



ShipShuk

Prepared by

Esabil Bulbul

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2. Terminology

Bid	Offering for ads
CPM	Cost Per Impression. This is the bidding cost per 1k view aka Mille

3. Introduction

This document explains how SIMIL library is developed and deployed into MySQL.

4. Compiler Installation

If you are using windows 7 and MySQL57, you can compile code with cygwin64. If you are windows 10 users and want to use it with MySQL8 then the library should be compiled with mygwin64.

Also if you are using MySQL57, mysql.h header file in include folder of mysql should be updated. The fixed file attached here as well.

To download Cygwin

<https://www.cygwin.com/install.html>

To download mygwin

<https://sourceforge.net/projects/mingw-w64/>

If you are installing mygwin for windows 10, make sure you choose x86_64 (64 bit) at architecture options.

Also, remember to install Microsoft Visual C Runtime libraries. It is recommended to install it at both level at mysql installation exe (gives you the option to execute install) and installing and updating latest package.

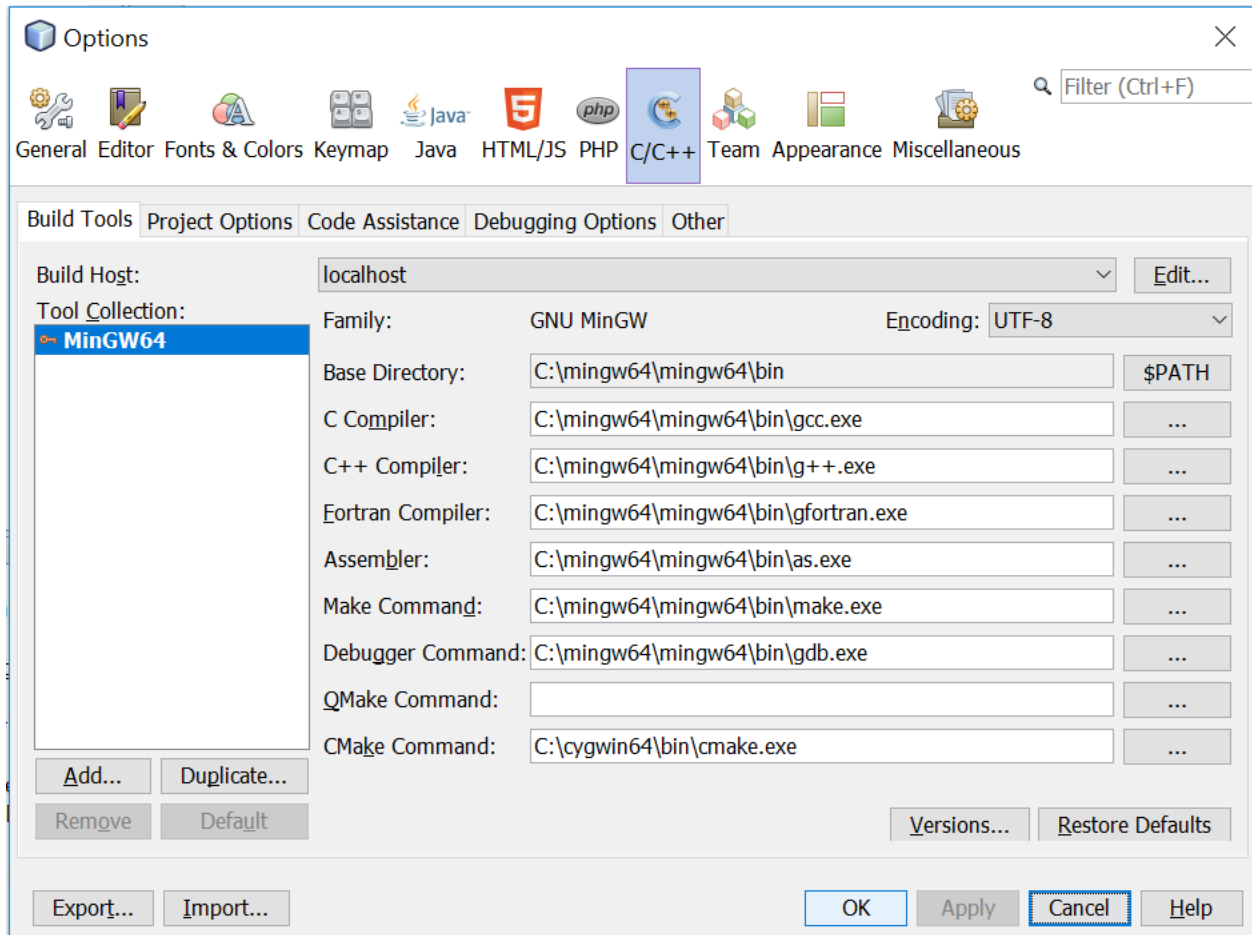
It is also recommended not to use space in your MYSQL installation folder. There were a few incidents came across on the internet people had issues with.

When you installed ngywin make sure you are installed 64 bit as mentioned above. Then add the “bin” path to System Variables.

5. SDK Preparation

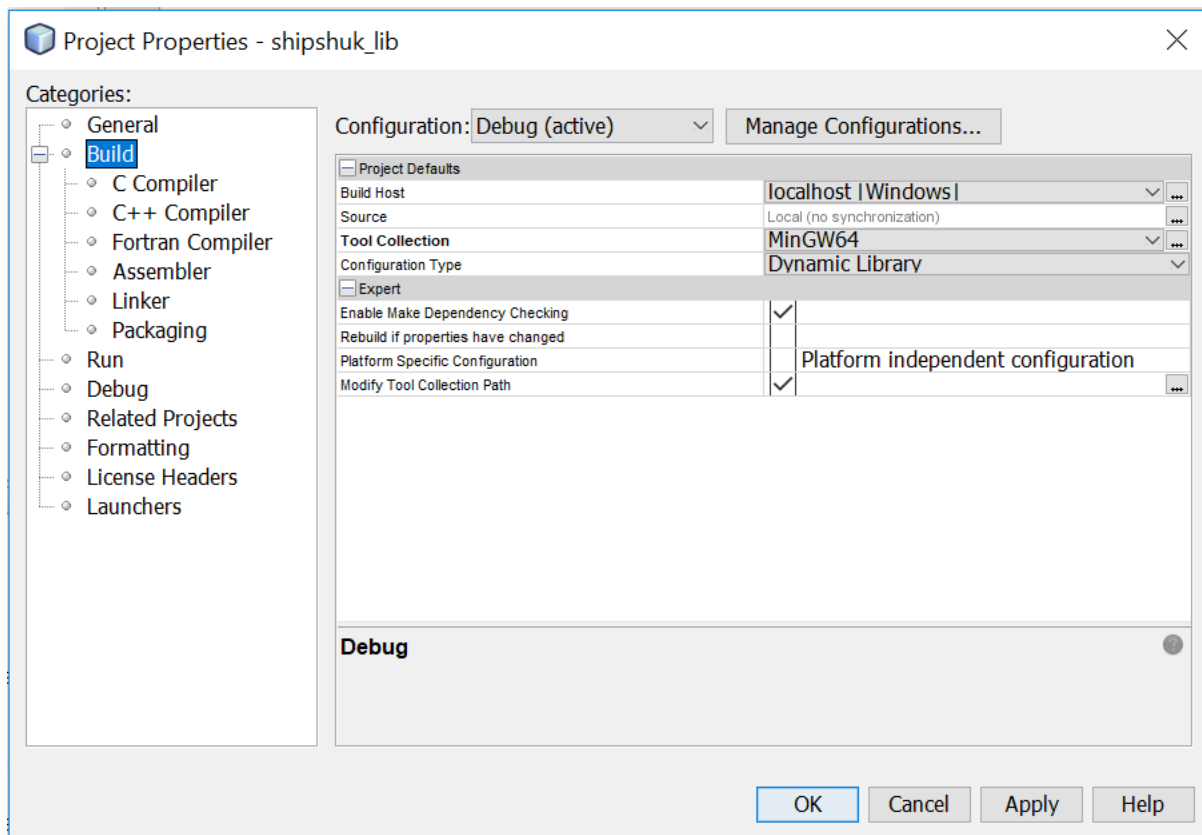
Unlike many installation using Visual Studio, this document explains how the dll build and deployed with Cygwin/mygwin with Netbeans.

First step is to preparing SDK for the compiler nygwin64. On Netbeans, go to tools -> Options -> C/C++ -> Build Tools



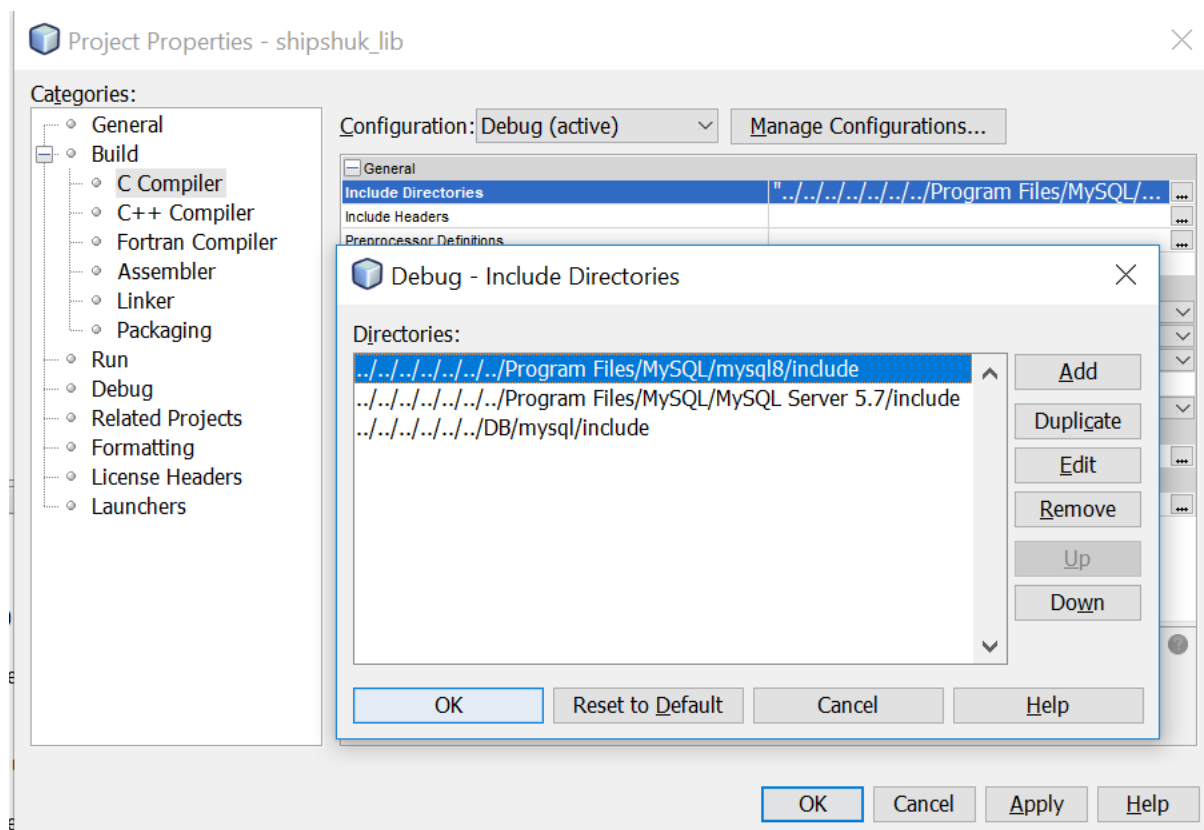
When you choose to Add a new Tool Collection on the screen, it will ask you for the binary folder of mygwin. When you chose the folder, the compiler options will be filled auto with one exception. The make command will not be filled because the installation comes with the file mingw32-make.exe. Make a copy of this file and rename the copy version to "make.exe" then Apply.

The second things needs to be done is to set project configuration. Go to project and right click to Properties on Netbeans.



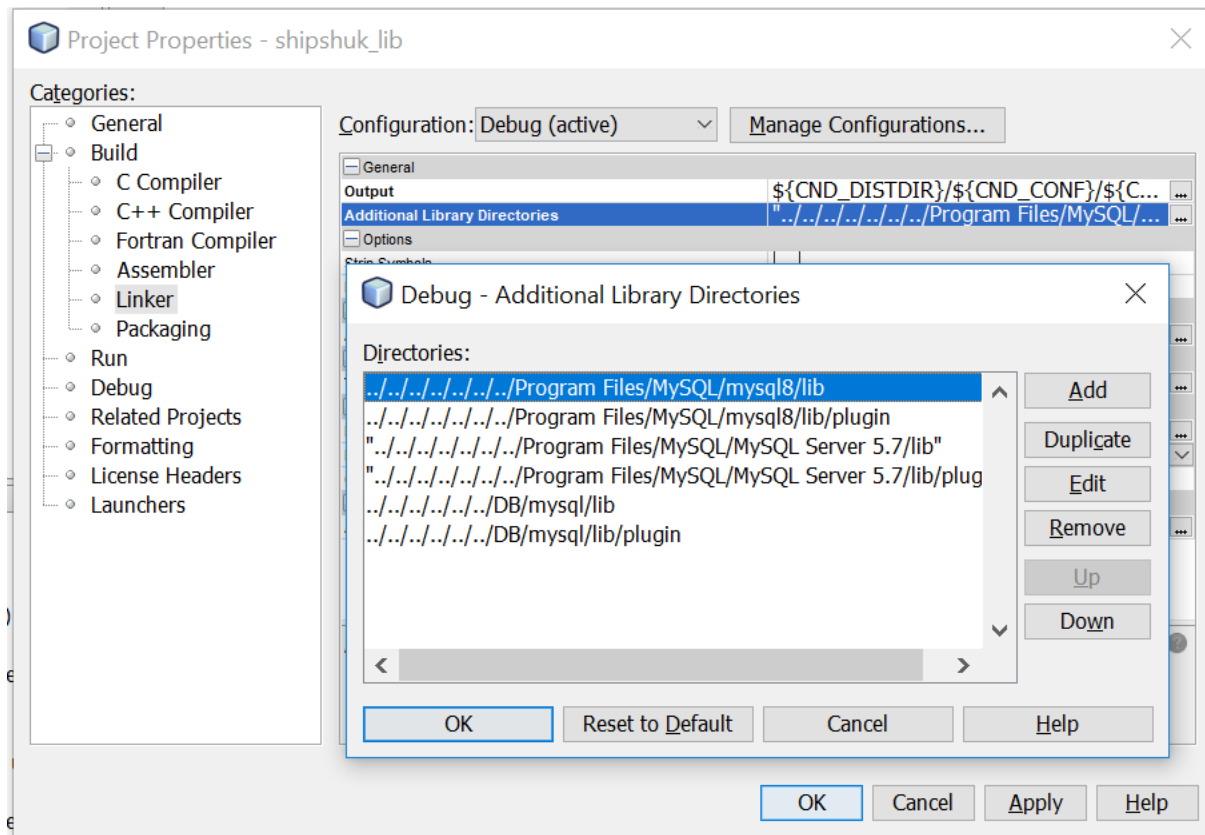
Choose the tool collection that we have just defined in previous step. In this example case we named it as MinGW64 so we set it to Tool collection.

The next step is to set the include files for MySQL. For this on properties screen of project, click C Compiler option.



Find MySQL installation folder and add include folder under.

The next step is to add library/binary folders for MySQL. Same as previous step this time go to Linker option on Project Properties screen.



Then add the lib and plugin folder of MySQL. The folder lib are located under mysql installation folder same level with include folder. Plugin folder is located under lib folder.

6. Code Development

For those who is coding on Windows 7 with MySQL57 version, there are some definition problems such as `time_t` redefinition and so on. The library attached here is the header file that fixed those issues. Replace the file with the header file under include folder of MySQL. The library fixed is `my_sql.h`

For those who is coding for MySQL8, `my_bool`, `longlong` are depreciated. Therefore these needs to be defined in your source/header code.

```
typedef unsigned longlong;
typedef char my_bool;
```

7. Library Compiling

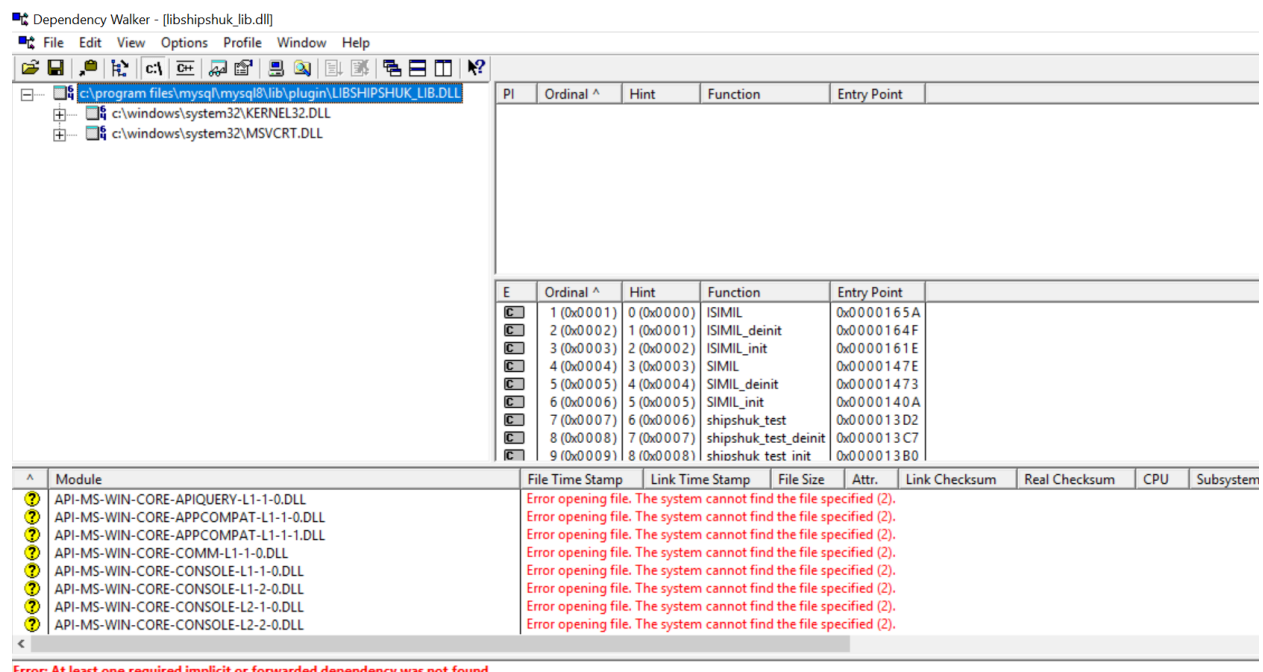
You may not need to compile manually, however in case you want to compile the code from the command line, you can use the following command prompt. Considering mygwin (gcc) installation completed. G++ for c++ codes.

```
gcc -shared -L<external library/headers> -o <c source file> <DLL File name>
```

See attachment test.c in repository for a sample code

8. Library Checking

Like many of us, you might probably be running into problem with the library. To check the library, you can use dependency walker free tool. That gives you the glimpse of what is wrong with the DLL if there is. When you compiled the library, for basic library the two DLL expected to be your library dependent on. These are KERNEL32.DLL and MSVCRT.DLL. Considering you compiled with mygwin64. These two should NOT be red and should be there. If not there, you may want to look into details how you configured SDK and your mygwin installation.



Dependency Walker - [libshipshuk.lib.dll]

File Edit View Options Profile Window Help

PI Ordinal ^ Hint Function Entry Point

E	Ordinal ^	Hint	Function	Entry Point
1 (0x0001)	0 (0x0000)		ISIMIL	0x0000165A
2 (0x0002)	1 (0x0001)		ISIMIL_deinit	0x0000164F
3 (0x0003)	2 (0x0002)		ISIMIL_init	0x0000161E
4 (0x0004)	3 (0x0003)		SIMIL	0x0000147E
5 (0x0005)	4 (0x0004)		SIMIL_deinit	0x00001473
6 (0x0006)	5 (0x0005)		SIMIL_init	0x0000140A
7 (0x0007)	6 (0x0006)		shipshuk_test	0x000013D2
8 (0x0008)	7 (0x0007)		shipshuk_test_deinit	0x000013C7
9 (0x0009)	8 (0x0008)		shipshuk_test_init	0x000013B0

Module

Module	File Time Stamp	Link Time Stamp	File Size	Attr.	Link Checksum	Real Checksum	CPU	Subsystem
API-MS-WIN-CORE-APIQUERY-L1-1-0.DLL								
API-MS-WIN-CORE-APPCOMPAT-L1-1-0.DLL								
API-MS-WIN-CORE-APPCOMPAT-L1-1-1.DLL								
API-MS-WIN-CORE-COMM-L1-1-0.DLL								
API-MS-WIN-CORE-CONSOLE-L1-1-0.DLL								
API-MS-WIN-CORE-CONSOLE-L1-2-0.DLL								
API-MS-WIN-CORE-CONSOLE-L2-1-0.DLL								
API-MS-WIN-CORE-CONSOLE-L2-2-0.DLL								

Error: At least one essential implicit or forwarded dependency was not found

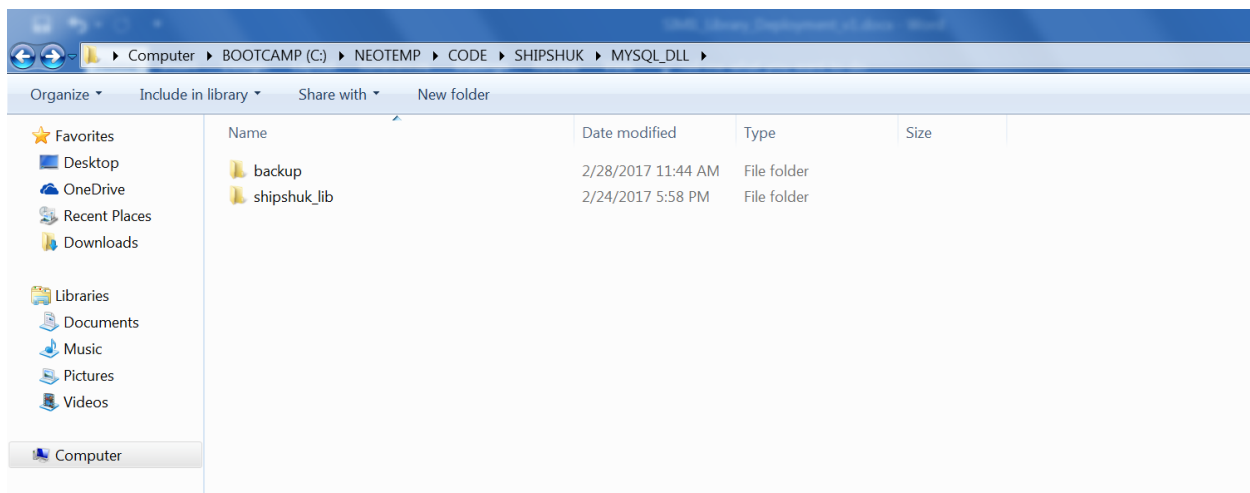
9. Deployment Process

SIMIL library is developed under C language and prepared as dynamic library also called as DLL. This DLL later imported into MySQL.

What you need to know here is that MySQL doesn't have very flexible and traceable and not bug free environment. Therefore, you should be careful when you are developing and deploying the library.

The DLL is developed with C and compiled with Cygwin library. Therefore, this might work for both windows and linux however Linux might require another compile before deployment.

The library is located under MYSQL_DLL folder and the name of the project is "shipshuk_lib"



The project has two major files one is shipshuk_lib.c and the other one is the header file. These files are where the function is defined and called the SIMIL function. The export methods are defined in both .c and .h files. They must be identically defined in both files.

Make sure the method name defined exported in the library and the MySQL script to import the function name are same

CAUTION:

One of the major problems with UDF @ MySQL is that the library somehow fails to pass of the second parameter length information properly. What happens is arguments are passed correct and third parameter length passed to library as second argument length. In order to get around the issue, the 2nd and 3rd argument has to be passed to the function with the same values.

And the other major thing that needs to be careful of is that you should pass the baseword, first parameter to function, with upper case. Actually all the words should be passed uppercase for a better result.

Compiling and Deployment process is shown in steps below

1. Compile the library on Netbeans (For compile settings see Netbeans document)
2. Stop mysql with net stop mysql on command line
3. Copy library file under libshipshuk_lib.dll from Cygwin_1-Windows folder to <mysql folder>\lib\plugin folder
4. Start mysql with net start mysql on command line
5. Delete function if already exist with
 - a. DROP FUNCTION SIMIL;
6. Import function with the following
 - a. CREATE FUNCTION **SIMIL** RETURNS **INTEGER** SONAME "libshipshuk_lib.dll";
 - b. At this step MySQL might crash there for you might need to restart MySQL. This is one of the bugs mentioned above.
7. Make sure the library function is imported succesfully
 - a. select * from mysql.func;
8. Call SIMIL Function to test
 - a. SELECT SIMIL(TOUPPER(**baseword**), TOUPPER(**TargetWord1**), TOUPPER(**TargetWord2**)) FROM dual;
 - b. CAUTION: Just because of a problem in the library TargetWord1 and TargetWord2 has to be same.

IMPORTANT:

If you need to recompile the DLL, somehow with my_sql.h something wrong. So use the some of the blocks like __int64 redefined in the header and FILETIME was giving errors. Therefore that part closed in header file and worked. The header file put under the code under the library MY_SQL_H folder.

IMPORTANT:

If you have installed a newer version of MariaDB/MySQL, you will have to recompile the file. Make sure Cygwin is installed and compile the DLL with it.

Make sure you have defined Cygwin files to system path. Control Panel -> System Variables -> <Path>

Add these two

C:\cygwin64;C:\cygwin64\bin

Then restart computer.

For the Cygwin installation follow this link;

https://www.youtube.com/watch?v=DAIS4hF_PbY

Also check this link

<https://stackoverflow.com/questions/6752578/the-program-cant-start-because-cygwin1-dll-is-missing-in-eclipse-cdt>