

LIBOCON19

# Databases in LibreOffice

By Tamás Bunth

**Developer at Collabora  
Productivity**

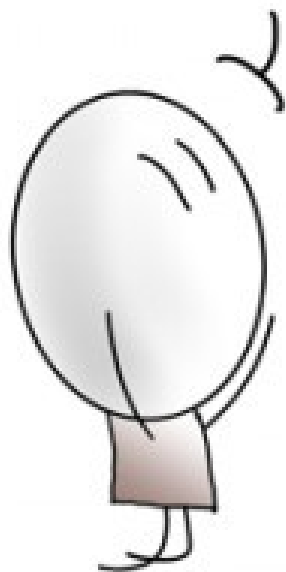
#Wastack



**Collabora  
Productivity**



DEAR GOD, HI'; DROP TABLE Sins;--



CAN'T BELIEVE HE DOESN'T  
SANITIZE THE PRAYERS



# About Tamás

- 2016: GSoC
- 2017-: Collabora Productivity
- 2018-: Certified LO developer



# Database Access Overview

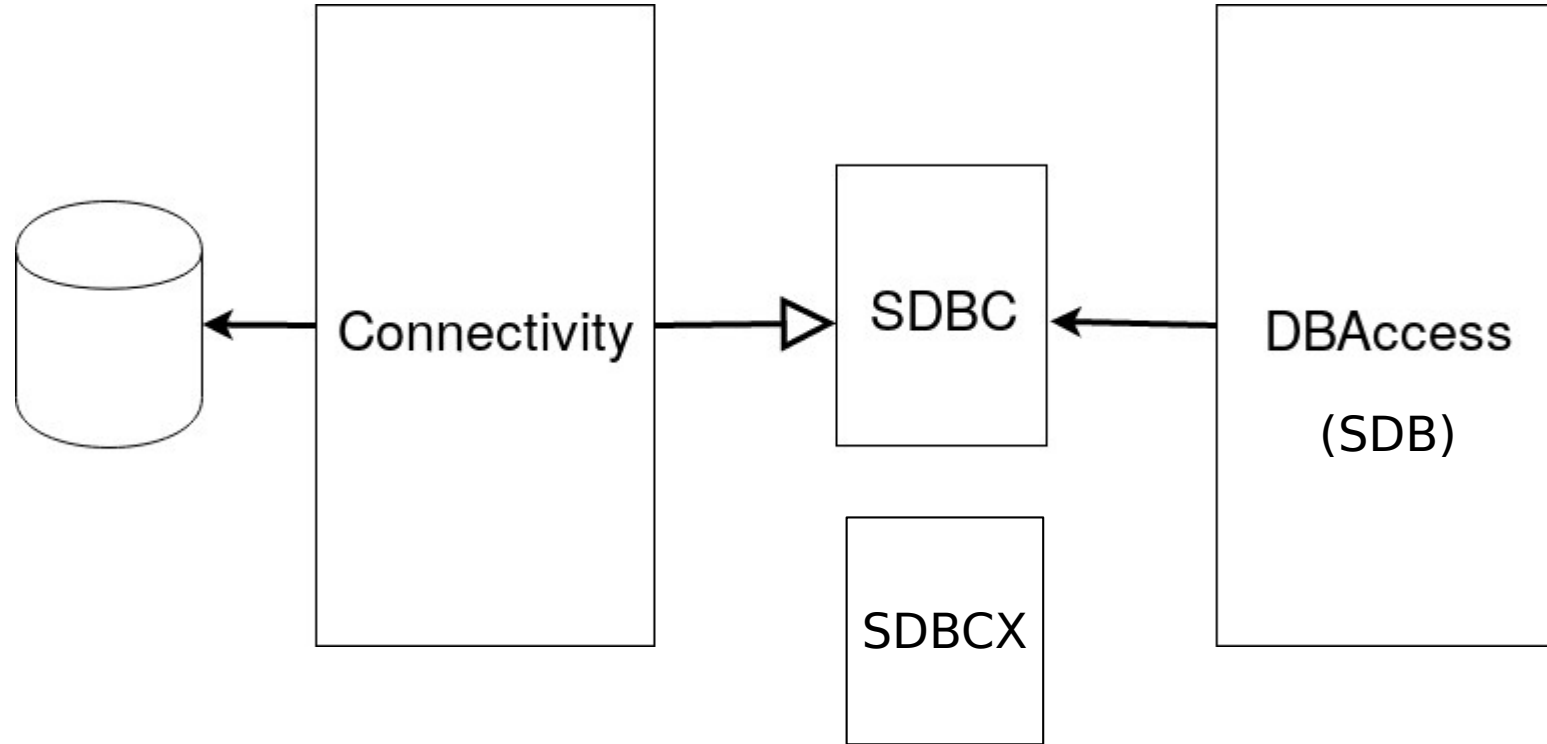


## Base as...

- User friendly database access tool
- reports and forms
- Something to be tested on secondary school final exam
- Database migration – copy/paste – tool
- Something to work on



# The whole picture





# The database part

- Embedded & external
- Bundled & System
- Direct access & jdbc/odbc
- Writer, spreadsheet, csv file, text file ...



# Hello SDBC

```
sURL = "sdbc:mysql:mysql:localhost:3306/"  
oManager = CreateUnoService("com.sun.star.sdbc.DriverManager")  
oConn = oManager.getConnectionWithInfo(sURL, oParams)  
oStatement = oConn.createStatement()  
oRes = oStatement.executeQuery("select 'Hello world!' from myTable")  
oRes.next  
msgbox(oRes.getString(1))
```







# SDBC Overview

- XDriver, XConnection: to create
- XDatabaseMetadata, XResultSetMetadata: for info
- XStatement, XPreparedStatement: to do something
- XResultSet, XRow: for the result
- Others: XDriverManager, SQLException, data types, XBlob, XClob, ...



# Query of tables - the MySQL way

- show table
- **SELECT** TABLE\_CATALOG AS TABLE\_CAT, TABLE\_SCHEMA AS TABLE\_SCHEM, TABLE\_NAME, IF(STRCMP(TABLE\_TYPE,'BASE TABLE'), TABLE\_TYPE, 'TABLE') AS TABLE\_TYPE, TABLE\_COMMENT AS REMARKS **FROM** INFORMATION\_SCHEMA.TABLES **WHERE** TABLE\_SCHEMA LIKE ? AND TABLE\_NAME LIKE ? "

**supportsOpenStatementsAcrossRollback**



# Yeah, I'm pretty sure it's writable

isWritable	indicates whether it is possible for a write on the column to succeed.
isDefinitelyWritable	indicates whether a write on the column will definitely succeed.



# Connection parameters

- Server / Connection / Client
- MariaDB C API: `mysql_options`, connection flags or system-variables
- Firebird C API: DPB buffer – `char*`
- JDBC: ~nothing to do
- A text file: ?



# DBAccess - queries

- List Tables
  - Catalog, schema?
- List Columns
  - Data type, scale, precision, default value, nullable
  - Firebird: ~BCNF, 5 joins
- auto incrementation: ...



# Auto increment variations

- **SQL standard - Firebird**: CREATE TABLE t1 (col1 DECIMAL GENERATED ALWAYS AS IDENTITY);
- **MySQL**: CREATE TABLE t1 (col1 INT NOT NULL PRIMARY KEY AUTO\_INCREMENT);
- **PostgreSQL**: CREATE TABLE t1 (col1 SERIAL PRIMARY KEY);
- **HSQLDB**: CREATE TABLE t1(id INTEGER IDENTITY PRIMARY KEY);
- Wikipedia example code: MSSQL



# Firebird 2.5 auto increment

```
CREATE GENERATOR gen_t1_id;  
SET GENERATOR gen_t1_id TO 0;  
set term !! ;  
CREATE TRIGGER T1_BI FOR T1  
ACTIVE BEFORE INSERT POSITION 0 AS  
BEGIN  
if (NEW.ID is NULL) then NEW.ID = GEN_ID(GEN_T1_ID, 1);  
END!!  
set term ; !!
```





# SDBCX

- Practically: You can use it instead of DDL statements
- Obtain & modify meta data
- E.g 'create cached table' or auto incrementation alternatives



# DBAccess

- GUI – wizards, views, misc (e.g. copy/paste table)
- DatabaseContext (service)
  - Acces to application-wide registered database
- DataSource (service): establish connection
- Import/Export to xml
- HSQLDB import



# Connectivity - useful stuff

- SQL parser: Bison based
  - Different dialects? ← *'Create cached table'*
  - pNode→getChild(6) ...
- Driver manager: bootstrap drivers
  - from registry, with a precedence order
  - Get connection with URL
- Commonntools
  - sdbc, sdbcx bases
- Registry: xml setup



# mysqlc component

- Was an extension with C++ connector
- Now part of the project, with mariaDB C connector
- Fixed copy/paste, prepared statements, foreign key references, cursor positions
- Allow multiple open prepared statements
- Added test suite
  - A MySQL server implementation is required
  - 10.1.36-MariaDB, also tried MySQL Ver 8.0.17 for linux-glibc2.12



# Future steps

- tdf#127040: 34 open bugs; Default to Firebird not HSQLDB
- tdf#119927: mariadb C API: 1 left from 5 bugs, pushed to gerrit yesterday
- tdf#116968: 16 open bugs: Database-Firebird-Migration
- Migration thoughts: experimental vs “don’t ask me again button”
  - Migarting & copy/paste
  - Migrating views ← SQLParser
  - See more:  
<https://wiki.documentfoundation.org/Documentation/HowTo/MigrateFromHSQLDB>

- tdf#126268: corrupted numeric data
- tdf#127040: “record size exceeds 64k”
- tdf#117120: Don’t ask me button
- tdf#117090: Complex view definition





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# Thank you and 'please ask' page

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