DB Interface Library Tutorial

Contents

Objective:

This library is user interface which allows for the ability to input queries to a database like CRUD (Create, read, update and delete) by using communication reference with ODBC.

To run any database command, you have to fellow these steps:

1. Create DB using MySQL workbench
2. Create ODBC using ODBC32
3. Open DB connection from LabVIEW

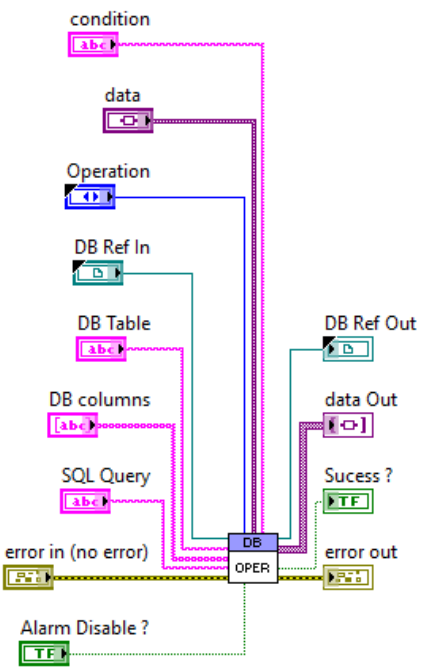
You can replace step 1,2,3 by using DB_Modules_API (main)

4. Run all quires you need
5. Close connection reference

DB Interface main blocks

DB Interface

this vi block is used to run any type of query (insert-select-update-delete-drop- Execute-fetch-List tables), inputs of this block depends on the type of operation will be run

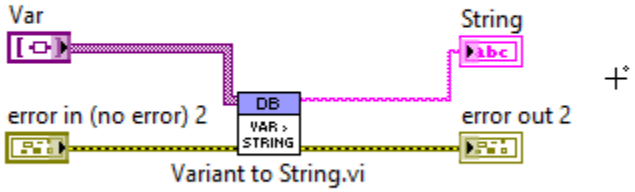


inputs (Data ref in - operation - data in - DB Table name - DB columns - SQL query - condition - Disable alarms?)

outputs (DB ref out - success -data out)

Variant to string.vi

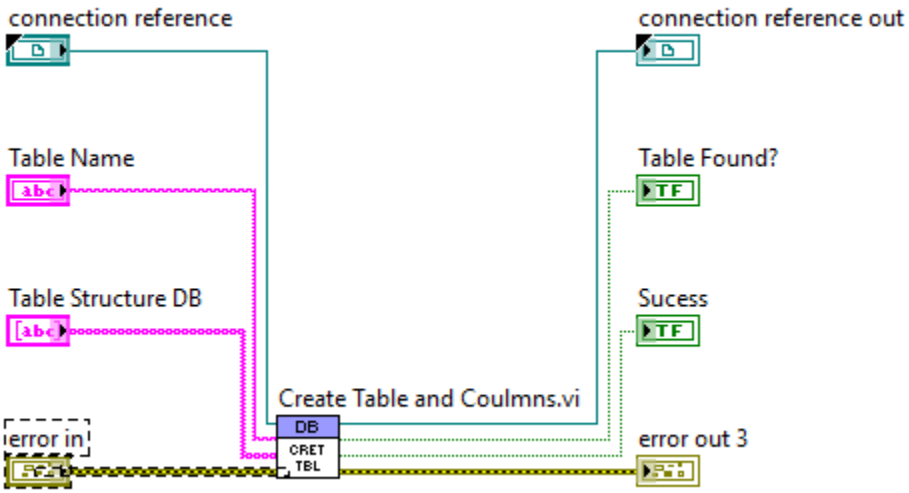
This VI is used to convert any variant data output (resulted from DB execution) into string output



Inputs ---> 1. variant data
outputs---> 2. string output

create table and coulmns.vi

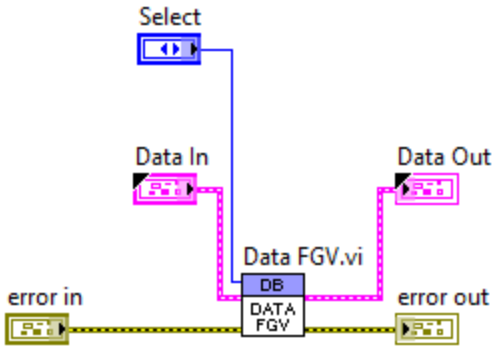
this VI is mainly used to create a specific table with a specific structure if table is not found



inputs ---> 1. connection ref in 2. Table name 3. Table structure
outputs ---> 1. connection ref out 2. table already found? 3. success?

Data FGV.vi

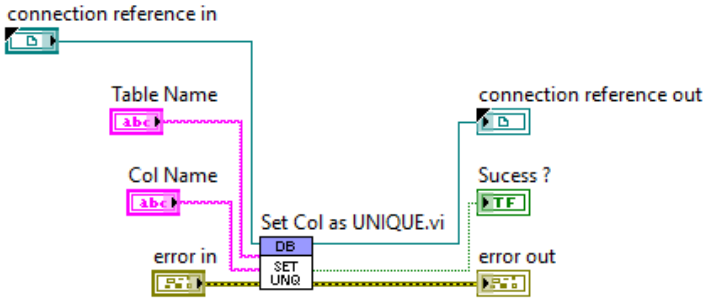
this FGV has two modes to read/write into Data Cluster FGV



inputs --> 1. Select enum (read/write) 2. Data in cluster
outputs --> Data out cluster

Set Col as unique.vi

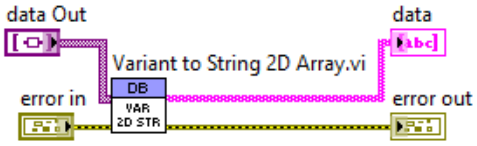
this VI is used to make any selected col as unique column



inputs - --> 1. connection reference in 2. Table name 3. Column name
outputs ---> 1. connection reference out 2. success?

Variant to string 1D Array.vi

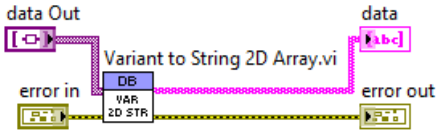
this VI is used to convert any variant data output (resulted from DB execution) into 1D array output



Inputs ---> 1. variant data
outputs---> 2. 1D array of strings

Variant to string 2D Array.vi

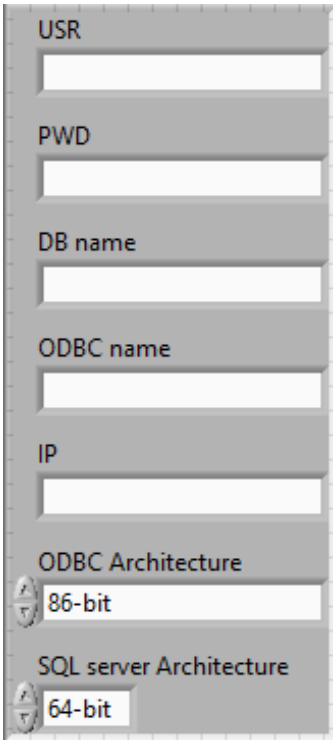
this VI is used to convert any variant data output (resulted from DB execution) into 2D array output



Inputs ---> 1. variant data
outputs---> 2. 2D array of strings

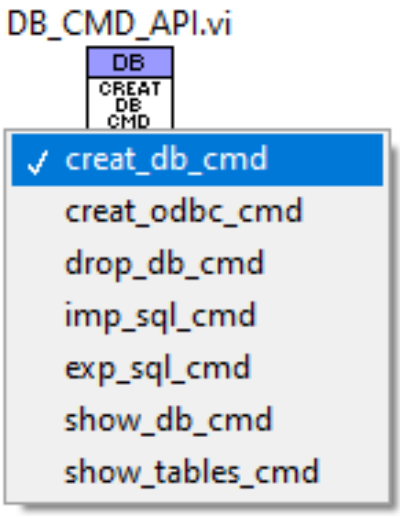
DB Import & Export Blocks

The main input for all Import Export Blocks is Database Cluster



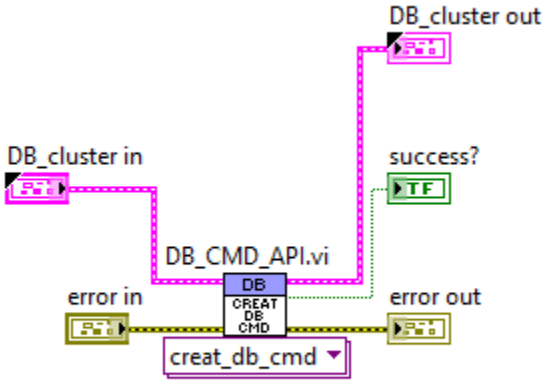
DB_CMD_API.vi

This API is used to rum any (MySQL / MySQL dump / ODBC) commands



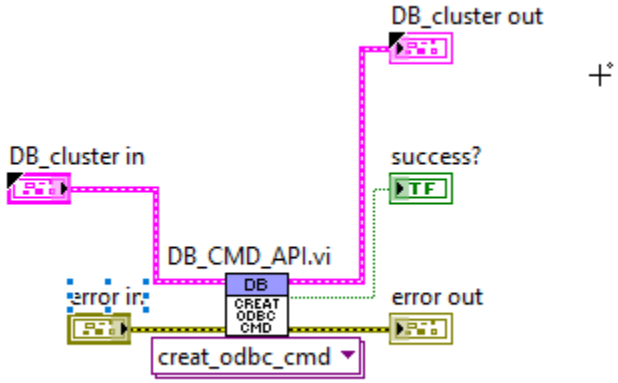
The DB_CMD_API Has many functions:

- Create DB CMD
  this block is used to create database CMD



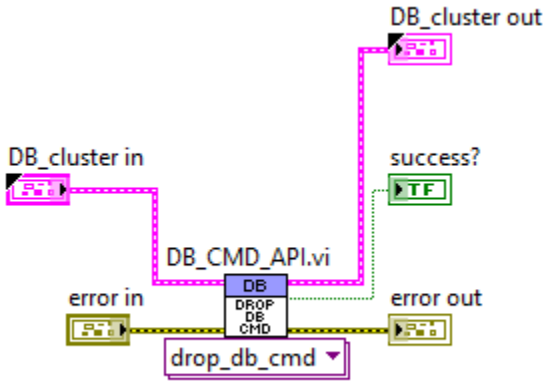
input --> main DB cluster in
output --> main DB cluster out, success?

- Create ODBC CMD
  this block is used to create OBDC CMD



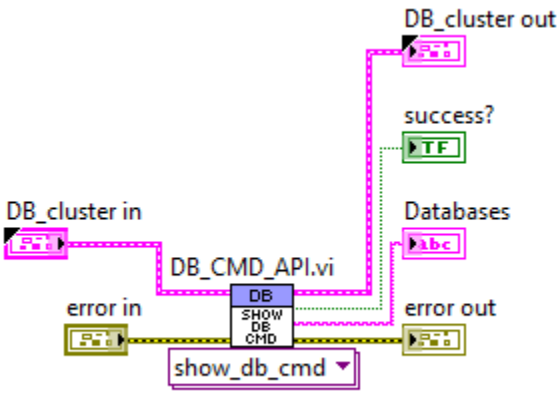
  input --> main DB cluster in
  output --> main DB cluster out, success?

- Drop DB CMD
  this block is used to drop database CMD



  input --> main DB cluster in
  output --> main DB cluster out, success?

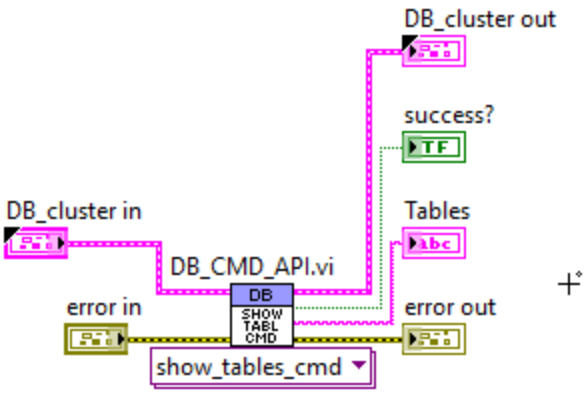
- Show DB CMD
  this block is used to show database CMD



  input --> main DB cluster in, .sql file path
  output --> main DB cluster out, databases array, success?

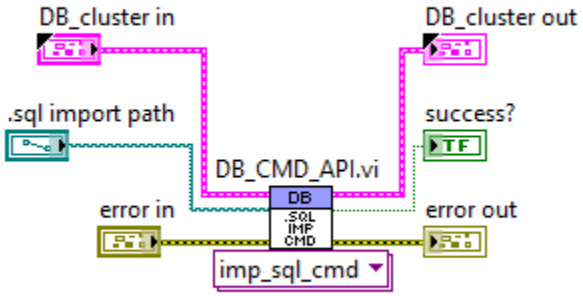
- Show Tables CMD

  this block is used to show all tables in database CMD



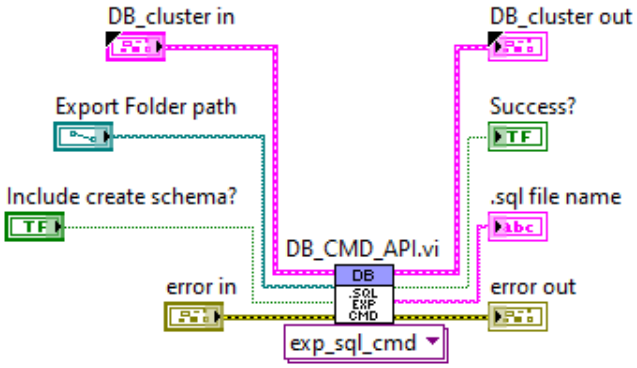
  input --> main DB cluster in
  output --> main DB cluster out, success, tables.

- Import .sql CMD
  this block is used to import .sql CMD



input --> main DB cluster in, import file path.
output --> main DB cluster out, success

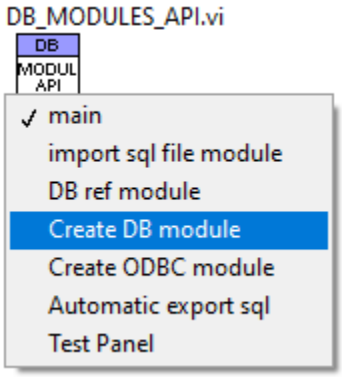
- Export .sql CMD
  this block is used to import .sql CMD



input --> main DB cluster in, Export folder path, include create schema?
output --> main DB cluster out, success, .sql file name.

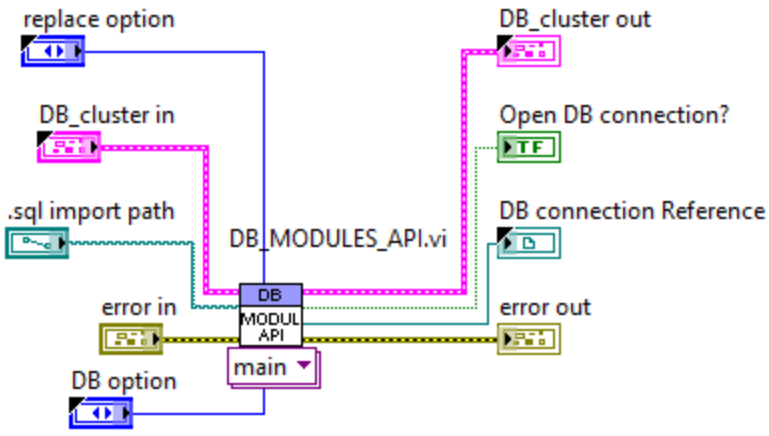
DB_MODULES_API.vi

This API modules are builds on the DB_CMD_API



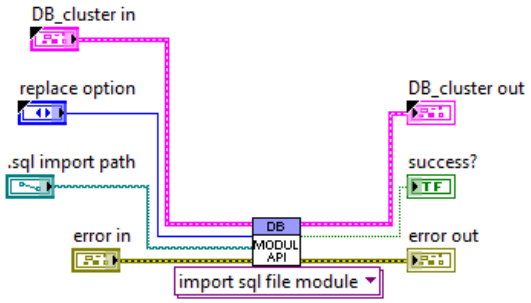
The DB_CMD_API Has many functions:

- Main module:
  this block is the generic block which is used to open database connection with the enticed data if database connection is not found (the system block is used to make these actions
    create New or import database
    create the required ODBC depends on the database
    reconnect to this database to create DB connection reference



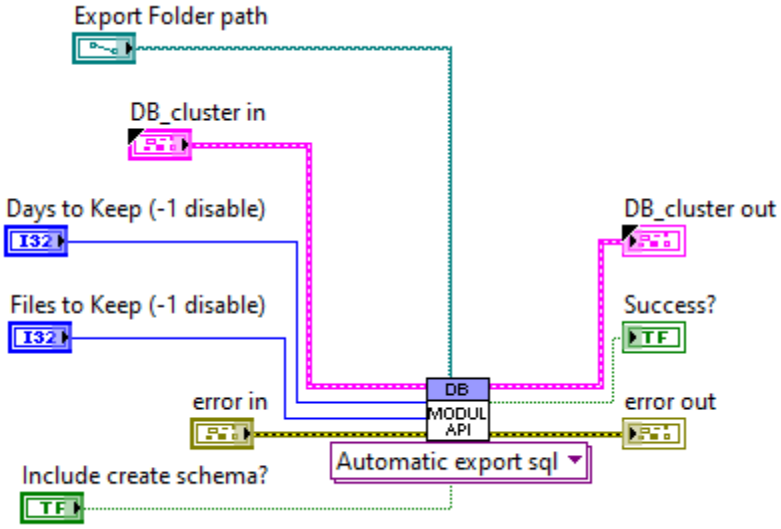
inputs ---> DB cluster in, DB option (New/Import), replace option (replace if found), .sql file path "in case of importing database"
outputs ---> DB cluster out, success, DB connection ref.

- Import .sql module
  this block is used to check and import database from desired file path
  if replace option is to create only (that's mean if database is found it won't be replaced)



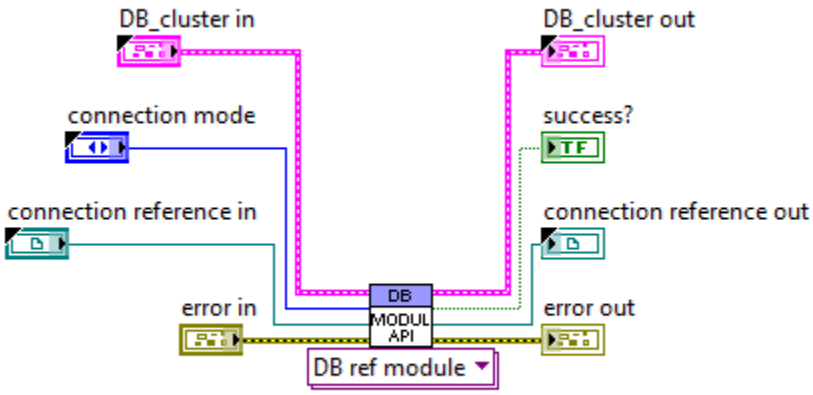
  input --> main DB cluster in, Export file path, replace option?
  output --> main DB cluster out, success?

- Automatic Export .sql module
  this block is used to make automatic backup for the required database
  the block is also used to delete the old ,sql file by selection the no of files to keep or by the no of days to keep
  if one of them is equal to -1 that's mean the option is disabled
  if any option of them equal to 0 that's mean that the backup folder will contain only one back up (the recent one)



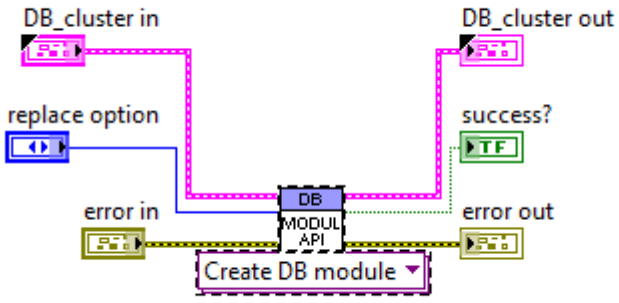
  input --> main DB cluster in , Export folder path , Include create schema? , Files to Keep (-1 disable) ,Days to Keep (-1 disable)
  output --> main DB cluster out , success?

- DB ref module
  this VI is used to control database connection
  (open, close or reconnect to database connection)



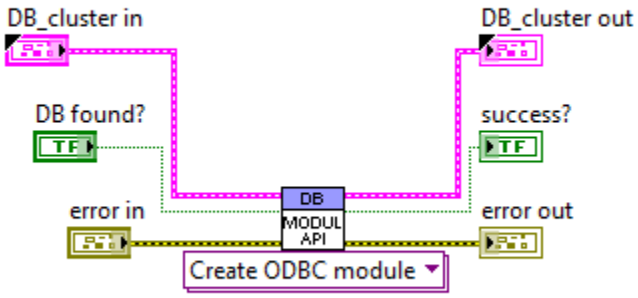
inputs ---> DB cluster in, connection mode
outputs ---> DB cluster out, connection reference out, success?

- Create DB Module
  this block is used to verify and create local database
  at the first the block is used to check if all data are valid (user and pwd)
  then if database is already found database will be created if replace option is enabled



inputs --> DB cluster in, replace option
outputs --> DB cluster out, success?

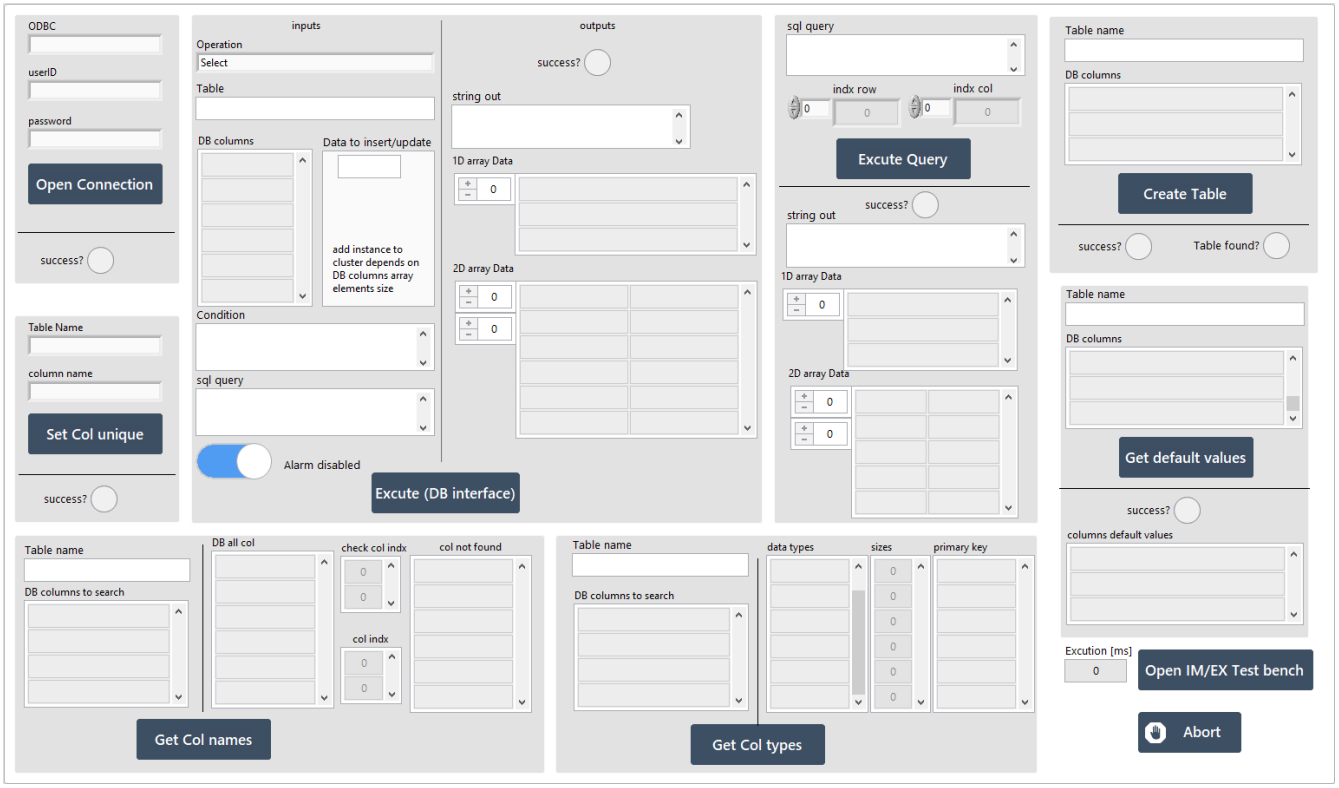
- Create ODBC Module
  this block is used to verify and to create ODBC by using ODBC_CMD for local and remote connection



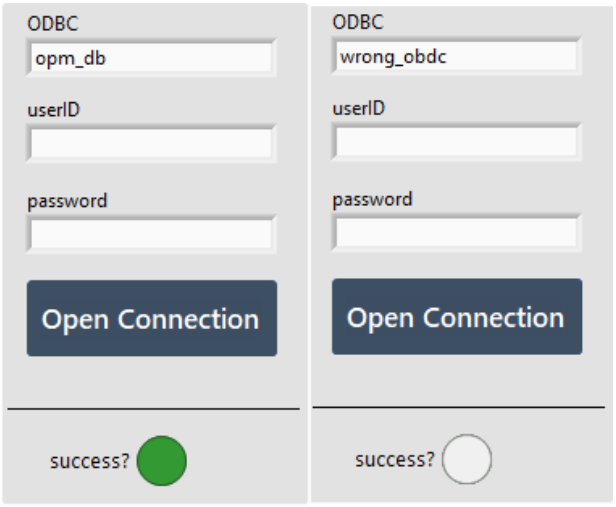
inputs ---> DB cluster in, DB found?
outputs ---> DB cluster out, success?

Test Bench:

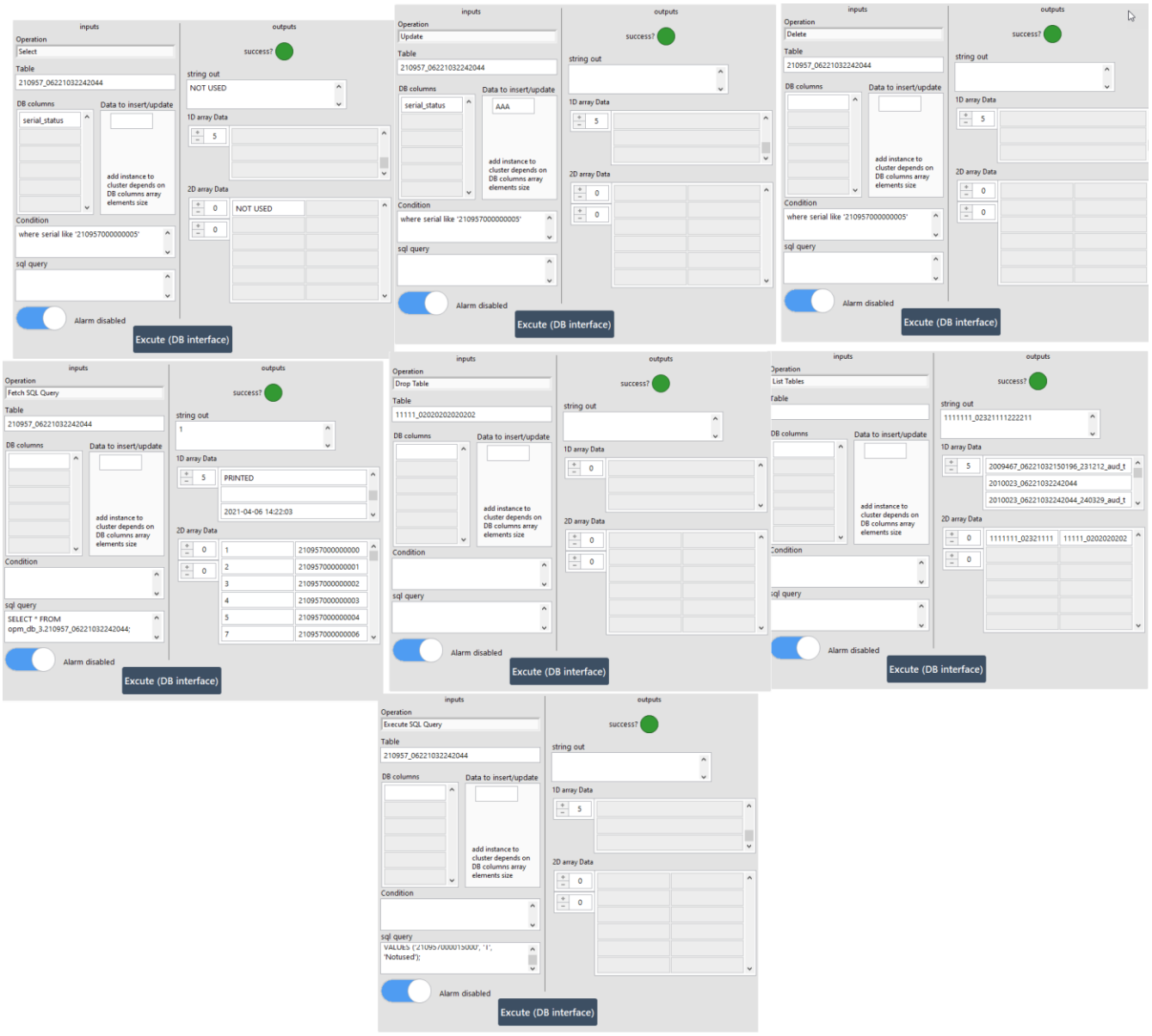
This test bench contains many modules



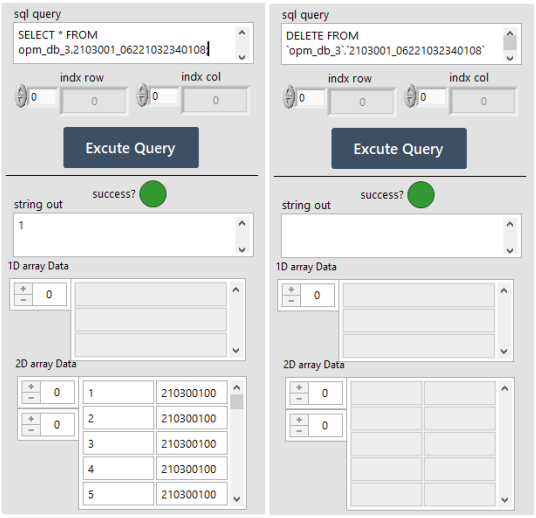
1. Open connection module: this module is used to open DB connection and return connection reference



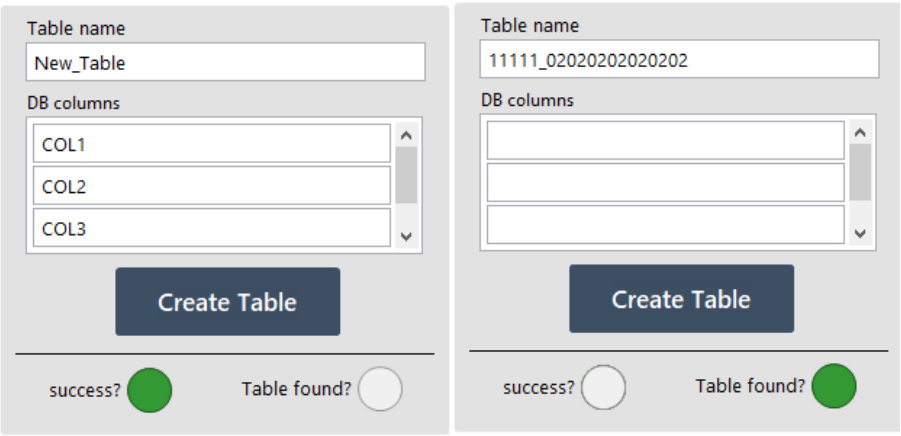
2. DB interface module



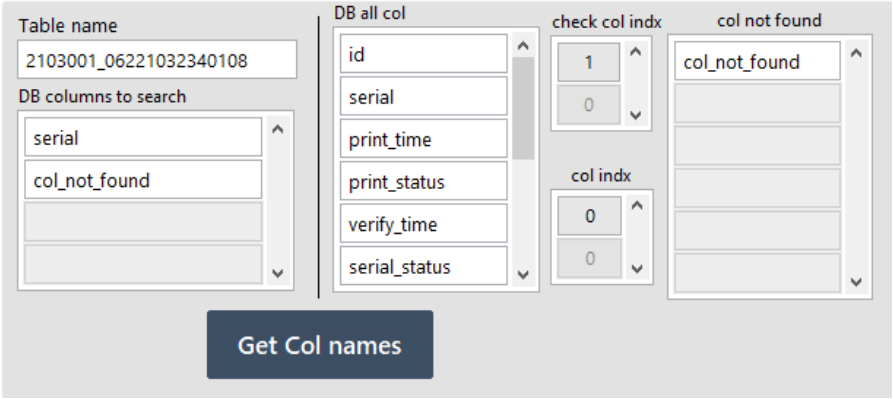
3. Execute Query



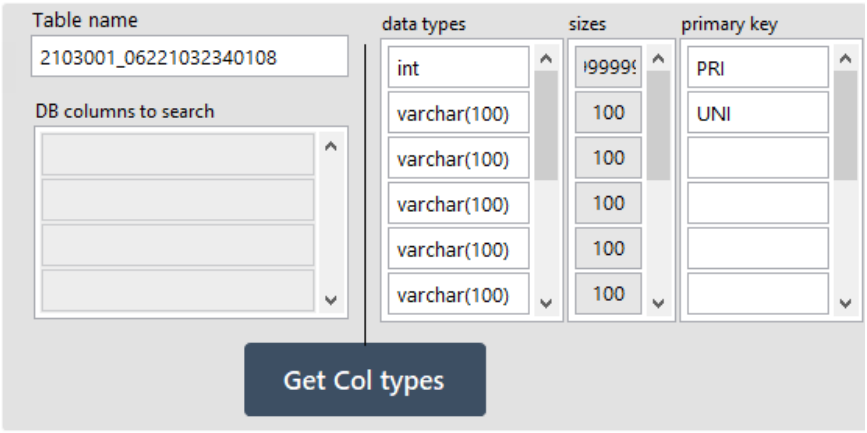
4. Create Table



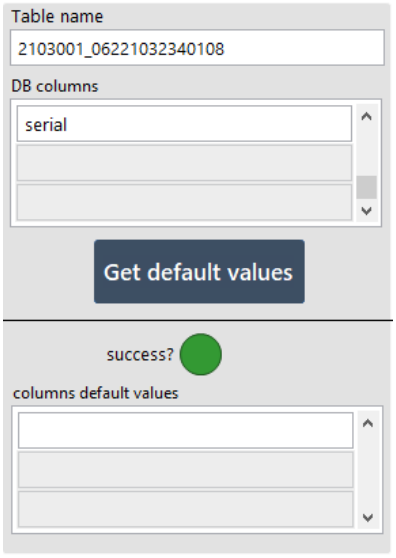
5. Get col names



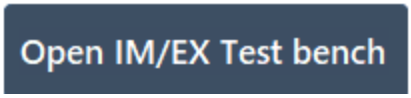
6. Get Col types



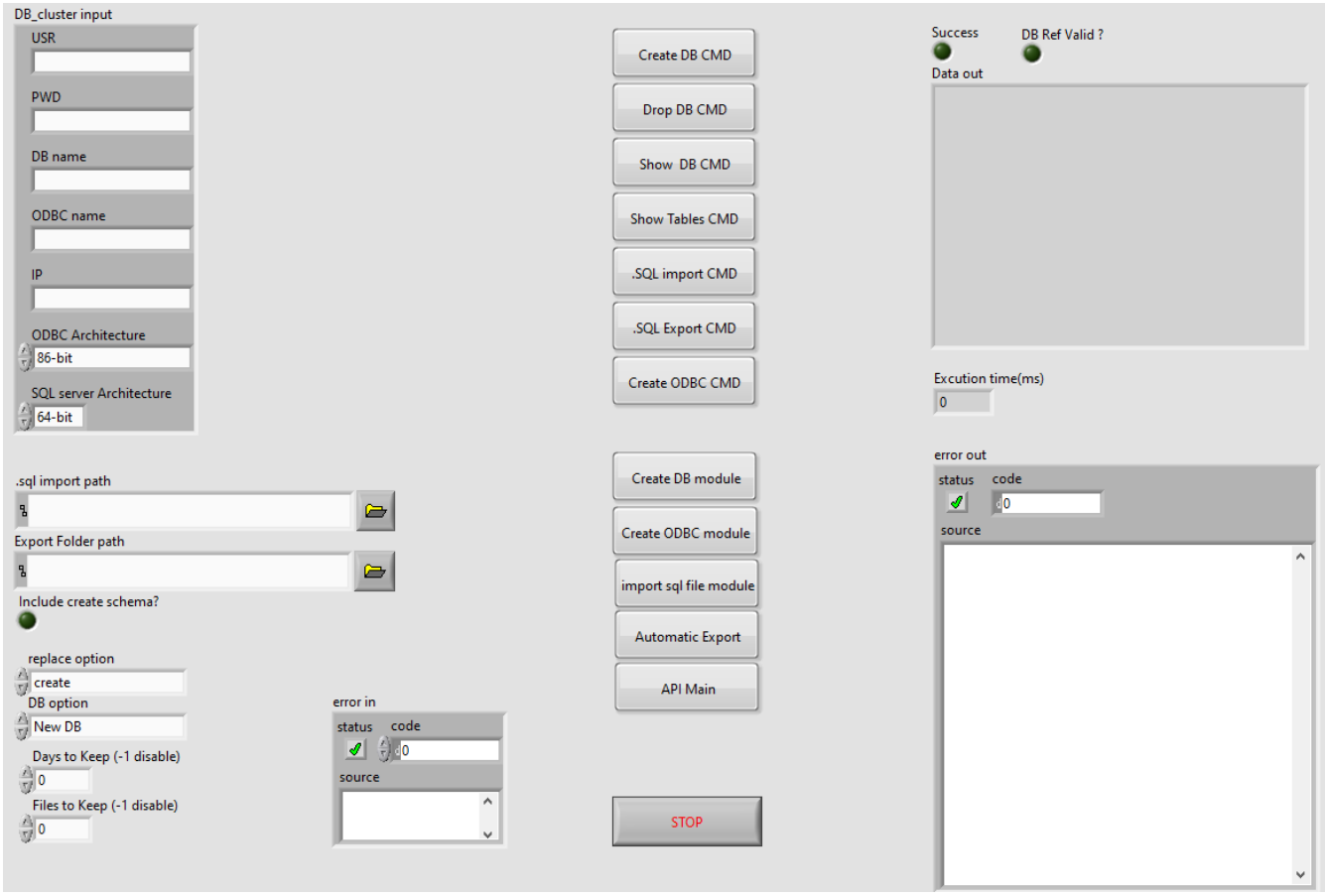
7. Get Default Values



8. Open Import Export Module
   this button is used to open import Export test bench



Import Export Test Bench



References

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