUpdates method rather than to call each individual dataset's ApplyUpdates method. The connection component's ApplyUpdates method takes care of committing and rolling back transactions and clearing the cache when the operation is successful.

Example

The following procedure illustrates how to apply a dataset's cached updates to a database in

response to a button click:

```
procedure ApplyButtonClick(Sender: TObject);
begin
   with MyQuery do
   begin
      Session.StartTransaction;
      try
         ... <Modify data>
         ApplyUpdates; <try to write the updates to the database>
         Session.Commit; <on success, commit the changes>
      except
         RestoreUpdates; <restore update result for applied records>
         Session.Rollback; <on failure, undo the changes>
         raise; <raise the exception to prevent a call to CommitUpdates!>
      end;
      CommitUpdates; <on success, clear the cache>
   end;
end;
```

See Also

- TMemDataSet.CachedUpdates
- TMemDataSet.CancelUpdates
- TMemDataSet.CommitUpdates
- TMemDataSet.UpdateStatus

Writes dataset's pending cached updates of specified records to a database.

Class

TMemDataSet

Syntax

```
procedure ApplyUpdates(const UpdateRecKinds: TUpdateRecKinds);
overload; virtual;
```

Parameters

UpdateRecKinds

Indicates records for which the ApplyUpdates method will be performed.

Remarks

Call the ApplyUpdates method to write a dataset's pending cached updates of specified records to a database. This method passes cached data to the database, but the changes are not committed to the database if there is an active transaction. An application must explicitly call the database component's Commit method to commit the changes to the database if the write is successful, or call the database's Rollback method to undo the

changes if there is an error.
Following a successful write to the database, and following a successful call to a connection's Commit method, an application should call the CommitUpdates method to clear the cached update buffer.
Note: The preferred method for updating datasets is to call a connection component's ApplyUpdates method rather than to call each individual dataset's ApplyUpdates method. The connection component's ApplyUpdates method takes care of committing and rolling back transactions and clearing the cache when the operation is successful.

5.18.1.1.3.3 CancelRange Method

Removes any ranges currently in effect for a dataset.

Class

TMemDataSet

Syntax

```
procedure CancelRange;
```

Remarks

Call CancelRange to remove a range currently applied to a dataset. Canceling a range reenables access to all records in the dataset.

See Also

- ApplyRange
- EditRangeEnd
- EditRangeStart
- IndexFieldNames
- SetRange
- SetRangeEnd
- SetRangeStart

5.18.1.1.3.4 CancelUpdates Method

Clears all pending cached updates from cache and restores dataset in its prior state.

Class

TMemDataSet

Syntax

```
procedure CancelUpdates;
```

Remarks

Call the CancelUpdates method to clear all pending cached updates from cache and restore dataset in its prior state.
It restores the dataset to the state it was in when the table was opened, cached updates were last enabled, or updates were last successfully applied to the database.
When a dataset is closed, or the CachedUpdates property is set to False, CancelUpdates is called automatically.

See Also

- CachedUpdates
- TMemDataSet.ApplyUpdates
- UpdateStatus

5.18.1.1.3.5 CommitUpdates Method

Clears the cached updates buffer.

Class

TMemDataSet

Syntax

```
procedure CommitUpdates;
```

Remarks

Call the CommitUpdates method to clear the cached updates buffer after both a successful call to ApplyUpdates and a database component's Commit method. Clearing the cache after applying updates ensures that the cache is empty except for records that could not be processed and were skipped by the OnUpdateRecord or OnUpdateError event handlers. An application can attempt to modify the records still in cache.
CommitUpdates also checks wether there are pending updates in dataset. And if there are, it calls ApplyUpdates.
Record modifications made after a call to CommitUpdates repopulate the cached update buffer and require a subsequent call to ApplyUpdates to move them to the database.

See Also

- CachedUpdates

- TMemDataSet.ApplyUpdates
- UpdateStatus

5.18.1.1.3.6 DeferredPost Method

Makes permanent changes to the database server.

Class

TMemDataSet

Syntax

```
procedure DeferredPost;
```

Remarks

Call DeferredPost to make permanent changes to the database server while retaining dataset in its state whether it is dsEdit or dsInsert.
Explicit call to the Cancel method after DeferredPost has been applied does not abandon modifications to a dataset already fixed in database.

5.18.1.1.3.7 EditRangeEnd Method

Enables changing the ending value for an existing range.

Class

TMemDataSet

Syntax

```
procedure EditRangeEnd;
```

Remarks

Call EditRangeEnd to change the ending value for an existing range.
To specify an end range value, call FieldByName after calling EditRangeEnd.
After assigning a new ending value, call ApplyRange to activate the modified range.

See Also

- ApplyRange
- CancelRange
- EditRangeStart
- IndexFieldNames

- SetRange
- SetRangeEnd
- SetRangeStart

5.18.1.1.3.8 EditRangeStart Method

Enables changing the starting value for an existing range.

Class

TMemDataSet

Syntax

```
procedure EditRangeStart;
```

Remarks

Call EditRangeStart to change the starting value for an existing range.
To specify a start range value, call FieldByName after calling EditRangeStart.
After assigning a new ending value, call ApplyRange to activate the modified range.

See Also

- ApplyRange
- CancelRange
- EditRangeEnd
- IndexFieldNames
- SetRange
- SetRangeEnd
- SetRangeStart

5.18.1.1.3.9 GetBlob Method

Retrieves TBlob object for a field or current record when only its name or the field itself is known.

Class

TMemDataSet

Overload List

Name	Description
GetBlob(Field: TField)	Retrieves TBlob object for a field or current

	record when the field itself is known.
GetBlob(**const** FieldName: **string**)	Retrieves TBlob object for a field or current record when its name is known.

Retrieves TBlob object for a field or current record when the field itself is known.

Class

TMemDataSet

Syntax

```
function GetBlob(Field: TField): TBlob; overload;
```

Parameters

Field

Holds an existing TField object.

Return Value

TBlob object that was retrieved.

Remarks

Call the GetBlob method to retrieve TBlob object for a field or current record when only its name or the field itself is known. FieldName is the name of an existing field. The field should have MEMO or BLOB type.

Retrieves TBlob object for a field or current record when its name is known.

Class

TMemDataSet

Syntax

```
function GetBlob(const FieldName: string): TBlob; overload;
```

Parameters

FieldName

Holds the name of an existing field.

Return Value

TBlob object that was retrieved.

Example

```
LiteQuery1.GetBlob('Comment').SaveToFile('Comment.txt');
```

See Also

- TBlob

5.18.1.1.3.10 Locate Method

Searches a dataset for a specific record and positions the cursor on it.

Class

TMemDataSet

Overload List

Name	Description
Locate(**const** KeyFields: **array of** TField; **const** KeyValues: variant; Options: TLocateOptions)	Searches a dataset by the specified fields for a specific record and positions cursor on it.
Locate(**const** KeyFields: **string**; **const** KeyValues: variant; Options: TLocateOptions)	Searches a dataset by the fields specified by name for a specific record and positions the cursor on it.

Searches a dataset by the specified fields for a specific record and positions cursor on it.

Class

TMemDataSet

Syntax

```
function Locate(const KeyFields: array of TField; const
KeyValues: variant; Options: TLocateOptions): boolean;
reintroduce; overload;
```

Parameters

KeyFields

Holds TField objects in which to search.

KeyValues

Holds the variant that specifies the values to match in the key fields.

Options

Holds additional search latitude when searching in string fields.

Return Value

True if it finds a matching record, and makes this record the current one. Otherwise it returns False.

Searches a dataset by the fields specified by name for a specific record and positions the cursor on it.

Class

TMemDataSet

Syntax

```
function Locate(const KeyFields: string; const KeyValues:
variant; Options: TLocateOptions): boolean; overload; override;
```

Parameters

KeyFields

Holds a semicolon-delimited list of field names in which to search.

KeyValues

Holds the variant that specifies the values to match in the key fields.

Options

Holds additional search latitude when searching in string fields.

Return Value

True if it finds a matching record, and makes this record the current one. Otherwise it returns False.

Remarks

Call the Locate method to search a dataset for a specific record and position cursor on it. KeyFields is a string containing a semicolon-delimited list of field names on which to search. KeyValues is a variant that specifies the values to match in the key fields. If KeyFields lists a single field, KeyValues specifies the value for that field on the desired record. To specify multiple search values, pass a variant array as KeyValues, or construct a variant array on the fly using the VarArrayOf routine. An example is provided below.

Options is a set that optionally specifies additional search latitude when searching in string fields. If Options contains the loCaseInsensitive setting, then Locate ignores case when matching fields. If Options contains the loPartialKey setting, then Locate allows partial-string matching on strings in KeyValues. If Options is an empty set, or if KeyFields does not include any string fields, Options is ignored.

Locate returns True if it finds a matching record, and makes this record the current one. Otherwise it returns False.

The Locate function works faster when dataset is locally sorted on the KeyFields fields. Local dataset sorting can be set with the TMemDataSet.IndexFieldNames property.

Example

An example of specifying multiple search values:

```
with CustTable do
   Locate('Company;Contact;Phone', VarArrayOf(['Sight Diver', 'P',
      '408-431-1000']), [loPartialKey]);
```

See Also

- TMemDataSet.IndexFieldNames
- TMemDataSet.LocateEx

5.18.1.1.3.11 LocateEx Method

Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.

Class

TMemDataSet

Overload List

Name	Description
LocateEx(**const** KeyFields: **array of** TField; **const** KeyValues: variant; Options: TLocateExOptions)	Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet by the specified fields.
LocateEx(**const** KeyFields: **string**; **const** KeyValues: variant; Options: TLocateExOptions)	Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet by the specified field names.

Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet by the specified fields.

Class

TMemDataSet

Syntax

```
function LocateEx(const KeyFields: array of TField; const
KeyValues: variant; Options: TLocateExOptions): boolean; overload;
```

Parameters

KeyFields

Holds TField objects to search in.

KeyValues

Holds the values of the fields to search for.

Options

Holds additional search parameters which will be used by the LocateEx method.

Return Value

True, if a matching record was found. Otherwise returns False.

Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet by the specified field names.

Class

TMemDataSet

Syntax

```
function LocateEx(const KeyFields: string; const KeyValues:
variant; Options: TLocateExOptions): boolean; overload;
```

Parameters

KeyFields

Holds the fields to search in.

KeyValues

Holds the values of the fields to search for.

Options

Holds additional search parameters which will be used by the LocateEx method.

Return Value

True, if a matching record was found. Otherwise returns False.

Remarks

Call the LocateEx method when you need some features not to be included to the TMemDataSet.Locate method of TDataSet.

LocateEx returns True if it finds a matching record, and makes that record the current one. Otherwise LocateEx returns False.

The LocateEx function works faster when dataset is locally sorted on the KeyFields fields. Local dataset sorting can be set with the TMemDataSet.IndexFieldNames property.

Note: Please add the MemData unit to the "uses" list to use the TLocalExOption enumeration.

See Also

- TMemDataSet.IndexFieldNames
- TMemDataSet.Locate

5.18.1.1.3.12 Prepare Method

Allocates resources and creates field components for a dataset.

Class

TMemDataSet

Syntax

```
procedure Prepare; virtual;
```

Remarks

Call the Prepare method to allocate resources and create field components for a dataset. To learn whether dataset is prepared or not use the Prepared property.
The UnPrepare method unprepares a query.
Note: When you change the text of a query at runtime, the query is automatically closed and unprepared.

See Also

- Prepared
- UnPrepare

5.18.1.1.3.13 RestoreUpdates Method

Marks all records in the cache of updates as unapplied.

Class

TMemDataSet

Syntax

```
procedure RestoreUpdates;
```

Remarks

Call the RestoreUpdates method to return the cache of updates to its state before calling ApplyUpdates. RestoreUpdates marks all records in the cache of updates as unapplied. It is useful when ApplyUpdates fails.

See Also

- CachedUpdates
- TMemDataSet.ApplyUpdates

- CancelUpdates
- UpdateStatus

5.18.1.1.3.14 RevertRecord Method

Cancels changes made to the current record when cached updates are enabled.

Class

TMemDataSet

Syntax

```
procedure RevertRecord;
```

Remarks

Call the RevertRecord method to undo changes made to the current record when cached updates are enabled.

See Also

- CachedUpdates
- CancelUpdates

5.18.1.1.3.15 SaveToXML Method

Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.

Class

TMemDataSet

Overload List

Name	Description
SaveToXML(Destination: TStream)	Saves the current dataset data to a stream in the XML format compatible with ADO format.
SaveToXML(**const** FileName: **string**)	Saves the current dataset data to a file in the XML format compatible with ADO format.

Saves the current dataset data to a stream in the XML format compatible with ADO format.

Class

TMemDataSet

Syntax

```
procedure SaveToXML(Destination: TStream); overload;
```

Parameters

Destination

Holds a TStream object.

Remarks

Call the SaveToXML method to save the current dataset data to a file or a stream in the XML format compatible with ADO format.

If the destination file already exists, it is overwritten. It remains open from the first call to SaveToXML until the dataset is closed. This file can be read by other applications while it is opened, but they cannot write to the file.

When saving data to a stream, a TStream object must be created and its position must be set in a preferable value.

See Also

- M:Devart.Dac.TVirtualTable.LoadFromFile(System.String,System.Boolean)
- M:Devart.Dac.TVirtualTable.LoadFromStream(Borland.Vcl.TStream,System.Boolean)

Saves the current dataset data to a file in the XML format compatible with ADO format.

Class

TMemDataSet

Syntax

```
procedure SaveToXML(const FileName: string); overload;
```

Parameters

FileName

Holds the name of a destination file.

5.18.1.1.3.16 SetRange Method

Sets the starting and ending values of a range, and applies it.

Class

TMemDataSet

Syntax

```
procedure SetRange(const StartValues: array of System.TVarRec;
const EndValues: array of System.TVarRec; StartExlusive: Boolean
= False; EndExclusive: Boolean = False);
```

Parameters

StartValues

Indicates the field values that designate the first record in the range. In C++, StartValues_Size is the index of the last value in the StartValues array.

EndValues

Indicates the field values that designate the last record in the range. In C++, EndValues_Size is the index of the last value in the EndValues array.

StartExlusive

lindicates the upper and lower boundaries of the start range.

EndExclusive

Indicates the upper and lower boundaries of the end range.

Remarks

Call SetRange to specify a range and apply it to the dataset. The new range replaces the currently specified range, if any.

SetRange combines the functionality of SetRangeStart, SetRangeEnd, and ApplyRange in a single procedure call. SetRange performs the following functions:

- 1. Puts the dataset into dsSetKey state.
- 2. Erases any previously specified starting range values and ending range values.
- 3. Sets the start and end range values.
- 4. Applies the range to the dataset.

After a call to SetRange, the cursor is left on the first record in the range.

If either StartValues or EndValues has fewer elements than the number of fields in the current index, then the remaining entries are set to NULL.

See Also

- ApplyRange
- CancelRange
- EditRangeEnd
- EditRangeStart
- IndexFieldNames
- KeyExclusive

- SetRangeEnd
- SetRangeStart

5.18.1.1.3.17 SetRangeEnd Method

Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.

Class

TMemDataSet

Syntax

```
procedure SetRangeEnd;
```

Remarks

Call SetRangeEnd to put the dataset into dsSetKey state, erase any previous end range values, and set them to NULL.
Subsequent field assignments made with FieldByName specify the actual set of ending values for a range.
After assigning end-range values, call ApplyRange to activate the modified range.

See Also

- ApplyRange
- CancelRange
- EditRangeStart
- IndexFieldNames
- SetRange
- SetRangeStart

5.18.1.1.3.18 SetRangeStart Method

Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.

Class

TMemDataSet

Syntax

```
procedure SetRangeStart;
```

Remarks

Call SetRangeStart to put the dataset into dsSetKey state, erase any previous start range values, and set them to NULL.
Subsequent field assignments to FieldByName specify the actual set of starting values for a range.
After assigning start-range values, call ApplyRange to activate the modified range.

See Also

- ApplyRange
- CancelRange
- EditRangeStart
- IndexFieldNames
- SetRange
- SetRangeEnd

5.18.1.1.3.19 UnPrepare Method

Frees the resources allocated for a previously prepared query on the server and client sides.

Class

TMemDataSet

Syntax

```
procedure UnPrepare; virtual;
```

Remarks

Call the UnPrepare method to free the resources allocated for a previously prepared query on the server and client sides.
Note: When you change the text of a query at runtime, the query is automatically closed and unprepared.

See Also

- Prepare

5.18.1.1.3.20 UpdateResult Method

Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.

Class

TMemDataSet

Syntax

```
function UpdateResult: TUpdateAction;
```

Return Value

a value of the TUpdateAction enumeration.

Remarks

Call the UpdateResult method to read the status of the latest call to the ApplyUpdates method while cached updates are enabled. UpdateResult reflects updates made on the records that have been edited, inserted, or deleted.

UpdateResult works on the record by record basis and is applicable to the current record only.

See Also

- CachedUpdates

5.18.1.1.3.21 UpdateStatus Method

Indicates the current update status for the dataset when cached updates are enabled.

Class

TMemDataSet

Syntax

```
function UpdateStatus: TUpdateStatus; override;
```

Return Value

a value of the TUpdateStatus enumeration.

Remarks

Call the UpdateStatus method to determine the current update status for the dataset when cached updates are enabled. Update status can change frequently as records are edited, inserted, or deleted. UpdateStatus offers a convenient method for applications to assess the current status before undertaking or completing operations that depend on the update status of the dataset.

See Also

- CachedUpdates

5.18.1.1.4 Events

Events of the **TMemDataSet** class.

For a complete list of the **TMemDataSet** class members, see the TMemDataSet Members topic.

Public

Name	Description
OnUpdateError	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord	Occurs when a single update component can not handle the updates.

See Also

- TMemDataSet Class
- TMemDataSet Class Members

5.18.1.1.4.1 OnUpdateError Event

Occurs when an exception is generated while cached updates are applied to a database.

Class

TMemDataSet

Syntax

```
property OnUpdateError: TUpdateErrorEvent;
```

Remarks

Write the OnUpdateError event handler to respond to exceptions generated when cached updates are applied to a database.

E is a pointer to an EDatabaseError object from which application can extract an error message and the actual cause of the error condition. The OnUpdateError handler can use this information to determine how to respond to the error condition.

UpdateKind describes the type of update that generated the error.

UpdateAction indicates the action to take when the OnUpdateError handler exits. On entry into the handler, UpdateAction is always set to uaFail. If OnUpdateError can handle or correct the error, set UpdateAction to uaRetry before exiting the error handler.
The error handler can use the TField.OldValue and TField.NewValue properties to evaluate error conditions and set TField.NewValue to a new value to reapply. In this case, set UpdateAction to uaRetry before exiting.
Note: If a call to ApplyUpdates raises an exception and ApplyUpdates is not called within the context of a try...except block, an error message is displayed. If the OnUpdateError handler cannot correct the error condition and leaves UpdateAction set to uaFail, the error message is displayed twice. To prevent redisplay, set UpdateAction to uaAbort in the error handler.

See Also

- CachedUpdates

5.18.1.1.4.2 OnUpdateRecord Event

Occurs when a single update component can not handle the updates.

Class

TMemDataSet

Syntax

```
property OnUpdateRecord: TUpdateRecordEvent;
```

Remarks

Write the OnUpdateRecord event handler to process updates that cannot be handled by a single update component, such as implementation of cascading updates, insertions, or deletions. This handler is also useful for applications that require additional control over parameter substitution in update components.
UpdateKind describes the type of update to perform.
UpdateAction indicates the action taken by the OnUpdateRecord handler before it exits. On entry into the handler, UpdateAction is always set to uaFail. If OnUpdateRecord is successful, it should set UpdateAction to uaApplied before exiting.

See Also

- CachedUpdates

5.18.2 Variables

Variables in the **MemDS** unit.

Variables

Name	Description
DoNotRaiseExcetionOnUaFail	An exception will be raised if the value of the UpdateAction parameter is uaFail.
SendDataSetChangeEventAfterOpen	The DataSetChange event is sent after a dataset gets open. It was necessary to fix a problem with disappeared vertical scrollbar in some types of DB-aware grids.

5.18.2.1 DoNotRaiseExcetionOnUaFail Variable

An exception will be raised if the value of the UpdateAction parameter is uaFail.

Unit

MemDS

Syntax

```
DoNotRaiseExcetionOnUaFail: boolean = False;
```

Remarks

Starting with LiteDAC , if the OnUpdateRecord event handler sets the UpdateAction parameter to uaFail, an exception is raised. The default value of UpdateAction is uaFail. So, the exception will be raised when the value of this parameter is left unchanged.
To restore the old behaviour, set DoNotRaiseExcetionOnUaFail to True.

5.18.2.2 SendDataSetChangeEventAfterOpen Variable

The DataSetChange event is sent after a dataset gets open. It was necessary to fix a problem with disappeared vertical scrollbar in some types of DB-aware grids.

Unit

MemDS

Syntax

```
SendDataSetChangeEventAfterOpen: boolean = True;
```

Remarks

Starting with LiteDAC , the DataSetChange event is sent after a dataset gets open. It was necessary to fix a problem with disappeared vertical scrollbar in some types of DB-aware grids. This problem appears only under Windows XP when visual styles are enabled.
To disable sending this event, change the value of this variable to False.

5.19 VirtualDataSet

5.19.1 Classes

Classes in the **VirtualDataSet** unit.

Classes

Name	Description
TCustomVirtualDataSet	A base class for representation of arbitrary data in tabular form.
TVirtualDataSet	Dataset that processes arbitrary non-tabular data.

5.19.1.1 TCustomVirtualDataSet Class

A base class for representation of arbitrary data in tabular form.
For a list of all members of this type, see TCustomVirtualDataSet members.

Unit

`VirtualDataSet`

Syntax

```
TCustomVirtualDataSet = class(TMemDataSet);
```

Inheritance Hierarchy

TMemDataSet
  TCustomVirtualDataSet

5.19.1.1.1 Members

TCustomVirtualDataSet class overview.

Properties

Name	Description
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.

CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from **TMemDataSet**)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.

SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from **TMemDataSet**)	Occurs when a single update component can not handle the updates.

5.19.1.2 TVirtualDataSet Class

Dataset that processes arbitrary non-tabular data.

For a list of all members of this type, see TVirtualDataSet members.

Unit

`VirtualDataSet`

Syntax

```
TVirtualDataSet = class(TCustomVirtualDataSet);
```

Inheritance Hierarchy

TMemDataSet
TCustomVirtualDataSet
TVirtualDataSet

5.19.1.2.1 Members

TVirtualDataSet class overview.

Properties

Name	Description
CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from **TMemDataSet**)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.

RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from **TMemDataSet**)	Occurs when a single update component can not handle the updates.

5.19.2 Types

Types in the **VirtualDataSet** unit.

Types

Name	Description
TOnDeleteRecordEvent	This type is used for the E:Devart.Dac.TVirtualDataSet.OnDeleteRecord event.
TOnGetFieldValueEvent	This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetFieldValue event.
TOnGetRecordCountEvent	This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetRecordCount event.
TOnModifyRecordEvent	This type is used for E:Devart.Dac.TVirtualDataSet.OnInsertRecord and E:Devart.Dac.TVirtualDataSet.OnModifyRecord events.

5.19.2.1 TOnDeleteRecordEvent Procedure Reference

This type is used for the E:Devart.Dac.TVirtualDataSet.OnDeleteRecord event.

Unit

`VirtualDataSet`

Syntax

```
TOnDeleteRecordEvent = procedure (Sender: TObject; RecNo:
Integer) of object;
```

Parameters

Sender

An object that raised the event.

RecNo

Number of the record being deleted.

5.19.2.2 TOnGetFieldValueEvent Procedure Reference

This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetFieldValue event.

Unit

`VirtualDataSet`

Syntax

```
TOnGetFieldValueEvent = procedure (Sender: TObject; Field: TField;
```

```
RecNo: Integer; out Value: Variant) of object;
```

Parameters

Sender
An object that raised the event.

Field
The field, which data has to be returned.

RecNo
The number of the record, which data has to be returned.

Value
Requested field value.

5.19.2.3 TOnGetRecordCountEvent Procedure Reference

This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetRecordCount event.

Unit

`VirtualDataSet`

Syntax

```
TOnGetRecordCountEvent = procedure (Sender: TObject; out Count:
Integer) of object;
```

Parameters

Sender
An object that raised the event.

Count
The number of records that the virtual dataset will contain.

5.19.2.4 TOnModifyRecordEvent Procedure Reference

This type is used for E:Devart.Dac.TVirtualDataSet.OnInsertRecord and E:Devart.Dac.TVirtualDataSet.OnModifyRecord events.

Unit

`VirtualDataSet`

Syntax

```
TOnModifyRecordEvent = procedure (Sender: TObject; var RecNo:
Integer) of object;
```

Parameters

Sender
An object that raised the event.
RecNo
Number of the record being inserted or modified.

5.20 VirtualTable

5.20.1 Classes

Classes in the **VirtualTable** unit.

Classes

Name	Description
TVirtualTable	Dataset that stores data in memory. This component is placed on the Data Access page of the Component palette.

5.20.1.1 TVirtualTable Class

Dataset that stores data in memory. This component is placed on the Data Access page of the Component palette.
For a list of all members of this type, see TVirtualTable members.

Unit

`VirtualTable`

Syntax

```
TVirtualTable = class(TMemDataSet);
```

Inheritance Hierarchy

TMemDataSet
TVirtualTable

5.20.1.1.1 Members

TVirtualTable class overview.

Properties

Name	Description

CachedUpdates (inherited from **TMemDataSet**)	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames (inherited from **TMemDataSet**)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from **TMemDataSet**)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from **TMemDataSet**)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from **TMemDataSet**)	Used to prevent implicit update of rows on database server.
Prepared (inherited from **TMemDataSet**)	Determines whether a query is prepared for execution or not.
Ranged (inherited from **TMemDataSet**)	Indicates whether a range is applied to a dataset.
UpdateRecordTypes (inherited from **TMemDataSet**)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from **TMemDataSet**)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from **TMemDataSet**)	Applies a range to the dataset.
ApplyUpdates (inherited from **TMemDataSet**)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from **TMemDataSet**)	Removes any ranges currently in effect for a dataset.

CancelUpdates (inherited from **TMemDataSet**)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from **TMemDataSet**)	Clears the cached updates buffer.
DeferredPost (inherited from **TMemDataSet**)	Makes permanent changes to the database server.
EditRangeEnd (inherited from **TMemDataSet**)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from **TMemDataSet**)	Enables changing the starting value for an existing range.
GetBlob (inherited from **TMemDataSet**)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
Locate (inherited from **TMemDataSet**)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from **TMemDataSet**)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from **TMemDataSet**)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from **TMemDataSet**)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from **TMemDataSet**)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from **TMemDataSet**)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from **TMemDataSet**)	Sets the starting and ending values of a range, and applies it.

SetRangeEnd (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from **TMemDataSet**)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from **TMemDataSet**)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from **TMemDataSet**)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from **TMemDataSet**)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from **TMemDataSet**)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from **TMemDataSet**)	Occurs when a single update component can not handle the updates.