Databases in LibreOffice

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#Wastack
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 = "jdbc:mysql:mysqlc: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

<table>
<thead>
<tr>
<th>isWritable</th>
<th>indicates whether it is possible for a write on the column to succeed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>isDefinitelyWritable</td>
<td>indicates whether a write on the column will definitely succeed.</td>
</tr>
</tbody>
</table>
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**

```sql
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)
  - Access 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
The 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”
  - Migrating & 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
Thank you and ‘please ask’ page

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