Subject: MSSQL Exception Handling
Posted by Pradip on Fri, 03 Apr 2020 10:11:51 GMT
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Hi there,

Hope everyone is safe during this COVID threat! Stay indoors, stay safe, please!

Since we must work-from-home, we are faced with situations where the VPN connection is not stable, so the mssql connection can break anytime. Our app needs to be able to reconnect, in case it gets disconnected while running a query.

With this idea, I'm trying the following:

connection code (works fine):

```
MSSQLSession mssql;

bool ConnectMSSql() {
 String cs = "Driver={SQL Server Native Client 11.0};";
 cs << "Server=***;";
 cs << "UID=***;";
 cs << "PWD=***;";
 cs << "Database=***;";

 while(!mssql.Connect(cs))
  if(!ErrorRetryCancel(
   Format("\1Connection to database server failed:\n%s", mssql.GetLastError())
  ))
   return false;

 SQL = mssql;
 return true;
}
```

code for re-connection:
this also works, but SQL.GetErrorCode() == 0 must be very wrong. All I want to do here is "only if connection is broken the run connect", but SQL.GetErrorCode() seems to always return 0, no matter if the error is due to disconnection or sql logic error! I've tried SQL.GetErrorClass() == Sql::CONNECTION_BROKEN, but it didn't seem to work.

```
bool ReconnectMSSql() {
 return SQL.GetErrorCode() == 0 && ConnectMSSql(); // is error code right?
}
```

finally, code for queries:

this is the biggest question: do i have to use the same syntax for every query in the app? also for Select queries? till now i've used try...catch only for Update and Insert queries.

```
bool retry;
do {
 retry = false;
 try { // set start date
  q & ::Update(ACTIVITIES)(startDtId, newStartDt).Where(ACT_ID == Id);
 }
 catch(SqlExc &e) {
  if(ReconnectMSSql()) retry = true;
  else {
   Exclamation("[* " + DeQtfLf(e) + "]");
   return false;
  }
 }
} while(retry);
```

Is there any easier way to do this, so that anytime a query is executed it will check the connection status and reconnect if needed?

Thanks in advance for helping!

Subject: Re: MSSQL Exception Handling
Posted by Pradip on Fri, 10 Apr 2020 15:08:27 GMT
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Well, I think I've managed to do it by creating a manager class, posting the code here, if it helps others. *** to be replaced by appropriate code. Also expecting comments from experienced users.

I think the key here was using SqlSession::InstallErrorHandler

This app has option of using either mssql or sqlite3, hence in all listing both options will be seen.

.h file:

```
enum DBTYPE {MS, LITE};

class SqlManager {
private:
 static MSSQLSession mssql;
 static Sqlite3Session sqlite;
 static DBTYPE db_type;
 static String ms_con_str, lite_file;

public:
```

```
 typedef SqlManager CLASSNAME;

 SqlManager();
 void InstallErrorHandler();
 void UninstallErrorHandler();
 void AssignSession();
 static bool Connect();
 static bool ErrorHandler(String error, String stmt, int code, const char *scode,
Sql::ERRORCLASS clss);
};

MSSQLSession SqlManager::mssql;
Sqlite3Session SqlManager::sqlite;
DBTYPE SqlManager::db_type;
String SqlManager::ms_con_str, SqlManager::lite_file;
```

.cpp file:

```
// comment / uncomment to change database type
#define DBTYPEMS
//#define DBTYPELITE

#ifdef DBTYPEMS
#define SCHEMADIALECT <MSSQL/MSSQLSchema.h>
#endif

#ifdef DBTYPELITE
#define SCHEMADIALECT <plugin/sqlite3/Sqlite3Schema.h>
#endif

#define MODEL <***.sch>

#include <Sql/sch_schema.h>
#include <Sql/sch_header.h>
#include <Sql/sch_source.h>

SqlManager sqlm;

//=========================================

SqlManager::SqlManager() {
 #ifdef DBTYPEMS
 db_type = MS;
 #endif

 #ifdef DBTYPELITE
 db_type = LITE;
 #endif
```

```
 switch(db_type) {
  case MS:
   ms_con_str = "Driver={SQL Server Native Client 11.0};";
   ms_con_str << "Server=***;";
   ms_con_str << "UID=***;";
   ms_con_str << "PWD=***;";
   ms_con_str << "Database=***;";
   break;
  case LITE:
   lite_file = "***";
   break;
 }

 InstallErrorHandler();
}

void SqlManager::InstallErrorHandler() {
 switch(db_type) {
  case MS:
   mssql.InstallErrorHandler(&SqlManager::ErrorHandler); break;
  case LITE:
   sqlite.InstallErrorHandler(&SqlManager::ErrorHandler); break;
 }
}

void SqlManager::UninstallErrorHandler() {
 switch(db_type) {
  case MS:
   mssql.InstallErrorHandler(NULL); break;
  case LITE:
   sqlite.InstallErrorHandler(NULL); break;
 }
}

bool SqlManager::Connect() {
 DUMP("Connect");
 switch(db_type) {
  case MS:
   while(!mssql.Connect(ms_con_str))
    if(mssql.WasError()) return false;

   break;
  case LITE:
   while(!sqlite.Open(lite_file))
    if(sqlite.WasError()) return false;

   break;
```

```
 }
 return true;
}

void SqlManager::AssignSession() {
 switch(db_type) {
  case MS:
   SQL = mssql; break;
  case LITE:
   SQL = sqlite; break;
 }
}

bool SqlManager::ErrorHandler(String error, String stmt, int code, const char *scode,
Sql::ERRORCLASS clss) {
 DUMP("ErrorHandler");
 DUMP(code);

 // code, scode or clss seem to work only for code = 53!
 // Hence for other errors using substring matching in error string
 // server timeout
 if(code == 53)
  return ErrorRetryCancel("[* Cannot connect to database server:]\&" + DeQtf(error));

 // unable to complete login
 else if(error.Find("Unable to complete login process") >= 0)
  return ErrorRetryCancel("[* Database server login error:]\&" + DeQtfLf(error));

 // if error, try to reconnect; if successful, rerun query
 else if(error.Find("An existing connection was forcibly closed") >= 0) {
  if(Connect()) {
   SQL.ClearError();
   SQL.Execute(stmt);
   return !SQL.WasError();
  }
  else return false;
 }

 // all other errors
 else {
  Exclamation("[* Miscellaneous error:]\&" + DeQtfLf(error));
  if(SQL.GetTransactionLevel()) {
   SQL.Rollback();
  }
  return false;
 }
}
...
```

```
GUI_APP_MAIN {
 if(!sqlm.Connect()) return;
 sqlm.AssignSession();
 SQL.GetSession().ThrowOnError(false);
...
```

and for running insert or update query; select queries run without any modification; of course SQL.WasError() can be checked after select queries too and appropriate code can run if error:

```
  q * Update(ACTIVITIES)(startDtId, newStartDt).Where(ACT_ID == Id);
  if(SQL.WasError()) return false;
```

Subject: Re: MSSQL Exception Handling
Posted by mirek on Mon, 13 Apr 2020 11:36:59 GMT
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Well, PGSQL and MySql have mechanism for this, unfotunately this never made it to MSSQL (why use colosed-source DB anyway, right?

I will file this issue for the next release.

Mirek

Subject: Re: MSSQL Exception Handling
Posted by Pradip on Tue, 14 Apr 2020 04:42:41 GMT
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Thanks a lot Mirek!
For this app it was a mandate to use MSSQL. Once done I must try PGSQL or MySql, there's always so much to learn

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