



Join us for <Dev Days of Summer> 2024!

August 12-16 | 19-23, 2024

Two full weeks of live and on-demand
developer content, all for free!



Visual Assist





FireDAC

Secret Weapons

More than Delphi Data Access

Slides and samples

github.com/jimmckeeth/FireDAC-Secret-Weapons



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INTERFACE

- In-Memory Tables
- Local SQL
- Batch Move
- NoSQL & MongoDB
- New Security & Safety Features
- More resources



Slides and samples for this session

github.com/jimmckeeth/FireDAC-Secret-Weapons

Review the fundamentals

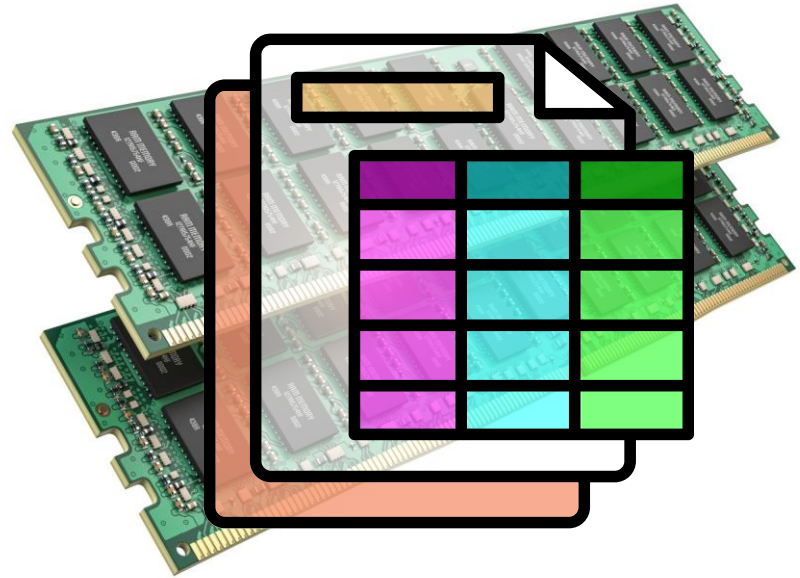
github.com/jimmckeeth/FireDAC-Fundamentals

IMPLEMENTATION

The background is a composite of two distinct visual elements. On the left, there is a large, bright yellow circular glow that fades into the center. On the right, there is a dark, tunnel-like structure composed of many parallel, glowing orange lines that recede into the distance, creating a sense of depth and movement.

TFDMemTable

- Similar to the TClientDataset
- Less about keeping it in RAM
- More NO DBMS Required
- AKA “Disconnected Dataset”



Object Inspector

FDMemTable1 TFDMemTable

Properties Events

Active ☐ False

> ActiveStoredUsage [auDesignTime,auRunTime]

Adapter

Aggregates (TFDAggregates)

AggregatesActive ☐ False

AutoCalcFields ☒ True

CachedUpdates ☐ False

ChangeAlerter

ChangeAlertName

Constraints (TCheckConstraints)

ConstraintsEnabled ☐ False

DataSetField

DetailFields

> FetchOptions (TFDFetchOptions)

FieldDefs (TFieldDefs)

> FieldOptions (TFieldOptions)

Filter

> FilterChanges [rtModified,rtInserted,rtUnmodified]

Filtered ☐ False

> FilterOptions []

> FormatOptions (TFDEFormatOptions)

Object Inspector

FDTable1 TFDTTable

Properties Events

Active ☐ False

> ActiveStoredUsage [auDesignTime,auRunTime]

Aggregates (TFDAggregates)

AggregatesActive ☐ False

AutoCalcFields ☒ True

CachedUpdates ☐ False

CatalogName

ChangeAlerter

ChangeAlertName

Connection

ConnectionName

Constraints (TCheckConstraints)

ConstraintsEnabled ☐ False

DetailFields

Exclusive ☐ False

> FetchOptions (TFDFetchOptions)

> FieldOptions (TFieldOptions)

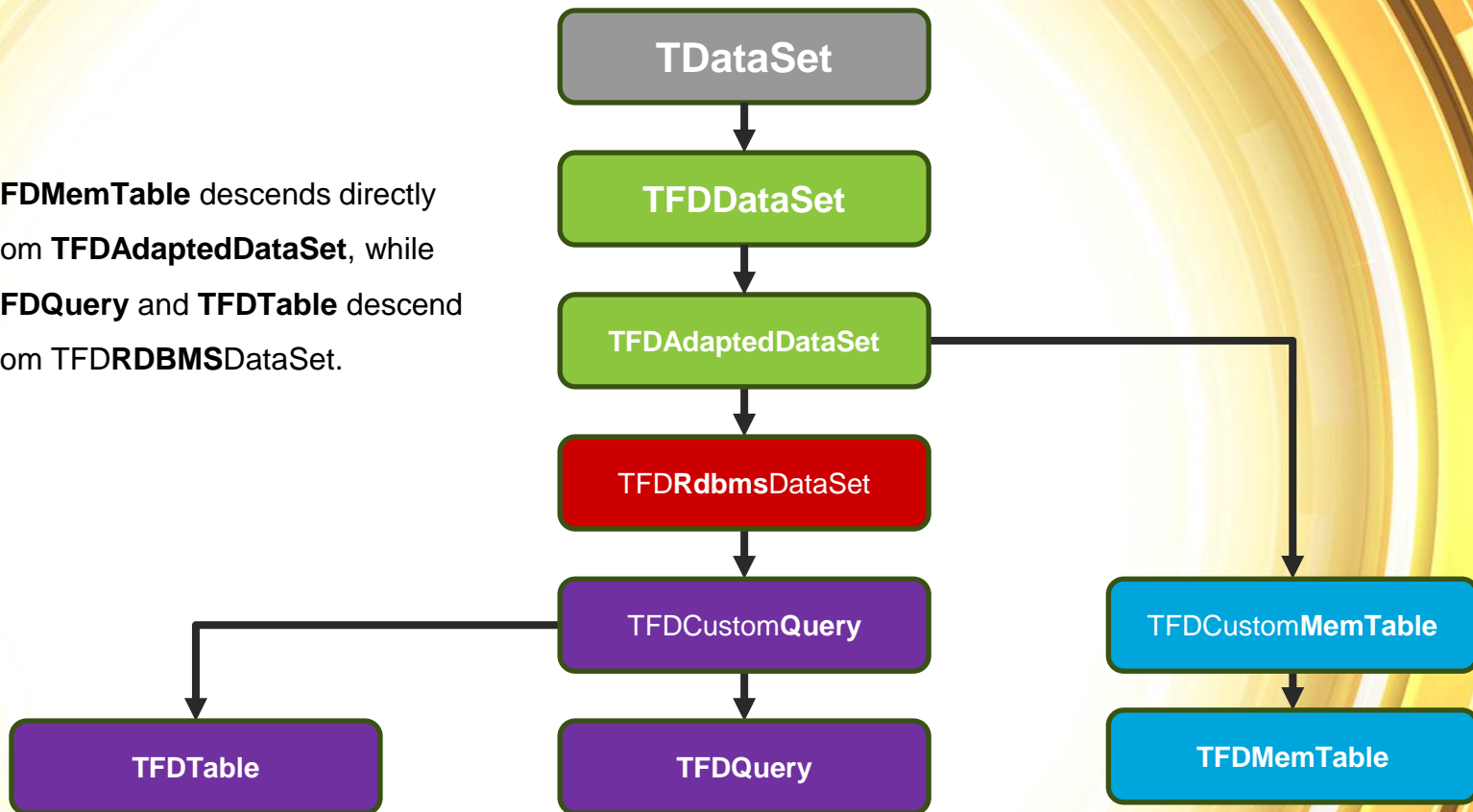
Filter

> FilterChanges [rtModified,rtInserted,rtUnmodified]

Filtered ☐ False

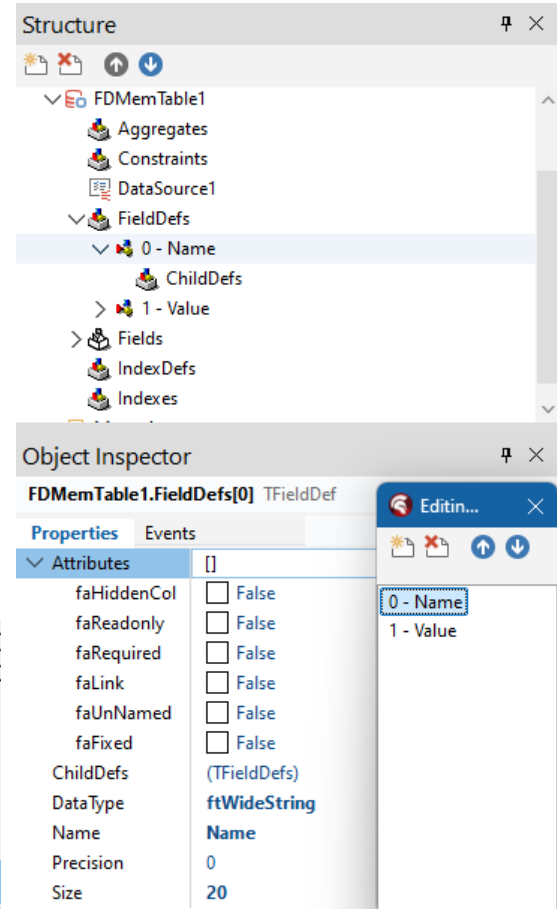
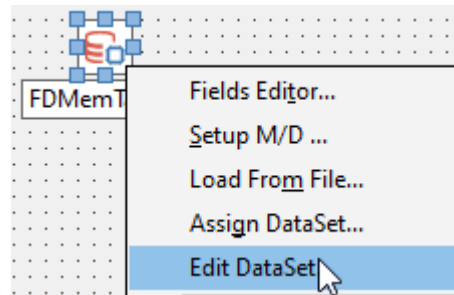
> FilterOptions []

TFDMemTable descends directly from **TFDAdaptedDataSet**, while **TFDQuery** and **TFDTable** descend from **TFDRDBMSDataSet**.



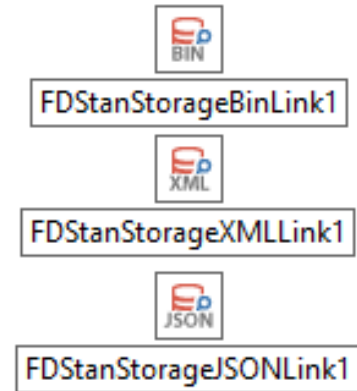
Creating TFDMemTable Dataset

- One of the following
 - Define the fields via FieldDefs property
 - Load From File
 - Assign DataSet from another in project
- Then optionally use Edit DataSet



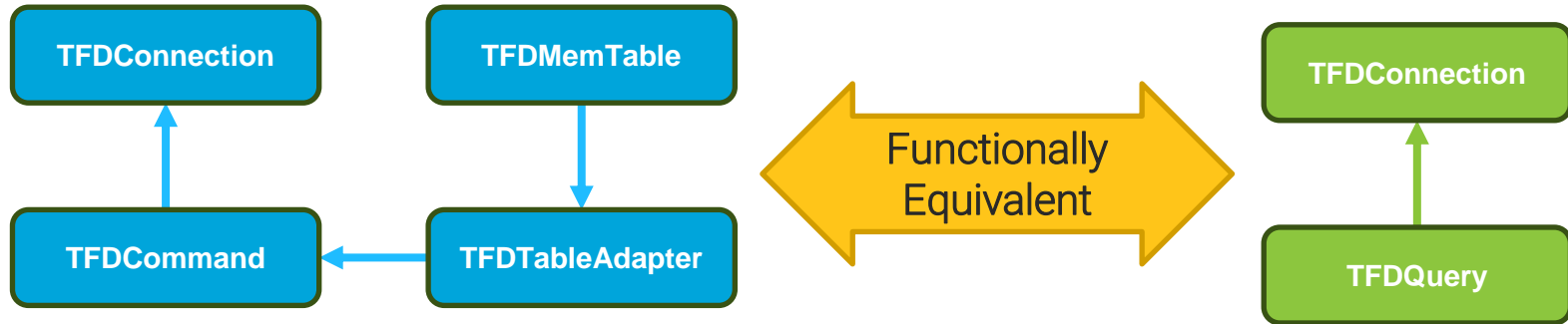
TFDMemTable Storage Components

- For loading or saving, need a Storage Link based on the storage format used
 - sfBinary = [TFDStanStorageBinLink](#) → FireDAC.Stan.StorageBin.pas
 - sfXML = [TFDStanStorageXMLLink](#) → FireDAC.Stan.StorageXML.pas
 - sfJSON = [TFDStanStorageJSONLink](#) → FireDAC.Stan.StorageJSON.pas
 - sfAuto = based on file extension
- The component does nothing besides add a unit to the uses (alternatively just add the unit).



TFDTableAdapter – Connecting the TFDMemTable

- Connects the TFDMemTable to an DBMS via TFDCommand
- Used to execute SQL queries, table updates, and transactions
- Then transfers data from TFDCommand into TFDMemTable

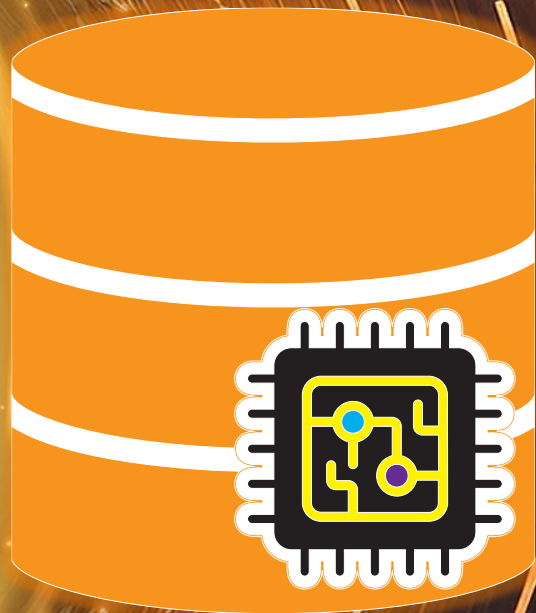


TFDMemTable Links

- DocWiki links
 - docwiki/Libraries/en/FireDAC.Comp.Client.TFDMemTable
 - docwiki/RADStudio/en/TFDMemTable_Questions
 - docwiki/Libraries/en/FireDAC.Comp.Client.TFDTableAdapter
 - docwiki/CodeExamples/en/FireDAC.TFDMemTable.Main_Sample
 - docwiki/CodeExamples/en/FireDAC.TFDMemTable.CachedUpdates_Sample

TFDMemTable

Demonstrations

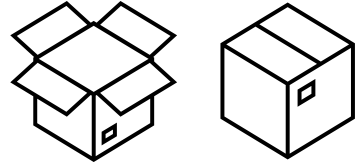


TFDLocalSQL

- Uses local SQLite-based engine
- Works with any TDataset descendent
- Allows for heterogenous joins
- No DBMS required (besides SQLite)
- DocWiki
 - [docwiki/RADStudio/en/Local_SQL_\(FireDAC\)](https://docwiki/radstudio/en/Local_SQL_(FireDAC))
 - [docwiki/CodeExamples/en/FireDAC.TFDLocalSQL.xDBMS_Sample](https://docwiki/codeexamples/en/FireDAC.TFDLocalSQL.xDBMS_Sample)
 - [docwiki/CodeExamples/en/FireDAC.TFDLocalSQL_InMemDB_Sample](https://docwiki/codeexamples/en/FireDAC.TFDLocalSQL_InMemDB_Sample)
 - [docwiki/CodeExamples/en/FireDAC.TFDLocalSQL_MegaFMX_Sample](https://docwiki/codeexamples/en/FireDAC.TFDLocalSQL_MegaFMX_Sample)



TFDBatchMove



- Your own personal data pump
- Combine with a reader and a writer (mix and match types)
 - Text - [TFDBatchMoveTextReader](#), [TFDBatchMoveTextWriter](#)
 - DataSet - [TFDBatchMoveDataSetReader](#), [TFDBatchMoveDataSetWriter](#)
 - SQL - [TFDBatchMoveSQLReader](#), [TFDBatchMoveSQLWriter](#)
- Even use it from the IDE without compiling

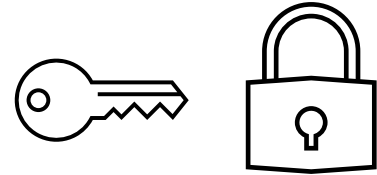
docwiki/Libraries/en/FireDAC.Comp.BatchMove.TFDBatchMove

NoSQL and MongoDB



- One of the most popular document oriented, NoSQL databases
- Uses JSON-like documents (BSON) with optional schemas
- RAD Studio includes the client libraries as redistributables
 - libbson-1.0.dll: a BSON library
 - libmongoc-1.0.dll: a MongoDB C driver.
- [docwiki/RADStudio/en/Connect_to_MongoDB_Database_\(FireDAC\)](https://docwiki.radiostudio.com/en/Connect_to_MongoDB_Database_(FireDAC))
- mongodb.com | hub.docker.com/_/mongo

New FireDAC Security & Safety



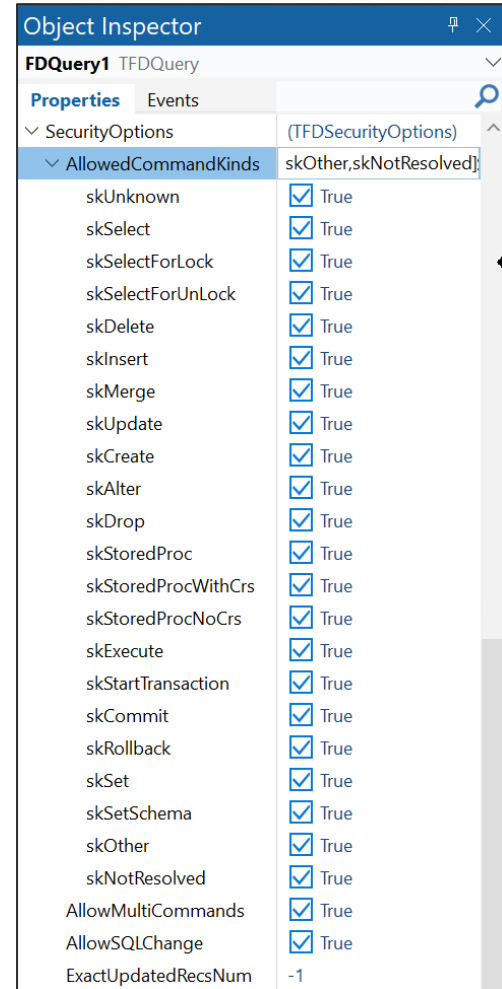
- [AllowedCommandKinds](#) - Limits the execution of SQL commands vs queries
- [AllowMultiCommands](#) - Enables or disables the execution of multiple SQL commands. On by default: SQLite, PostgreSQL, and MySQL.
- [AllowSQLChange](#) - Avoid changes to the text of a FireDAC SQL query at runtime. A method like DoSQLChanging would invoke CheckCanChangeSQL, now checking for the specific setting (among other conditions).
- [ExactUpdatedRecsNum](#) - It is an Integer with a default value of -1. When it is set to > 0 then SQL Updates include extra checks when

```
FDQuery.FetchOptions.Mode := fmExactRecsMax;
```

```
FDQuery.FetchOptions.RecsMax := 1;
```


FireDAC Security Options

- Showing default values
 - [AllowedCommandKinds](#) ([Expanded](#))
 - skUnknown, skSelect, skSelectForLock, skSelectForUnLock, skDelete, skInsert, skMerge, skUpdate, skCreate, skAlter, skDrop, skStoredProc, skStoredProcWithCrs, skStoredProcNoCrs, skExecute, skStartTransaction, skCommit, skRollback, skSet, skSetSchema, skOther, skNotResolved
 - [AllowMultiCommands](#)
 - [AllowSQLChange](#)
 - [ExactUpdatedRecsNum](#)



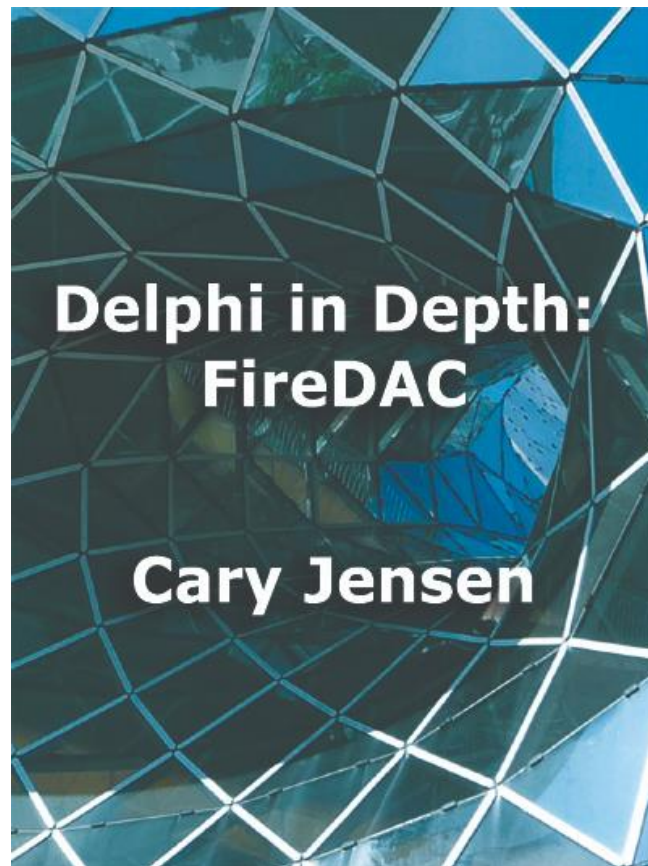
FINALIZATION

Slides and samples

github.com/jimmckeeth/FireDAC-Secret-Weapons

Delphi in Depth: FireDAC

- Definitive book about FireDAC
- Spirit of Delphi winner Cary Jensen, PH.D.
- jensendatasystems.com/firedacbook
 - Learn how to connect to a wide variety of databases
 - Optimize your connection configurations
 - Explore the world of indexes, searches, and filters
 - Discover the power of persisted datasets
 - Create flexible queries using macros and FireDAC scalar functions
 - Achieve blazing performance with Array DML
 - Master the art of cached updates
 - Add sophisticated features using Local SQL



The background of the image is a golden tunnel. The walls of the tunnel are composed of many thin, curved, golden lines that create a sense of depth and movement. The floor of the tunnel is a bright, glowing yellow. The overall effect is one of a bright, open path leading forward.

END.



<Dev Days of Summer> 2024!

Thanks for Watching

RAD



Visual Assist

Yellowfin