

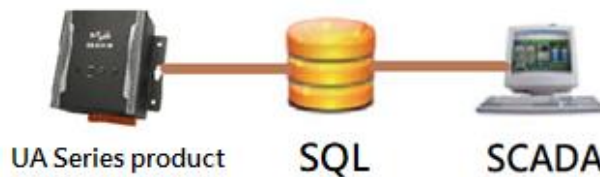
Classification	UA-Series English FAQ-Dev-002						
Author	Lynn Tang	Version	1.0.0	Date	2020,4	Page	1 / 49

● **How to save the UA collected data into SQL and then show trend chart in InduSoft? (Take MySQL Installer 5.7.31 as an example )**

UA series products of ICP DAS provide a useful service to transfer TCP/RTU data to SQL. SQL is to store device data, and then by using InduSoft can retrieve the data to manage the database easily.

Due to the time format written by UA is different from the reading format of InduSoft, here is how InduSoft read data.

(In this example, we use UA-5231M-4GE + Windows 10 OS + MySQL 5.7.31 Database + DL-302 with Modbus RTU protocol)



**1. How to Create MySQL Environment**

**1.1. Go to Microsoft Official Website to download and Install**

Linkage: <https://support.microsoft.com/en-us/help/2977003/the-latest-supported-visual-c-downloads>  
 Choose x86 version: vc\_redist.x86.exe

**Visual Studio 2015, 2017 and 2019**

Download the [Microsoft Visual C++ Redistributable for Visual Studio 2015, 2017 and 2019](#). The following updates are the latest supported Visual C++ redistributable packages for Visual Studio 2015, 2017 and 2019. Included is a baseline version of the Universal C Runtime see [MSDN](#) for details.

- x86: [vc\\_redist.x86.exe](#) ←
- x64: [vc\\_redist.x64.exe](#)
- ARM64: [vc\\_redist.arm64.exe](#)

**Note** Visual C++ 2015, 2017 and 2019 all share the same redistributable files.

For example, installing the Visual C++ 2019 redistributable will affect programs built with Visual C++ 2015 and 2017 also. However, installing the Visual C++ 2015 redistributable will not replace the newer versions of the files installed by the Visual C++ 2017 and 2019 redistributables.

This is different from all previous Visual C++ versions, as they each had their own distinct runtime files, not shared with other versions.

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## 1.2. Go to MySQL Official Website to download and install the program

Linkage: <https://dev.mysql.com/downloads/windows/installer/5.7.html>

Choose the download program with larger file.

MySQL Community Downloads

MySQL Installer

General Availability (GA) Releases Archives

### MySQL Installer 5.7.31

Select Version: 5.7.31 Looking for the latest GA version?

Select Operating System: Microsoft Windows

<b>Windows (x86, 32-bit), MSI Installer</b>	5.7.31	24.5M	<a href="#">Download</a>
<small>(mysql-installer-web-community-5.7.31.0.msi)</small>	<small>MD5: 8f33e6f9f8c2e6740bd7aa4716982018</small>	<small>Signature</small>	
<b>Windows (x86, 32-bit), MSI Installer</b>	5.7.31	509.3M	<a href="#">Download</a>
<small>(mysql-installer-community-5.7.31.0.msi)</small>	<small>MD5: 0907bf6376f468e5539cef2a5c22fe52</small>	<small>Signature</small>	

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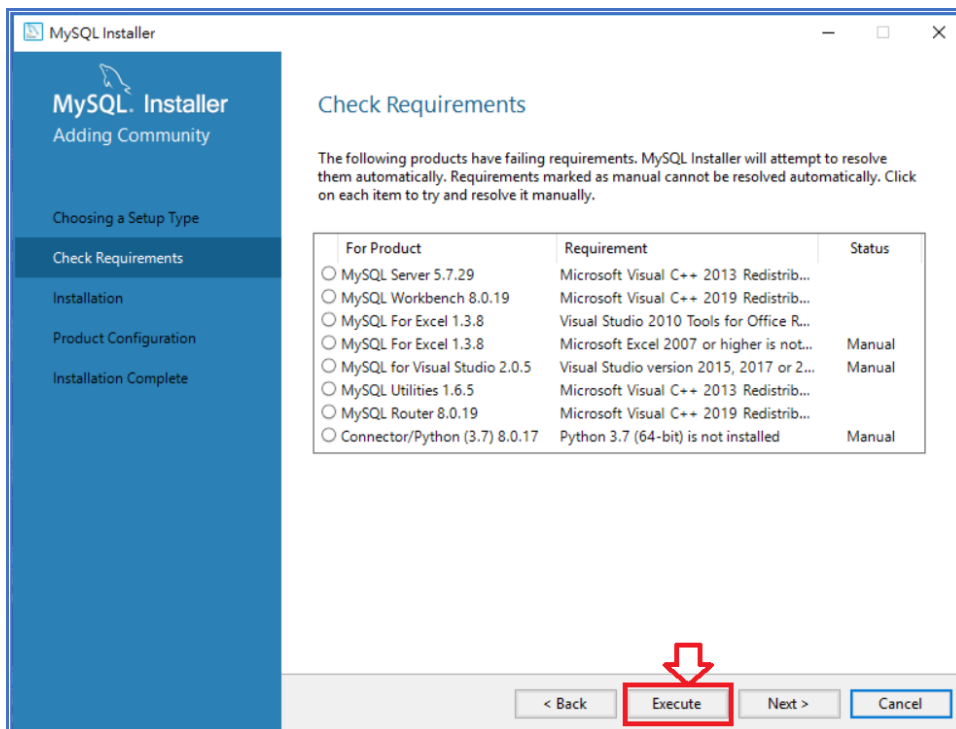
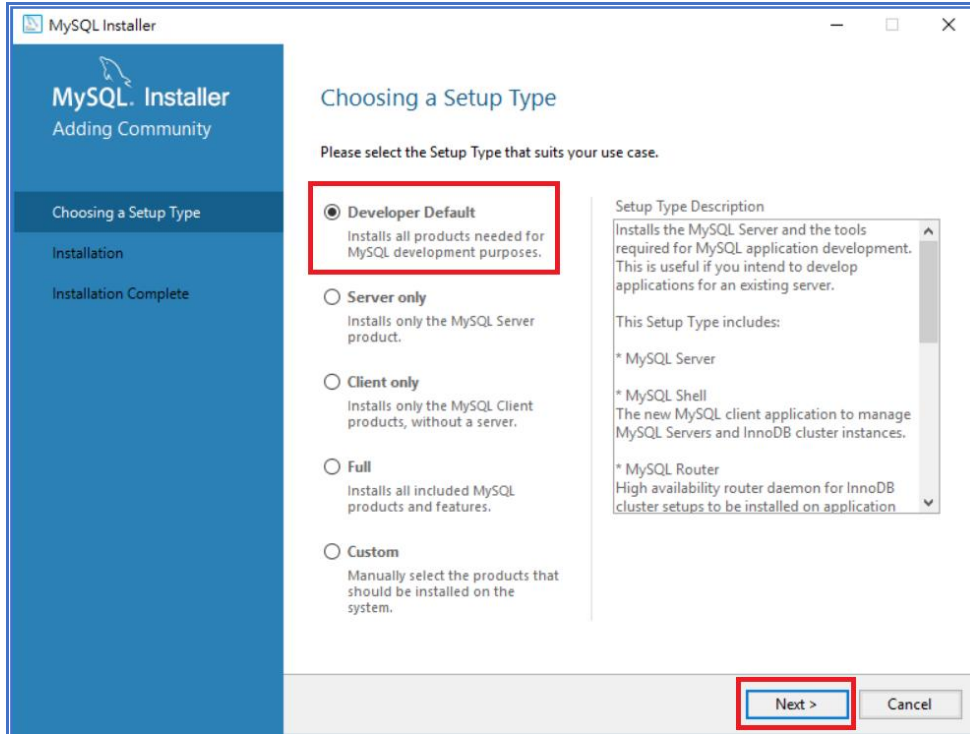
MySQL.com is using Oracle SSO for authentication. If you already have an Oracle Web account, click the Login link. Otherwise, you can sign up for a free account by clicking the Sign Up link and following the instructions.

[Click here to download.](#)

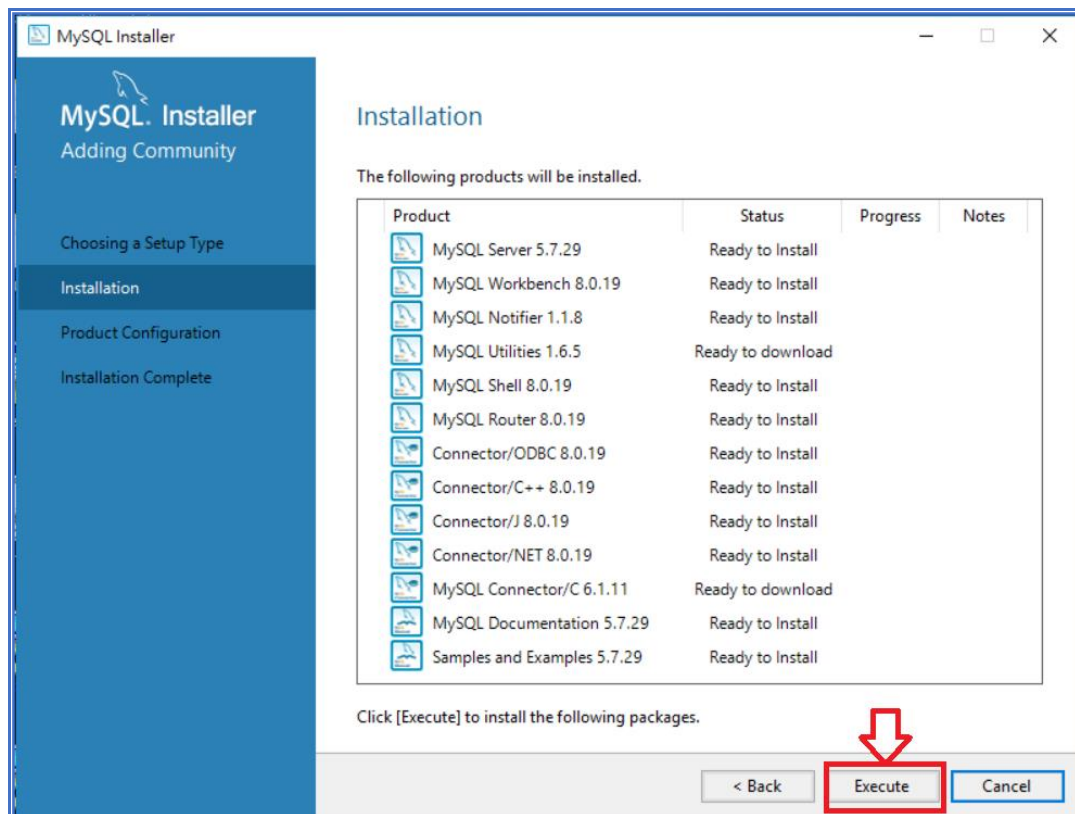
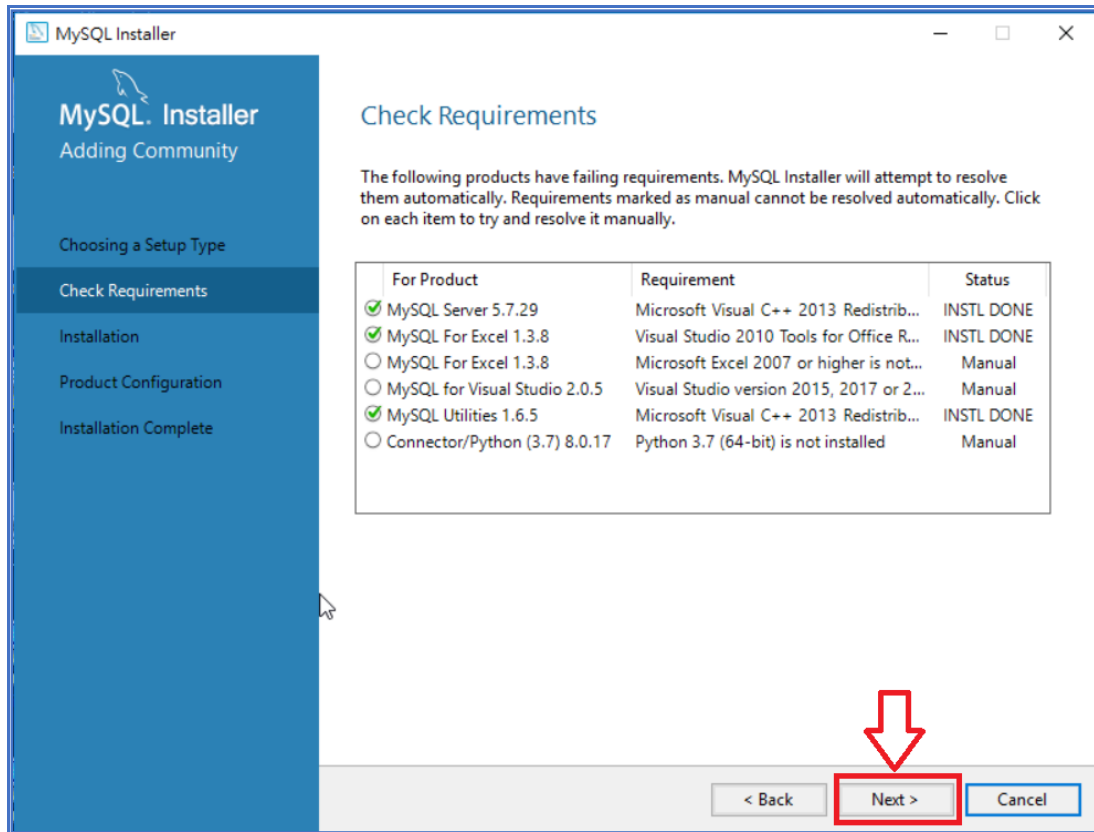
[No thanks, just start my download.](#)

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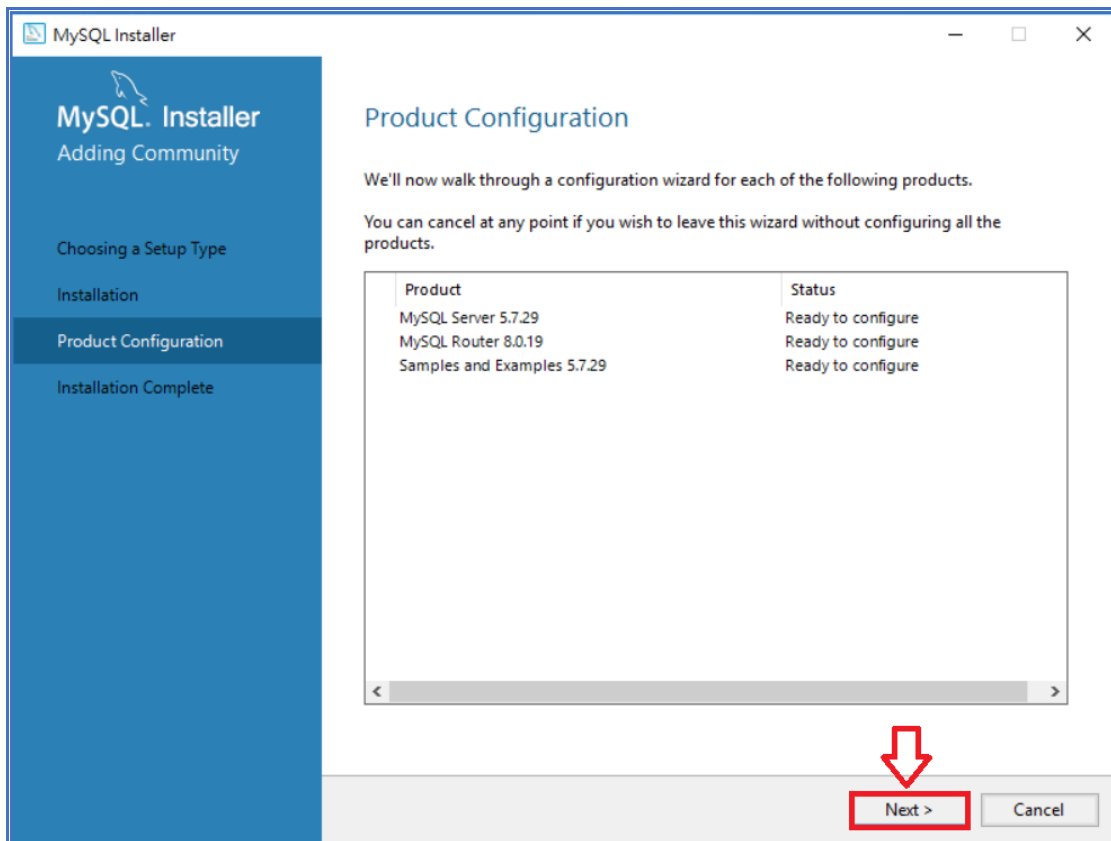
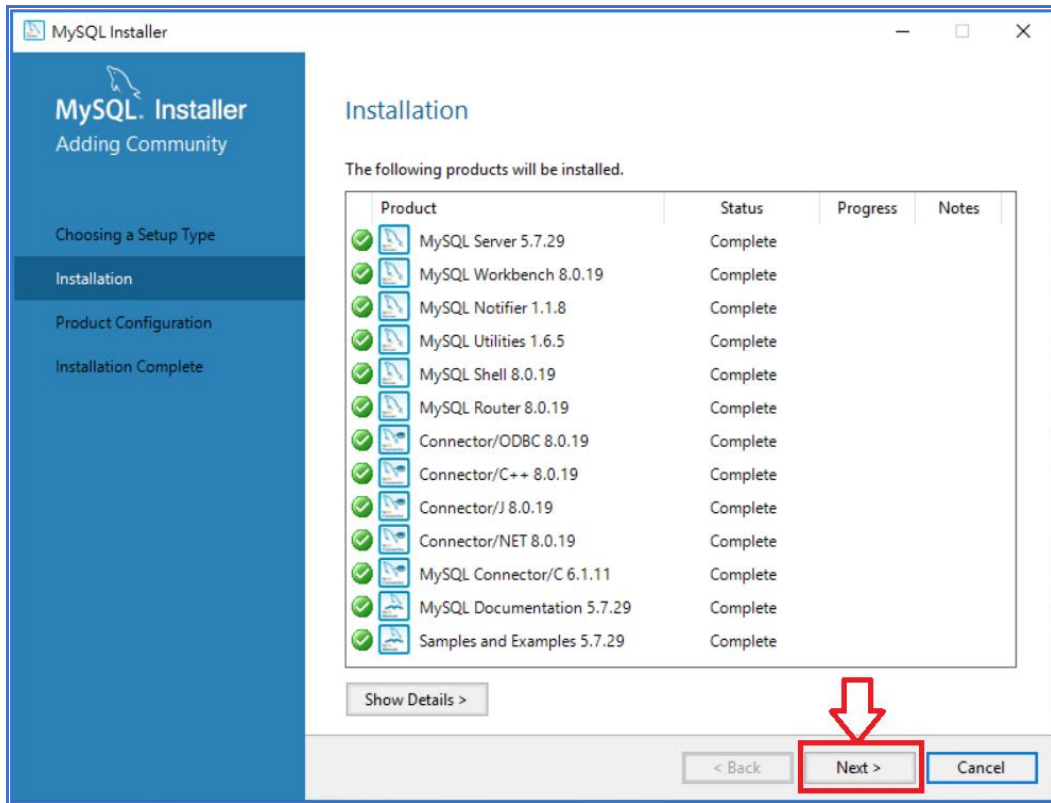
## Execute to start Installation



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### High Availability

**Standalone MySQL Server / Classic MySQL Replication**  
 Choose this option to run the MySQL instance as a standalone database server with the opportunity to configure classic replication later. With this option, you can provide your own high-availability solution, if required.

**Sandbox InnoDB Cluster Setup (for testing only)**  
 The [InnoDB cluster](#) technology provides an out-of-the-box HA (high availability) solution for MySQL using Group Replication.  
 This option enables you to test an InnoDB cluster setup on your local computer using several MySQL Server sandbox instances. Read about [Sandbox Deployment of InnoDB Cluster](#) to learn more.

To setup and configure a real-world production InnoDB cluster use the Create a New InnoDB Cluster or Add Local MySQL Server Instance to an InnoDB Cluster options available for MySQL Server 8.0.

InnoDB Cluster Log Verbosity Level  
 The log level for InnoDB cluster configuration. MEDIUM

**Next >** Cancel

### MySQL Installer

MySQL Server 5.7.29

- High Availability
- Type and Networking**
- Accounts and Roles
- Windows Service
- Apply Configuration

#### Type and Networking

Server Configuration Type  
 Choose the correct server configuration type for this MySQL Server installation. This setting will define how much system resources are assigned to the MySQL Server instance.  
 Config Type: Development Computer

Connectivity  
 Use the following controls to select how you would like to connect to this server.

TCP/IP Port: 3306

Open Windows Firewall port for network access

Named Pipe Pipe Name: MYSQL

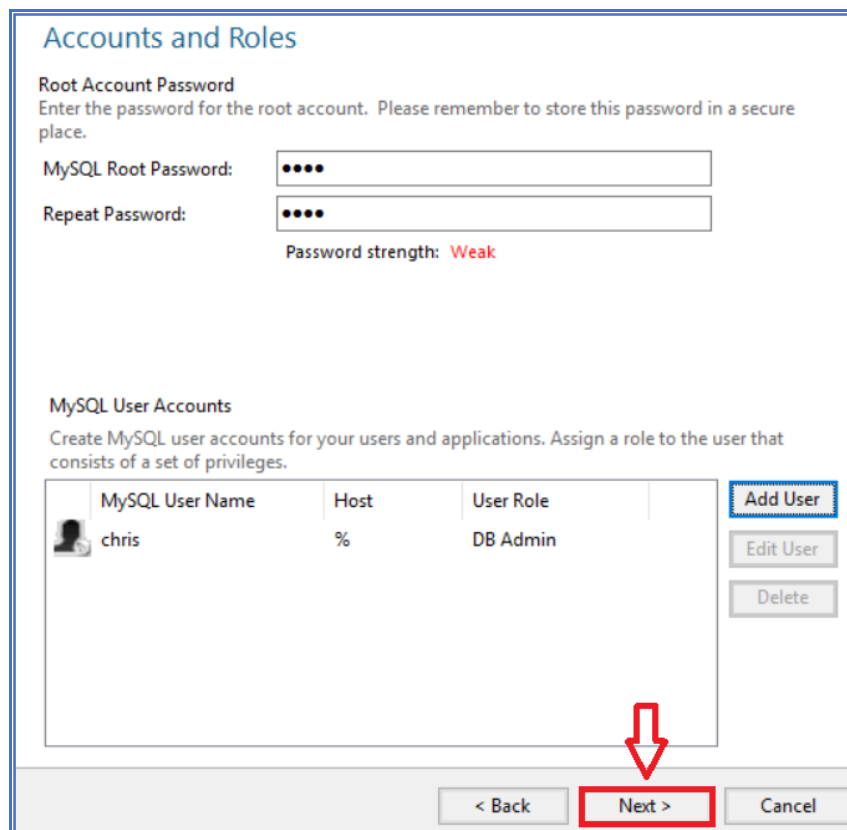
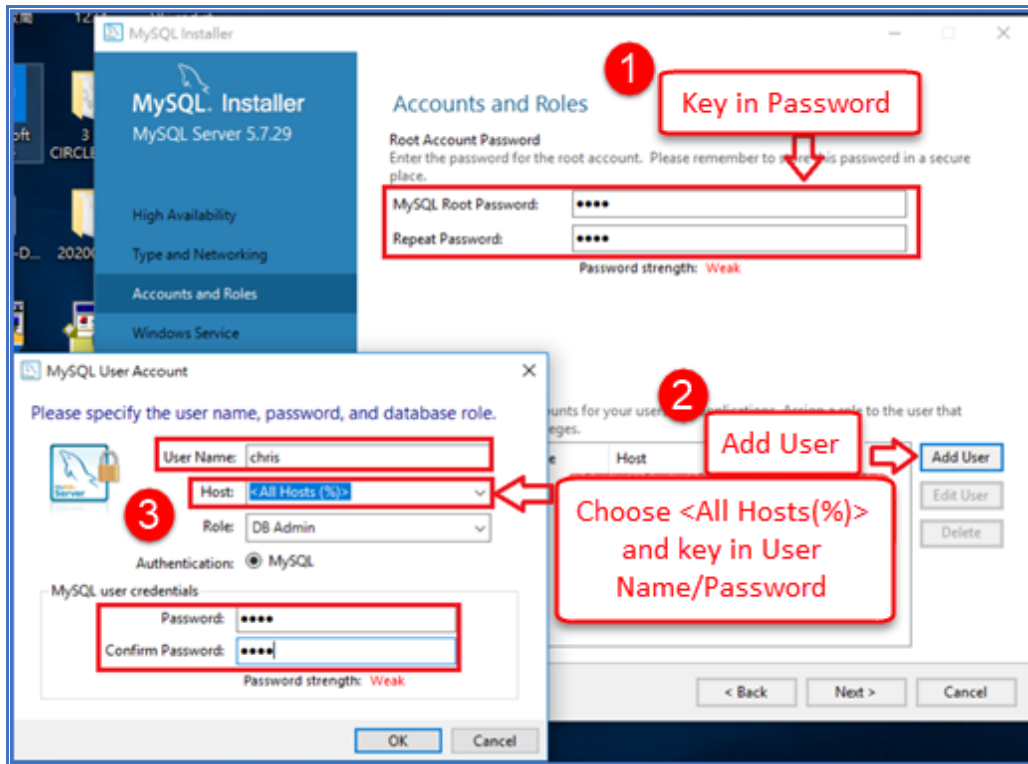
Shared Memory Memory Name: MYSQL

Advanced Configuration  
 Select the check box below to get additional configuration pages where you can set advanced and logging options for this server instance.

Show Advanced and Logging Options

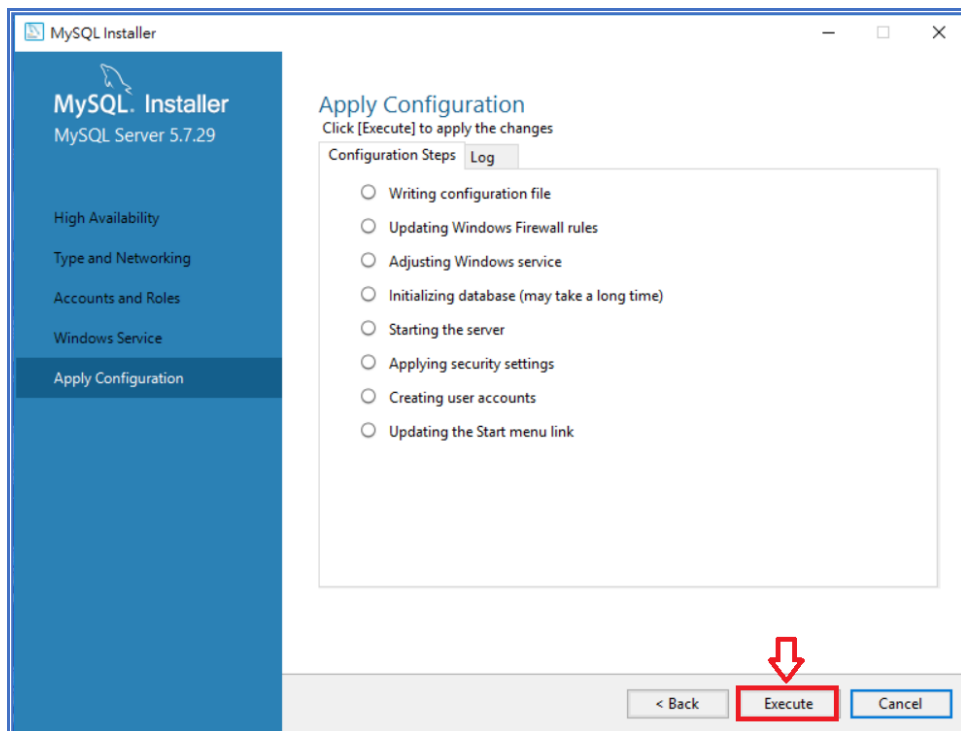
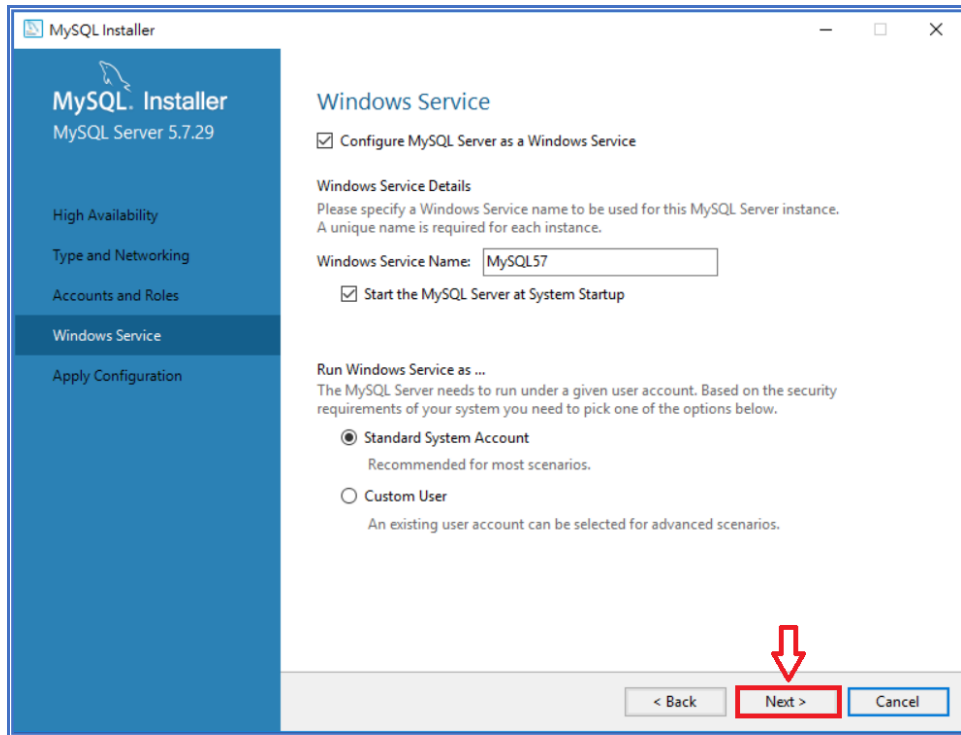
< Back **Next >** Cancel

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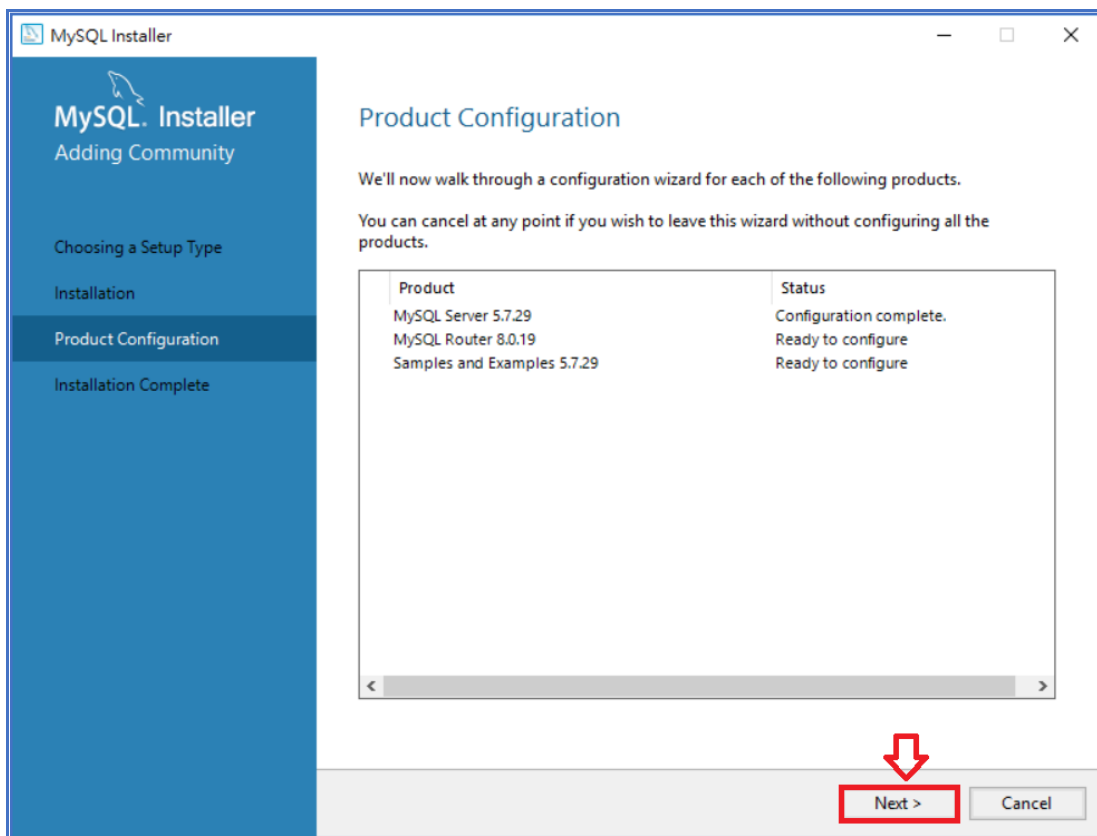
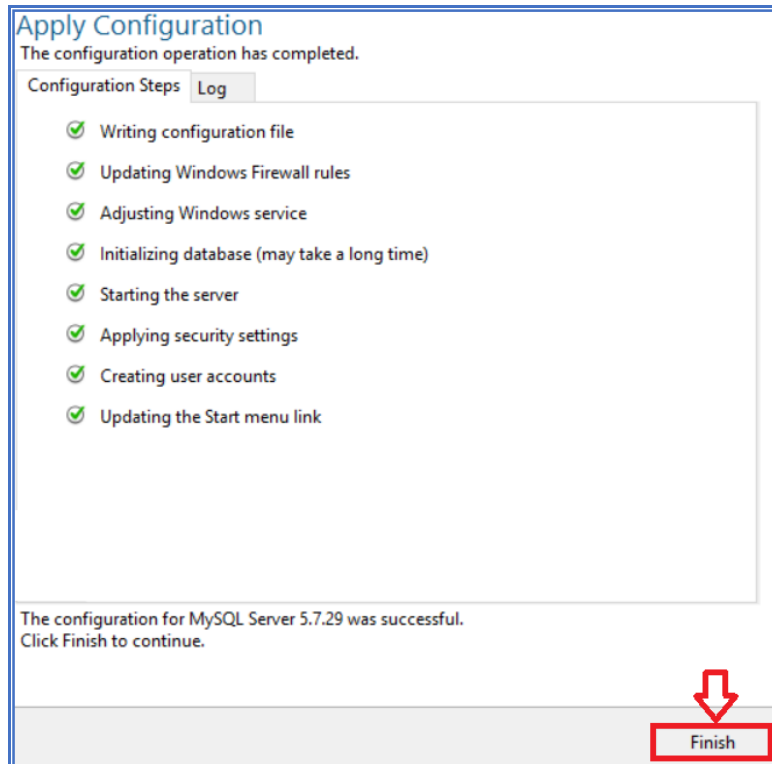


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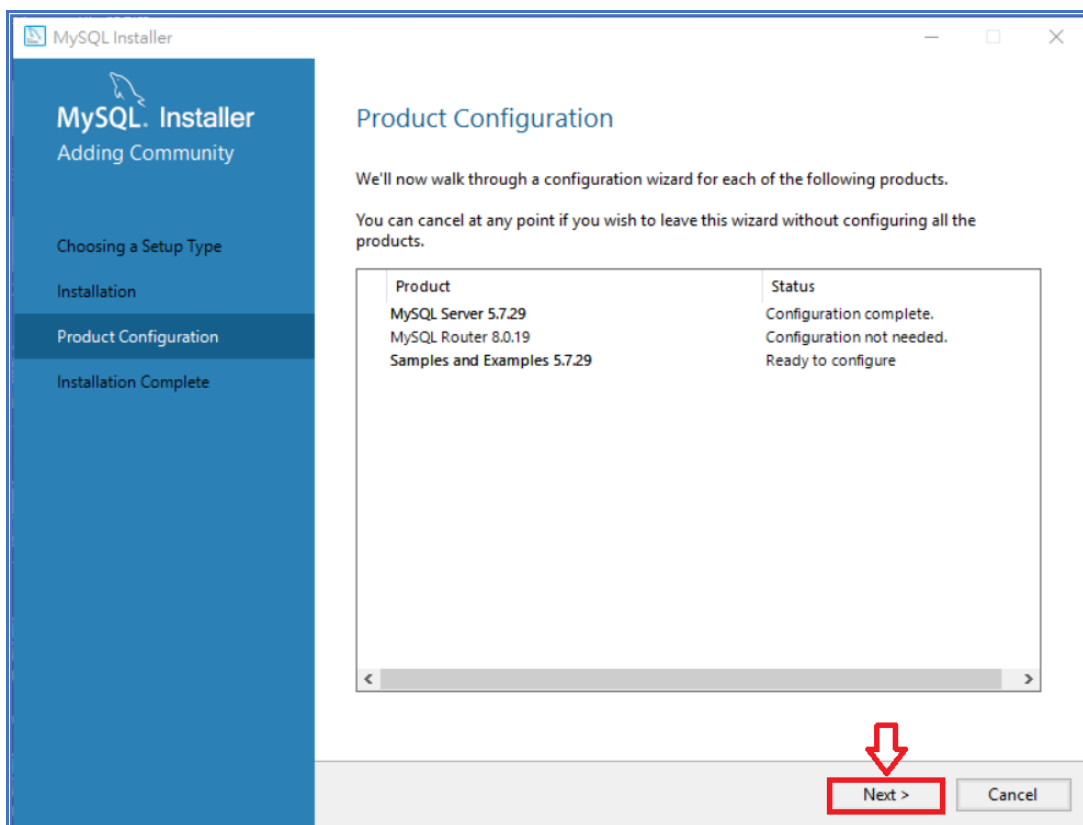
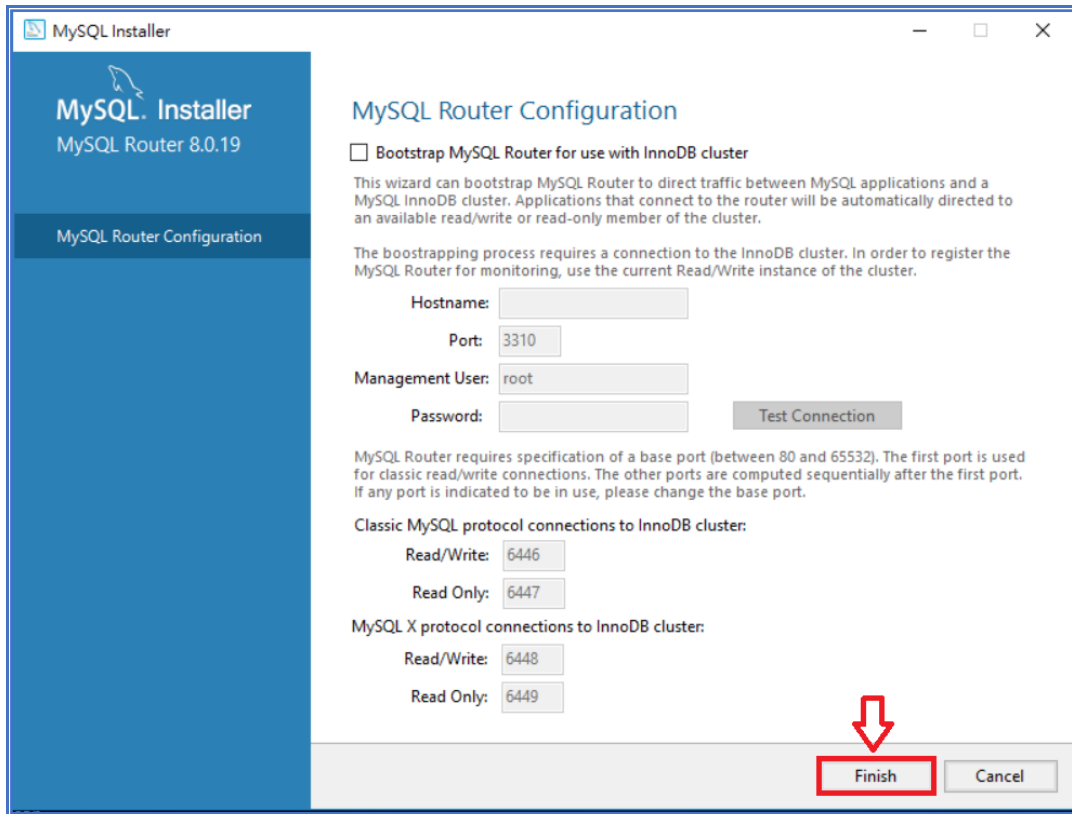




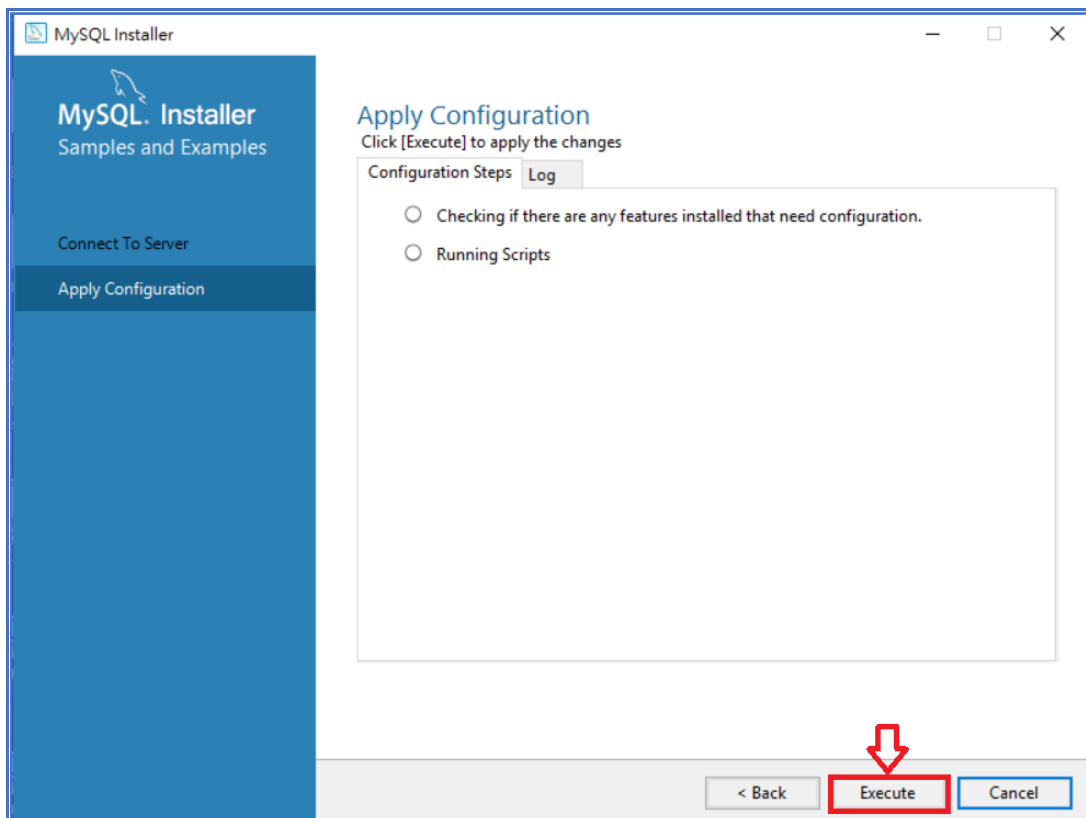
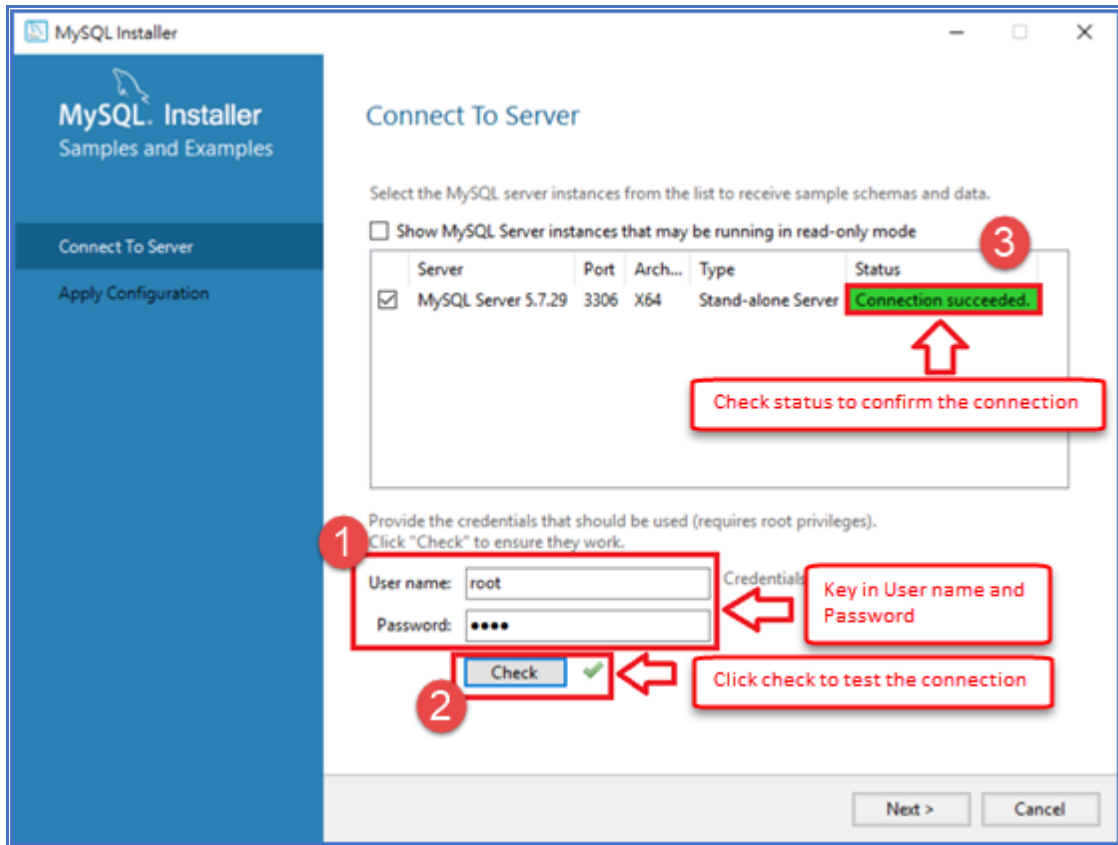
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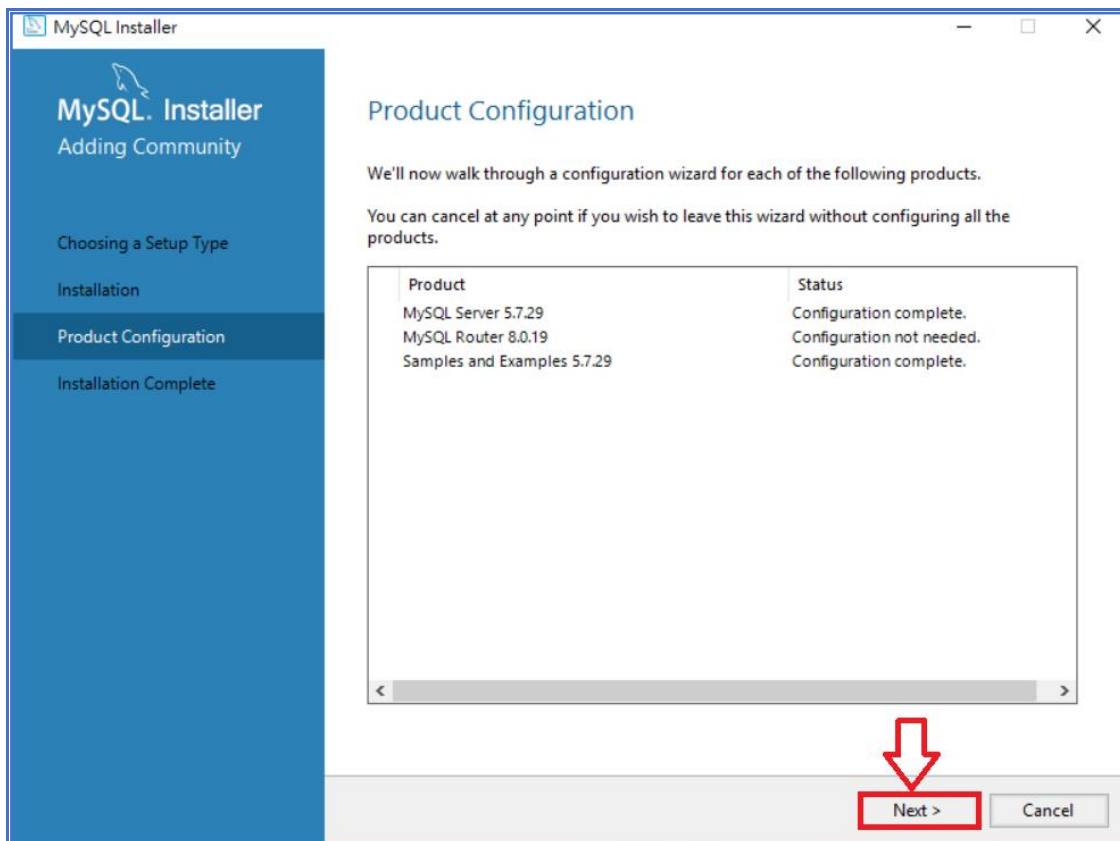
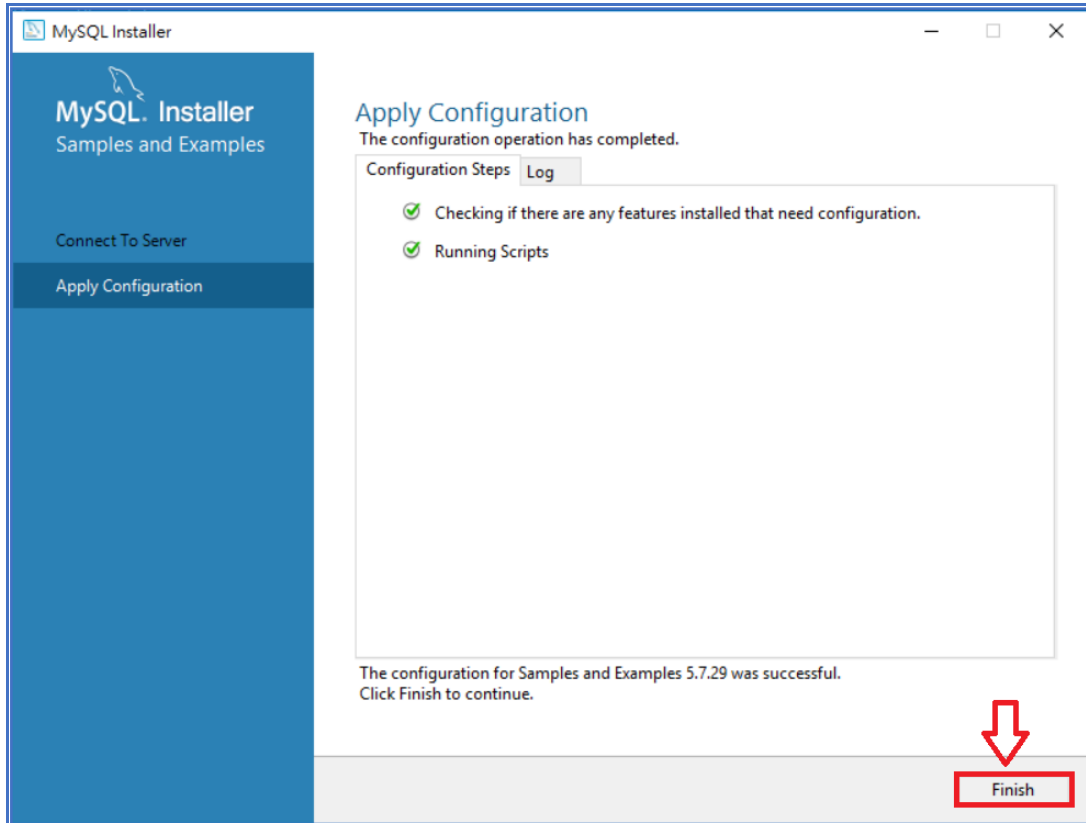
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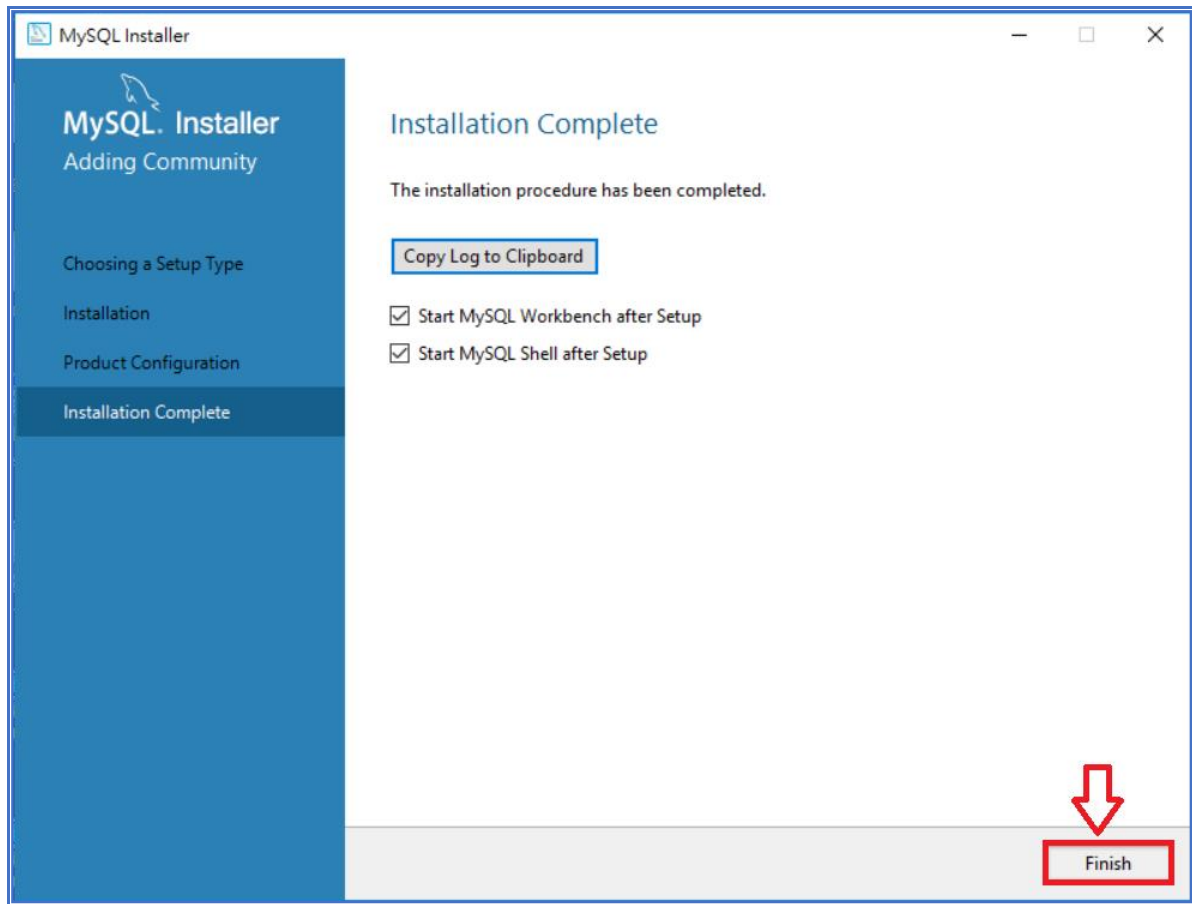


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Click [Finish] to complete the installation.



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### 1.3. Go to MySQL Official Website to download and Install MySQL ODBC

Linkage: <https://dev.mysql.com/downloads/connector/odbc/>

Choose Windows(x86, 32-bit), MSI Installer.

**MySQL Installer for Windows**

All MySQL Products. For All Windows Platforms. In One Package.

Starting with MySQL 5.6 the MySQL Installer package replaces the standalone MSI packages.

**Windows (x86, 32 & 64-bit), MySQL Installer MSI** [Go to Download Page >](#)

**Other Downloads:**

<b>Windows (x86, 64-bit), MSI Installer</b>	8.0.21	14.7M	<a href="#">Download</a>
(mysql-connector-odbc-8.0.21-winx64.msi)	MD5: 619f771a753e7da51dbe3266e272dea3   Signature		
<b>Windows (x86, 32-bit), MSI Installer</b>	8.0.21	14.2M	<a href="#">Download</a>
(mysql-connector-odbc-8.0.21-win32.msi)	MD5: 64df8835858d21bfe0ffe84c7ed477d0   Signature		
<b>Windows (x86, 32-bit), ZIP Archive</b>	8.0.21	14.0M	<a href="#">Download</a>
(mysql-connector-odbc-noinstall-8.0.21-win32.zip)	MD5: 2cce435bf58d6bcae2492e6499552603   Signature		
<b>Windows (x86, 64-bit), ZIP Archive</b>	8.0.21	14.5M	<a href="#">Download</a>
(mysql-connector-odbc-noinstall-8.0.21-winx64.zip)	MD5: 76932c3816adb9cead5b571068037c49   Signature		

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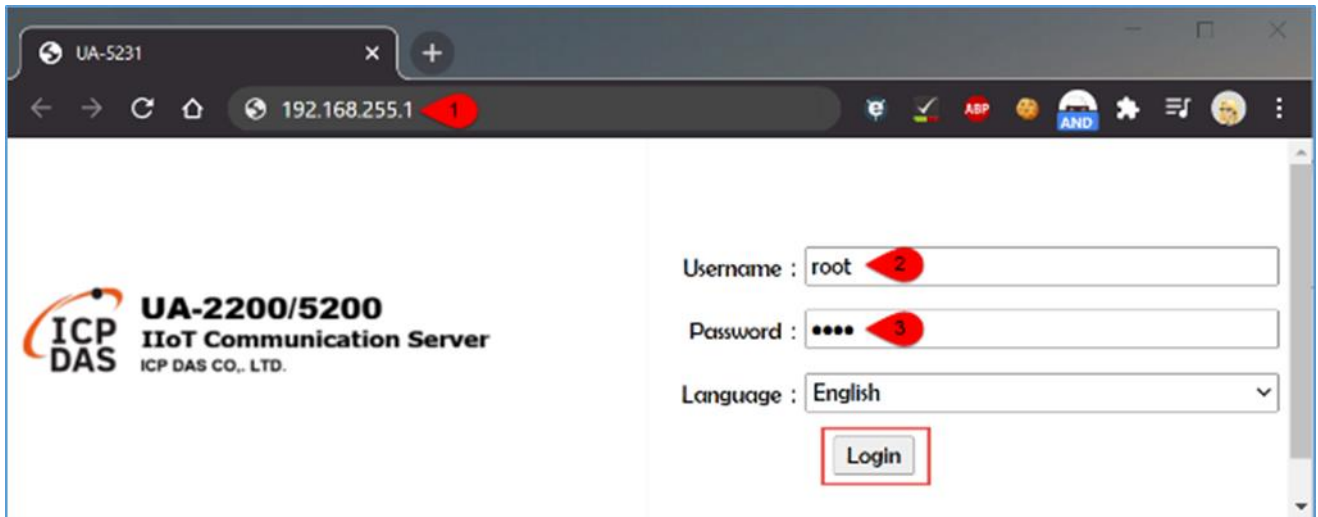
**Click here to download.**

**No thanks, just start my download.**

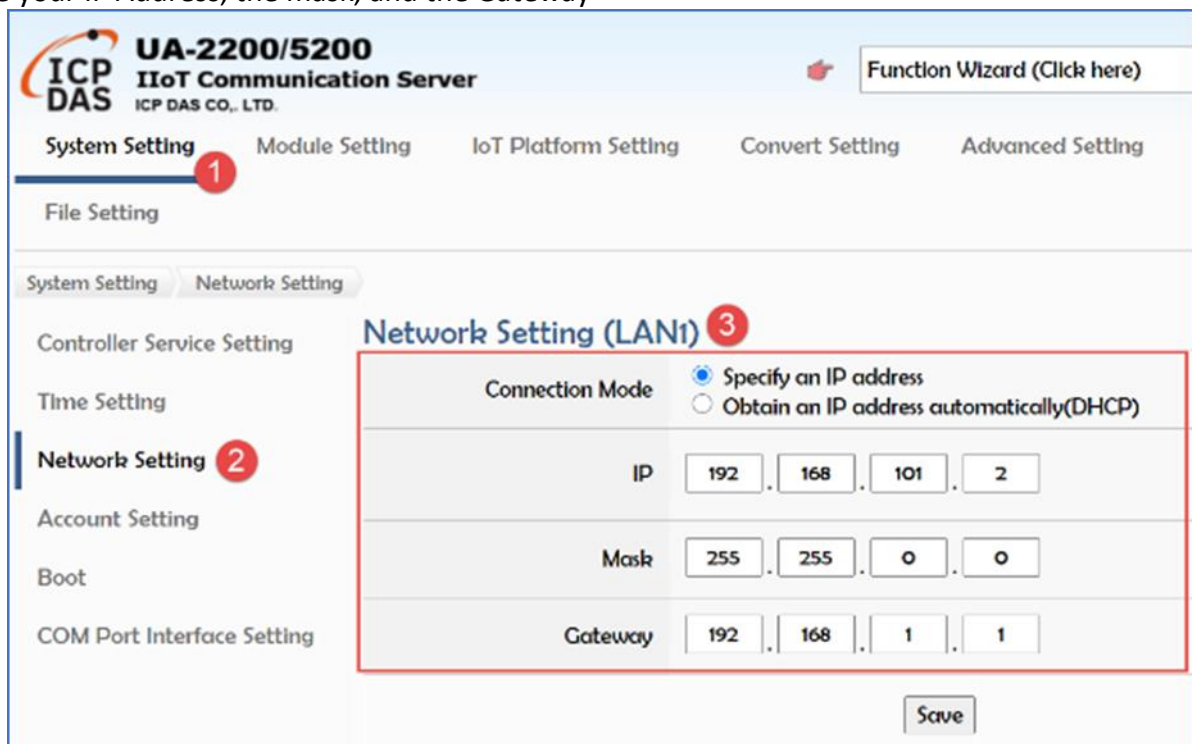
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## 2. How to set up UA products to save Modbus RTU data into SQL?

1. Key in following address in the URL bar: <http://192.168.255.1>
2. When the Web UI show up, key in default Username: root
3. Key in default Password: root



After successful Login, go to **【 System Setting 】 => 【 Network Setting 】 => 【 Network Setting (LAN1) 】** to change your IP Address, the mask, and the Gateway

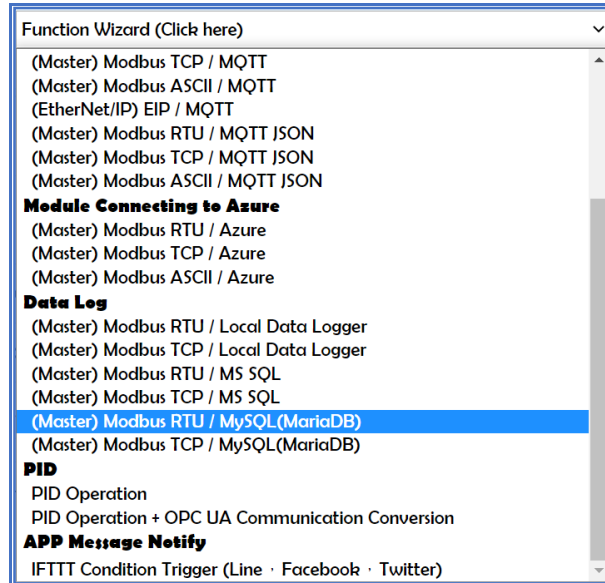


Then click "Save" .

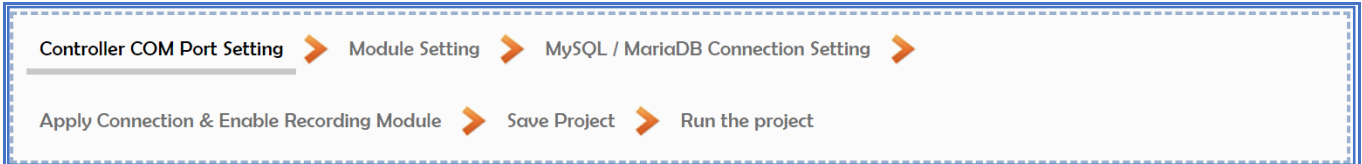


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After reload the Web UI page, find “Data Log” and choose “(Master) Modbus RTU / MySQL(MariaDB)” from the drop-down menu on the upper-right corner.



Follow the Wizard step-by-step to finish the Project.



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## 2.1. Step 1: COM Port Setting (Take DL-302 as an example)

The screenshot shows the 'COM Port Interface Setting Page' with the following configuration:

Serial Port	ttyO2
Baud Rate	9600
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Polling Rate(ms)	5000

A red callout box labeled 'DL-302 Settings' points to the Serial Port dropdown. A 'Save' button is circled in red, and the text 'Success.' is visible below it.

**Address:** Sets the address for a module.

Default: 1  
Range: 0 ~ 255

**Protocol:** Sets the communication protocol.

- ModbusRTU (default)
- DCON
- DCONChkSum: uses DCON protocol and enables checksum validation feature

**Baud Rate**

Default: 9600  
Support Baud Rate: 1200/ 2400/ 4800/ 9600/ 19200/ 38400/ 57600/ 115200 (unit: bps)

**Parity**

Default: N,8,1  
Support format: N81, N82, E81, O81

**Response Delay (ms):** Sets the delay time between receiving the command and sending the data.

Default: 0 ms  
Range: 0 ~ 30 (unit: ms)

**Save:** Saves the modification and returns to the Settings menu.  
All the changes take effect immediately after saving changes.

**Skip:** Returns to the Settings menu without saving any changes.

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## 2.2. Step 2: Module Setting

Controller COM Port Setting > **Module Setting** > MS SQL Connection Setting > Apply Connection & Enable Recording Module >

Save Project > Run the project

System Setting **Module Setting** IoT Platform Setting Convert Setting Advanced Setting Logger Setting I/O Status

File Setting

Module Setting RTU Module (Master)

**Modbus**

RTU Module (Master)

TCP Module (Master)

ASCII Module (Master)

**MQTT**

MQTT Module

**EtherNet/IP**

ICPDAS Module

**Modbus RTU Module List**

Serial Port **1** Choose Serial Port

Load ICPDAS Module Select The Module Update ICPDAS Module List

Select All	No.	*Module Name / Nickname	Edit
<input type="checkbox"/>	1	Name <b>2</b> Key in Module Name	

Click to Add Copy Remove < 0 / 0 >

Remove all **4** Save

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Controller COM Port Setting > **Module Setting** > MS SQL Connection Setting > Apply Connection & Enable Recording Module >

Save Project > Run the project

System Setting **Module Setting** IoT Platform Setting Convert Setting Advanced Setting Logger Setting I/O Status

File Setting

Module Setting RTU Module (Master)

**Modbus**

RTU Module (Master)

TCP Module (Master)

ASCII Module (Master)

**MQTT**

MQTT Module

**EtherNet/IP**

ICPDAS Module

**Modbus RTU Module List**

Serial Port ttyO2

Load ICPDAS Module Select The Module Update ICPDAS Module List

Select All	No.	*Module Name / Nickname	Edit
<input type="checkbox"/>	2	Name	
<input type="checkbox"/>	1	Name	<b>Edit</b>

Copy Remove < 1 / 1 >

Remove all Save **Success.**

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Module Setting   RTU Module (Master)   **Module Content Setting**

**Modbus:**

RTU Module (Master)

TCP Module (Master)

ASCII Module (Master)

**MQTT**

MQTT Module

**EtherNet/IP**

ICPDAS Module

### Module Content Setting

No.	<input type="text" value="1"/>
Module Name	<input type="text" value="Name"/>
Slave ID	<input type="text" value="1"/>
Timeout(ms)	<input type="text" value="500"/>

### Modbus Mapping Table Setting

Data Model	<input type="text" value="01 Coil Status(0x)"/>
Start Address	<input type="text" value="0"/>
Data Number	<input type="text" value="1"/>
Create Tables	<input type="button" value="Add"/>

Modbus Mapping information, please refer to the User Manual from the module you choose.

Module Content Setting	
No.	The module number in the module list (Not editable here)
Module Name	Give a name, e.g. model number or name. Default: Name.
Slave ID	Set the module Slave ID of the UA. (Range: 1 ~ 247)
Timeout	Set the timeout value for the module. Default: 500 ms
Modbus Mapping Table Setting	
Data Model	System provides 4 Modbus data models "01" ~ "04" for mapping to address of DO, DI, AO and AI. (ex. 01: DO channels, 02: DI, 03: AO, 04: AI)
Start Address	The start address of the Modbus command. <b>Note:</b> the Start Address of UA is bass on 0, even if some modules are bass on 1, here it needs to follow UA to set bass on 0.
Data Number	The number of the Modbus address. Need to give enough number for the DO, DI, AO, AI channels of the module. Default: 1.
Type	This item only when the data model is 03 or 04. Choose the suitable data type: 16-bit Short, 16-bit Unsigned Short, 32-bit Long, 32-bit Unsigned Long, 32-bit Float, 64-bit Double.
Create Tables	Click [Add] button, it will add a table in the Modbus mapping table.

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### DL-302 Modbus Address Mappings (Base 1)

Address	Description	Attribute
30001 ~ 30006	Analog input value of channel 0 to 5. channel 0: CO <sub>2</sub> in 1ppm,	R
40001 ~ 40006	channel 1: relative humidity in 0.01%, channel 2: temperature in 0.01°C, channel 3: temperature in 0.01°F, channel 4: dew point temperature in 0.01°C, channel 5: dew point temperature in 0.01°F	

Modbus Mapping Table Setting: Modbus Mapping Table Display and Edit.

**Modbus Mapping Table**

Address
Nickname
Scaling
Bitwise

Coil Status(0x)	Input Status(1x)	Holding Registers(4x)	Input Registers(3x)								
			<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 60%;">Address</td><td>0</td></tr> <tr><td>Number</td><td>6</td></tr> <tr><td>Type</td><td>Unsigned Short</td></tr> <tr><td colspan="2" style="text-align: right;"><input type="button" value="Edit"/></td></tr> </table>	Address	0	Number	6	Type	Unsigned Short	<input type="button" value="Edit"/>	
Address	0										
Number	6										
Type	Unsigned Short										
<input type="button" value="Edit"/>											

Take data from "DL-302 User Manual" Address 40001~40006 (Base1) as an example.

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Nickname: To set the variable name and the description, please click the “Nickname” to add the information.

Modbus Mapping Table
Address
Nickname
Scaling
Bitwise

**01 Coil Status(0x)**

1

Table Display

Address	Variable name	Data Type	Description
---------	---------------	-----------	-------------

**02 Input Status(1x)**

Table Display

Address	Variable name	Data Type	Description
---------	---------------	-----------	-------------

**03 Holding Registers(4x)**

Table Display

Address	Variable name	Data Type	Swap	Description
---------	---------------	-----------	------	-------------

**04 Input Registers(3x)**

Table Display

2

Address	Variable name	Data Type	Swap	Description
0	<input style="width: 90%;" type="text" value="CO2"/>	Unsigned Short	<input type="checkbox"/>	<input style="width: 90%;" type="text"/>
1	<input style="width: 90%;" type="text" value="RH"/>	Unsigned Short	<input type="checkbox"/>	<input style="width: 90%;" type="text"/>
2	<input style="width: 90%;" type="text" value="TempC"/>	Unsigned Short	<input type="checkbox"/>	<input style="width: 90%;" type="text"/>
3	<input style="width: 90%;" type="text" value="TempF"/>	Unsigned Short	<input type="checkbox"/>	<input style="width: 90%;" type="text"/>
4	<input style="width: 90%;" type="text" value="Tag4"/>	Unsigned Short	<input type="checkbox"/>	<input style="width: 90%;" type="text"/>
5	<input style="width: 90%;" type="text" value="Tag5"/>	Unsigned Short	<input type="checkbox"/>	<input style="width: 90%;" type="text"/>

3

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### 2.3. Step 3: MySQL /MariaDB Connection Setting

PID Oper

IFTTT Con

**Data Logger**

Local Data Logger

MS SQL

MySQL / MariaDB

#### MySQL / MariaDB List

Remove	Identification Name	Status	Edit
<input type="checkbox"/>	Name1		
<input type="checkbox"/>	MySQL_CO2	Enable	Edit
<input type="checkbox"/>	MySQL_RH	Enable	Edit
<input type="checkbox"/>	MySQL_TempC	Enable	Edit

#### MySQL / MariaDB List

Remove	Identification Name	Status	Edit
<input type="checkbox"/>	Name1		
<input type="checkbox"/>	MySQL_CO2	Enable	Edit
<input type="checkbox"/>	MySQL_RH	Enable	Edit
<input type="checkbox"/>	MySQL_TempC	Enable	Edit
<input type="checkbox"/>	MySQL_TempF	Enable	Edit
<input type="checkbox"/>	MySQL_DewC	Enable	Edit
<input type="checkbox"/>	MySQL_DewF	Enable	Edit

Remove
< 1 / 1 >

Save Success.



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Key in all information that needs to write into Database and set the MySQL content.

**MySQL / MariaDB Connection Settings**

Identification Name:

Database Name:

Table Name:

IP:

Port:

Account:

Password:

Log Mode:

Interval Seconds:

Enable:

Test Connection:

<b>Advanced Setting &gt; Data Logger &gt; MySQL/MariaDB – Content Setting</b>	
Identification Name	User defined name to identify the database.
Database Name	The name of the remote database. If the DB name not exist, it will create one DB.
Table Name	The IP address of the remote database. If the table name not exist, it will create one table.
IP	The Server IP and name of the remote database.
Port	The port to link with database. Default: 3306 (for MySQL), user defined.
Account	The login name of the remote database.
Password	The login password of the remote database.
Interval Seconds	Set up the interval time to save the I/O data to the remote database. Unit: Second.
Enable	Check to enable the data logger to the remote database. Default: check.
Test Connection	Click to test the connection to the remote database. Result: Success or Failure.
OK / Cancel	Click "OK" to save the settings of this page. Click "Cancel" to exit the setting page without saving.

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## 2.4. Step 4: Apply Connection & Enable Recording Module

### Modbus RTU Module List

No.	*Module Name / Nickname	Edit	Database Name	All Enabled
1	Name	Edit	(Groups) <input type="text" value=""/>	<input checked="" type="checkbox"/>

Apply

< 1 / 1 >

Save

### Variable Table

Details

Variable Name	Attribute	Data Type	Database Name	Enabled
<input type="text" value="CO2"/>	Read <input type="text" value=""/>	Unsigned Short	<input type="text" value="CO2 (Remote)"/>	<input checked="" type="checkbox"/>
<input type="text" value="RH"/>	Read <input type="text" value=""/>	Unsigned Short	<input type="text" value="RH (Remote)"/>	<input checked="" type="checkbox"/>
<input type="text" value="TempC"/>	Read <input type="text" value=""/>	Unsigned Short	<input type="text" value="TempC (Remote)"/>	<input checked="" type="checkbox"/>
<input type="text" value="TempF"/>	Read <input type="text" value=""/>	Unsigned Short	<input type="text" value="TempF (Remote)"/>	<input checked="" type="checkbox"/>
<input type="text" value="Tag4"/>	Read <input type="text" value=""/>	Unsigned Short	<input type="text" value="Tag4 (Remote)"/>	<input checked="" type="checkbox"/>
<input type="text" value="Tag5"/>	Read <input type="text" value=""/>	Unsigned Short	<input type="text" value="Tag5 (Remote)"/>	<input checked="" type="checkbox"/>

Choose corresponding Database name

Items to Enable

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### Modbus RTU Module List

No.	*Module Name / Nickname	Edit	Database Name	All Enabled
1	Name	<input type="button" value="Edit"/>	<div style="border: 1px solid red; border-radius: 10px; padding: 2px; display: inline-block;">1 <b>Confirm chosen Database</b></div> <div style="border: 1px solid red; border-radius: 10px; padding: 2px; display: inline-block;">(Groups) <input type="button" value="Apply"/></div> <div style="border: 1px solid red; border-radius: 10px; padding: 2px; display: inline-block; margin-left: 20px;">3 <input checked="" type="checkbox"/></div>	<input type="checkbox"/>
			<div style="border: 1px solid red; border-radius: 10px; padding: 2px; display: inline-block;">2</div> <div style="border: 1px solid red; border-radius: 10px; padding: 2px; display: inline-block; margin-left: 20px;">4 <input type="button" value="Save"/></div>	

## 2.5. Step 5~6: Save/ Run the Project

Click the next step [Save Project], the Step Box will show an animation as below picture that means the project is saving. When the animation vanished, the project saved completely.



After saving, the project needs to execute. Click the next step [Run the Project].

This step can also via the [System Setting > Controller Service Setting > Run Project] to Stop and Run the project.

System Setting
Module Setting
IoT Platform Setting
Convert Setting
Advanced Setting

File Setting

System Setting

Controller Service Setting

Time Setting

Network Setting

Account Setting

Boot

COM Port Interface Setting

### Function Status

Run Project	<div style="border: 1px solid red; border-radius: 10px; padding: 2px; display: inline-block;">Click to run the project</div> <input checked="" type="radio"/> Run <input type="radio"/> Stop <span style="color: blue;">Please wait.</span>
MQTT Broker	<input checked="" type="radio"/> Run <input type="radio"/> Stop
DDNS	<input type="radio"/> Run <input checked="" type="radio"/> Stop

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To check the I/O Status, click the "I/O status" and choose from the left-hand list. Confirm the connection value and status.

System Setting    Module Setting    IoT Platform Setting    Convert Setting    Advanced Setting    Logger Setting    **I/O Status**

File Setting

I/O Status

**Modbus; RTU Module (Master)**

No.	Name	Serial Port
1	<input type="text" value="Name"/>	ttyO2

< 1 / 1 >

**Modbus; TCP Module (Master)**

No.	Name	LAN
1		

< 1 / 0 >

**Modbus; ASCII Module (Master)**

No.	Name	Serial Port
1		

< 1 / 0 >

**Related Settings**

Number of variables:  (Updated 10 points per second)

Display Update Time (ms):

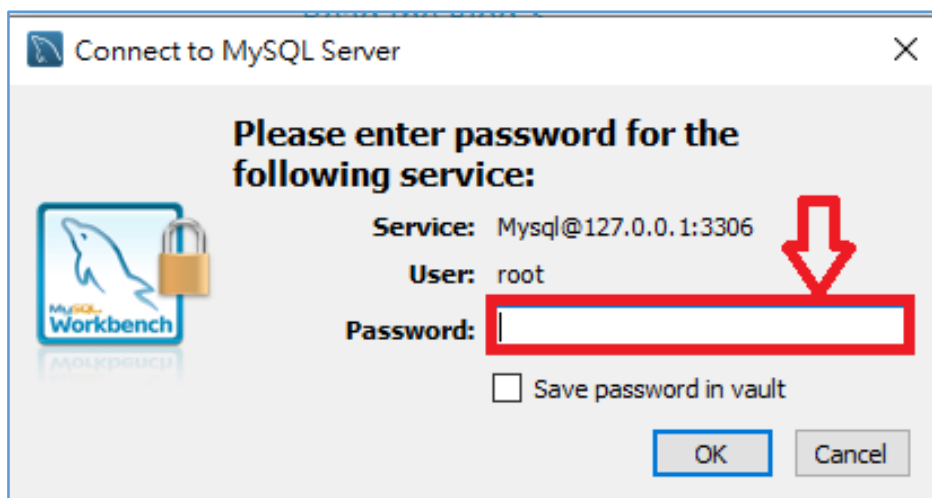
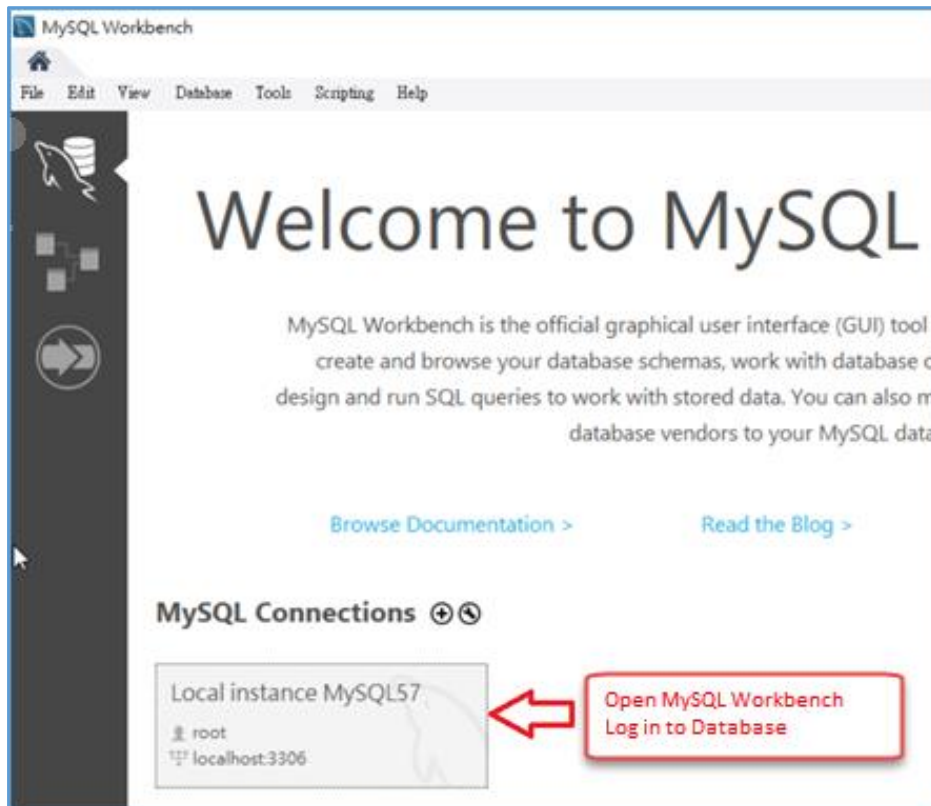
**I/O Status**

Variable Name	Data Type	Value	I/O		Status
			Description	Bitwise	
<input type="text" value="CO2"/>	Unsigned Short	<input type="text" value="741"/>	<input type="text"/>	<input type="text"/>	Good
<input type="text" value="RH"/>	Unsigned Short	<input type="text" value="6479"/>	<input type="text"/>	<input type="text"/>	Good
<input type="text" value="TempC"/>	Unsigned Short	<input type="text" value="2426"/>	<input type="text"/>	<input type="text"/>	Good
<input type="text" value="TempF"/>	Unsigned Short	<input type="text" value="7566"/>	<input type="text"/>	<input type="text"/>	Good
<input type="text" value="DewC"/>	Unsigned Short	<input type="text" value="1720"/>	<input type="text"/>	<input type="text"/>	Good
<input type="text" value="DewF"/>	Unsigned Short	<input type="text" value="6296"/>	<input type="text"/>	<input type="text"/>	Good

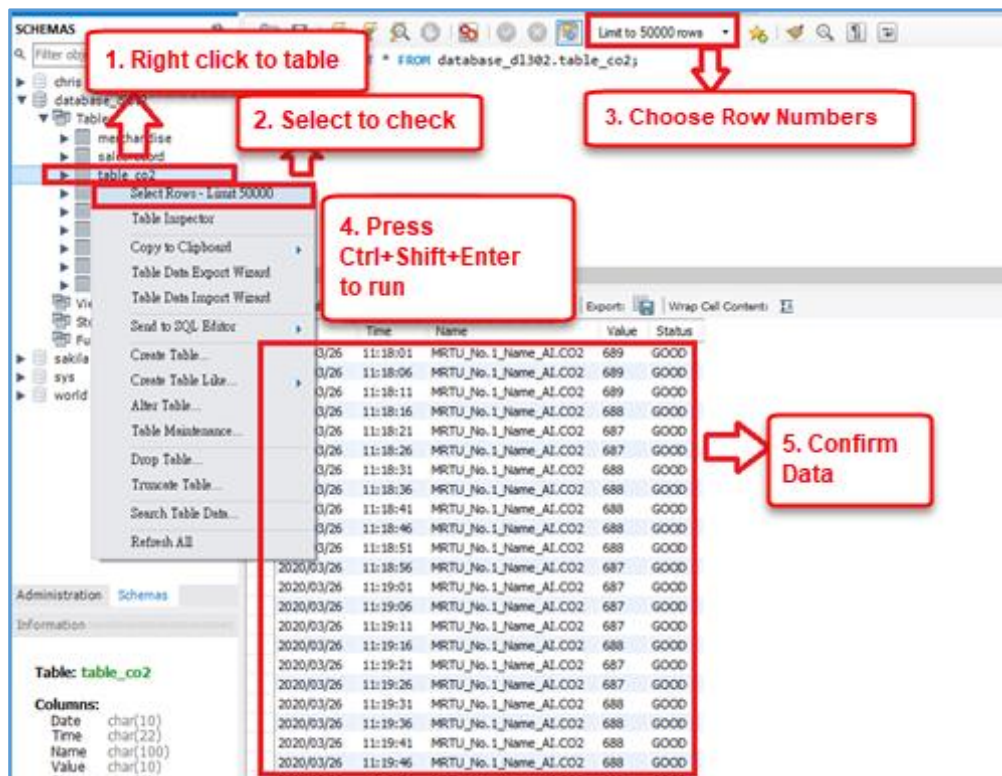
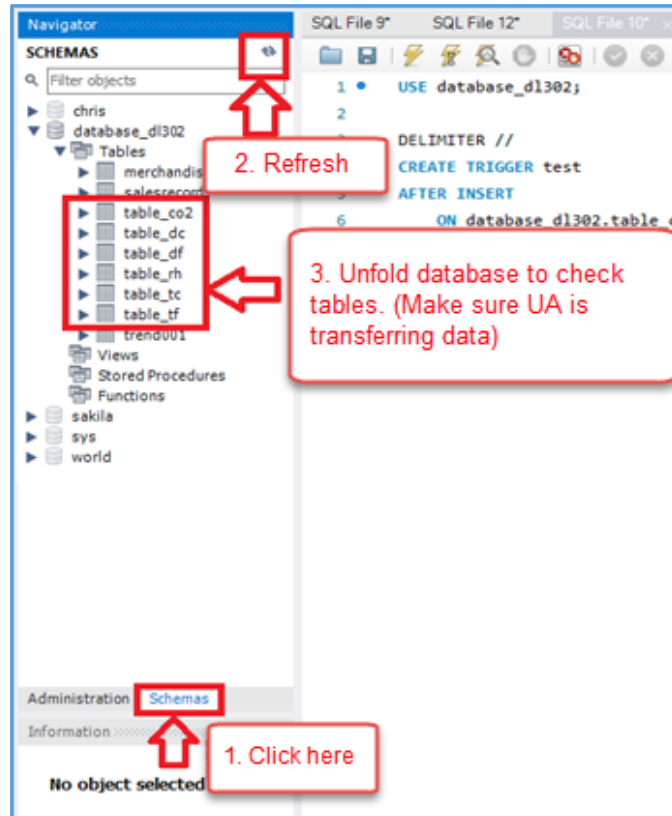
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### 3. After transferring UA data into MySQL, how to combine Date and Time column in the MySQL Server?

1. Open MySQL Workbench and log in to Database.

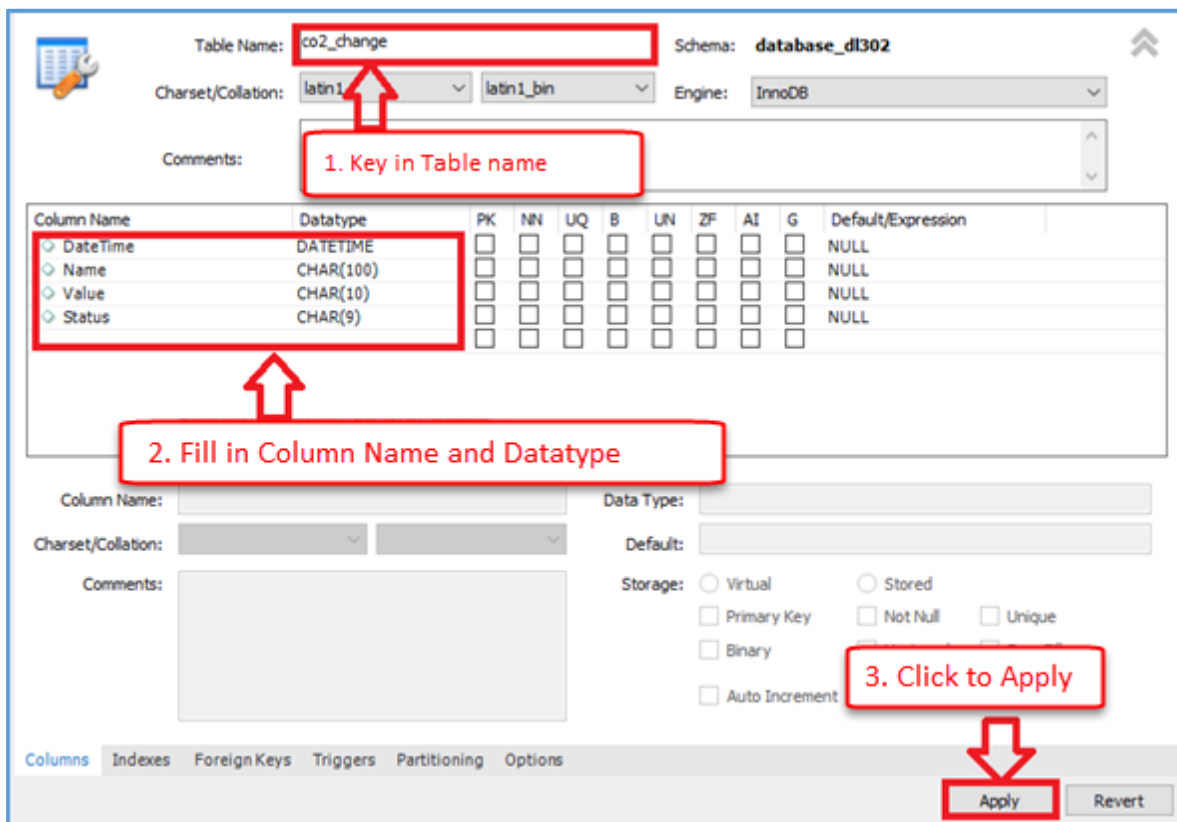
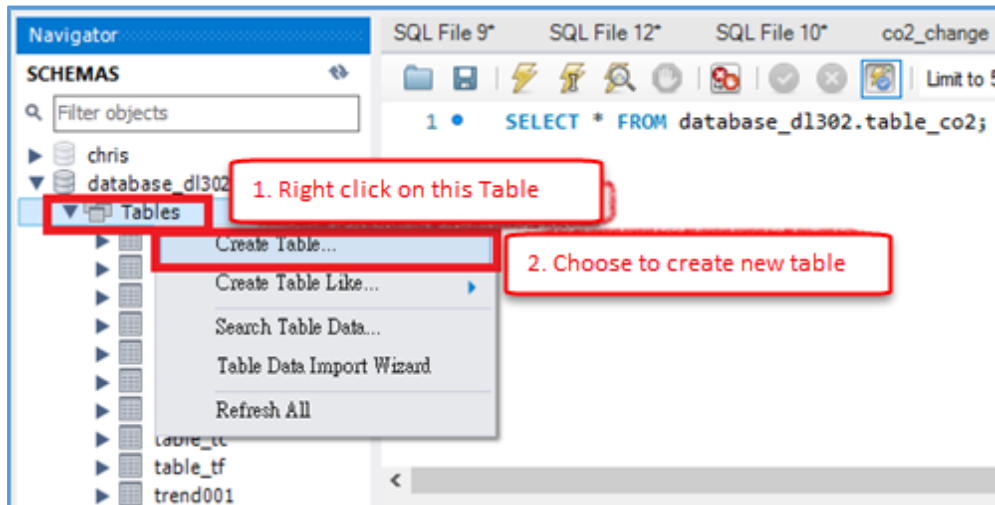


2. After log into Database, confirm if data from DL-302 is successfully show in the Schemas.



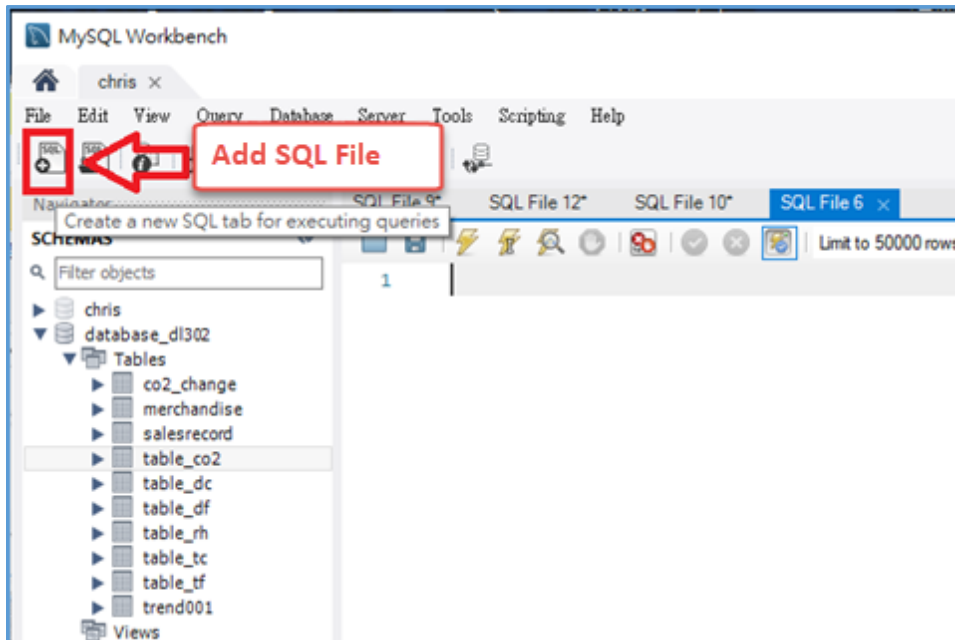
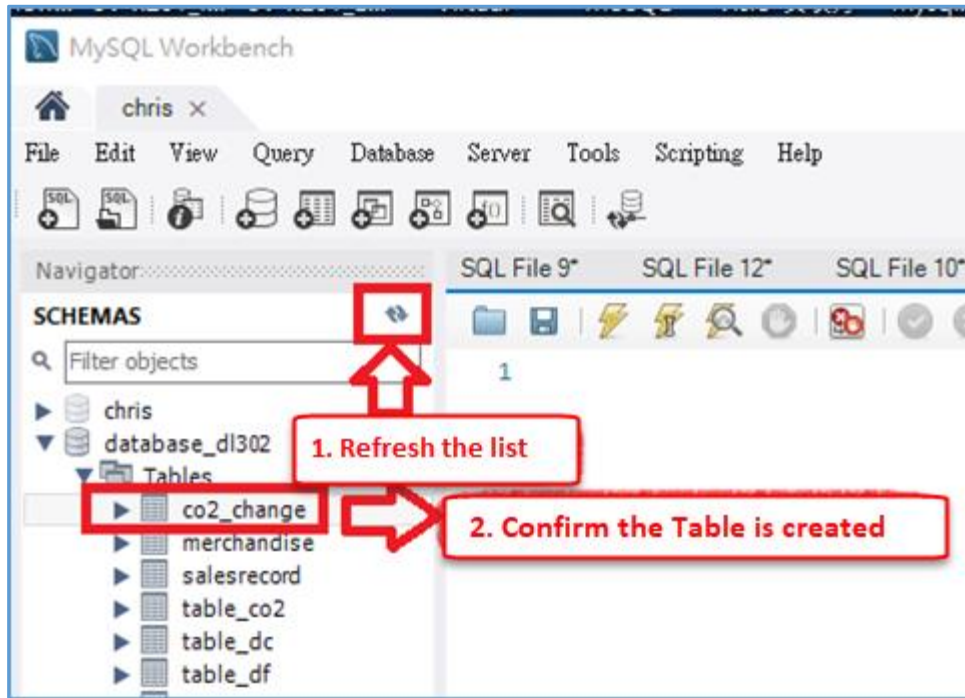
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3. Right click to database table that UA transfer data; choose "Create Table" to add a new table. Later we will combine the column in this new Table.





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4. Copy & Paste following code into SQL File. Press Ctrl+Shift+Enter to run this code.

```
USE database_dl302;

DELIMITER //
CREATE TRIGGER test
AFTER INSERT
    ON database_dl302.table_co2
    FOR EACH ROW
    BEGIN
        INSERT INTO database_dl302.co2_change (DateTime , Name ,Value ,Status)
        VALUES (concat(new.Date,' ',new.Time) ,new.Name ,new.Value ,new.Status);
    END //
```

Descriptions (Adjustable regarding to different cases)

USE database\_dl302; => Name of Database

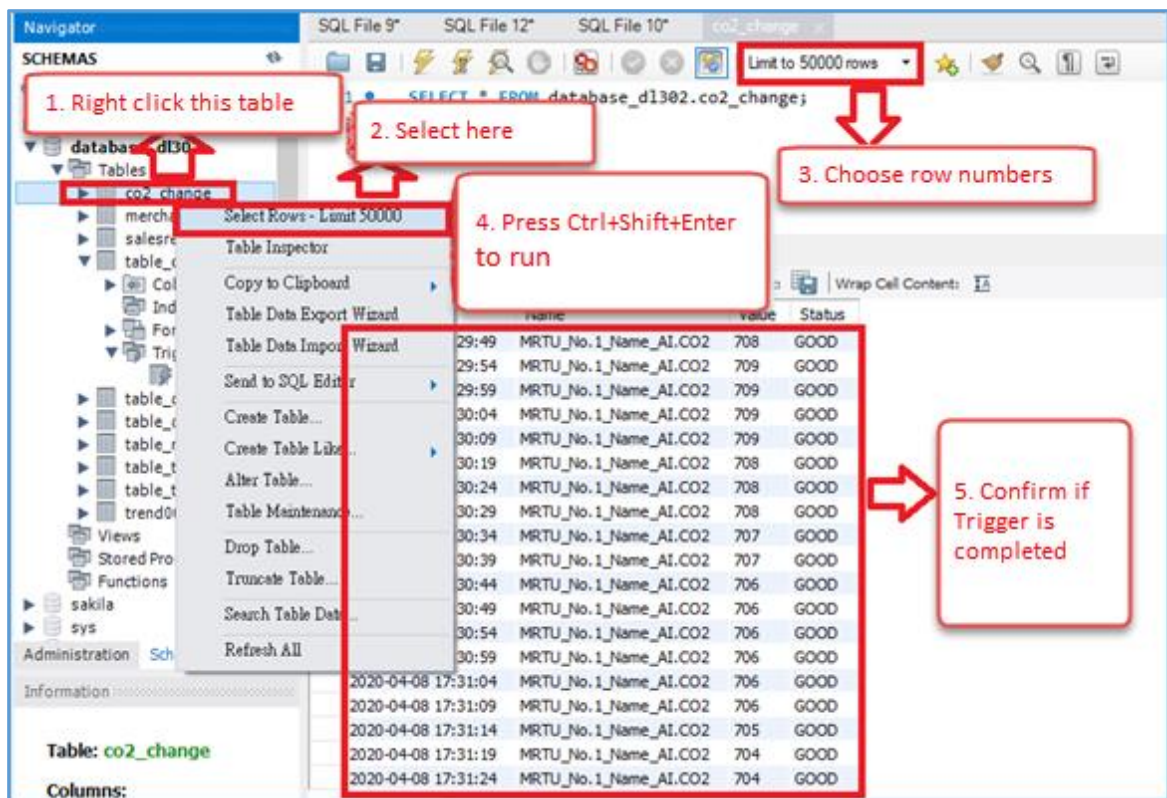
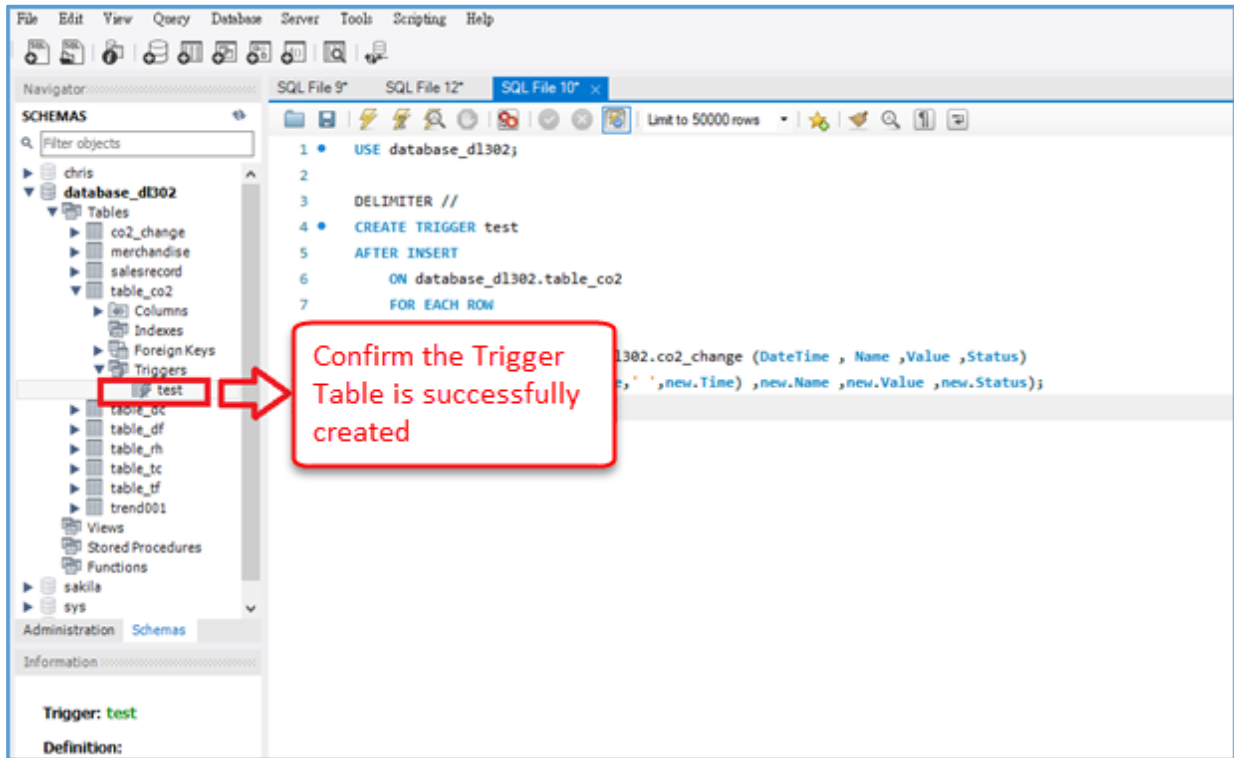
CREATE TRIGGER test => Trigger name created

ON database\_dl302.table\_co2 => Table of trigger

INSERT INTO database\_dl302.co2\_change (DateTime , Name ,Value ,Status) => datatable and column written into

VALUES (concat(new.Date,' ',new.Time) ,new.Name ,new.Value ,new.Status); While triggered, temporary table transfer data in

5. Unfold Table to confirm the TRIGGER successfully created.



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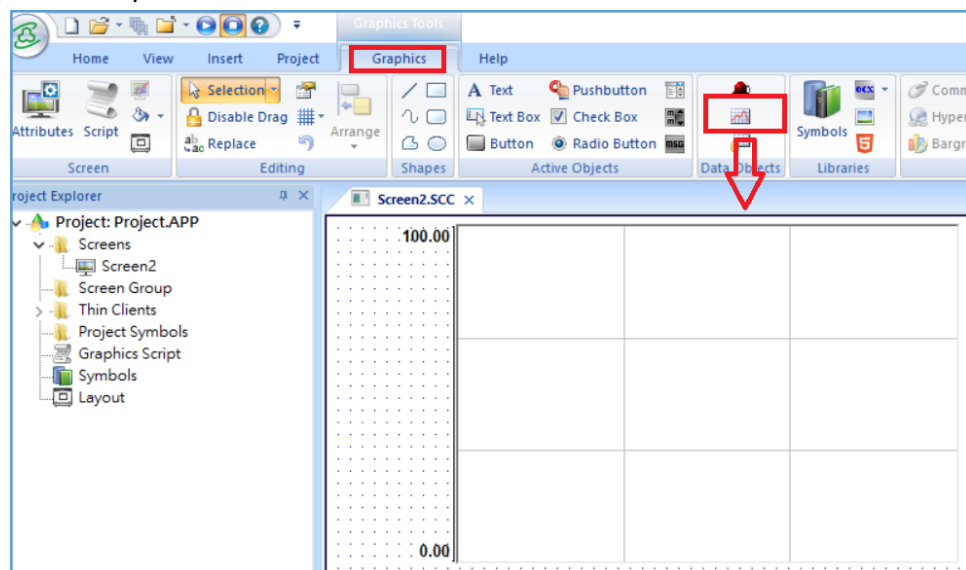
#### 4. How InduSoft read data in SQL?

Before setting InduSoft to read SQL in this section, please make sure that the remote MySQL database access function of InduSoft (IWS) has configured. If it has not configured, please complete it first. You can refer to the appendix in the end of this FAQ to configure.

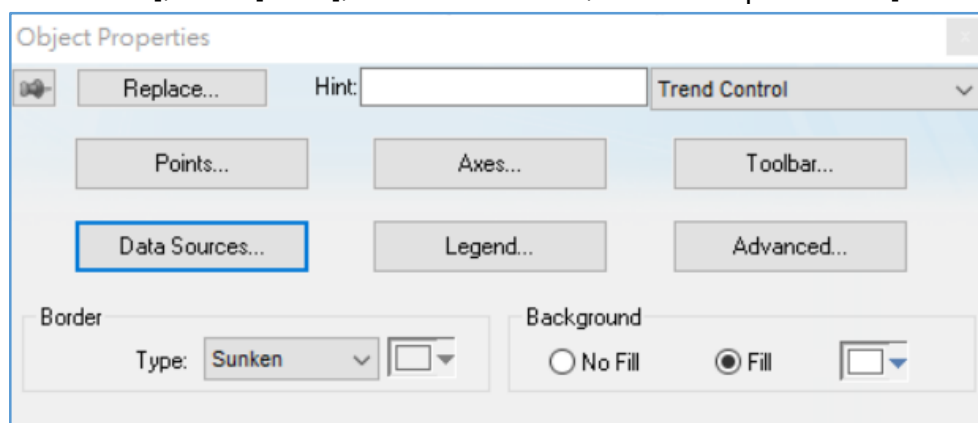
##### [4.1 Appendix: How IWS access remote MySQL database through ODBC](#)

#### Steps InduSoft to read SQL:

1. After completing the ODBC settings, enter InduSoft and click on the image of the trend graph in Graphics

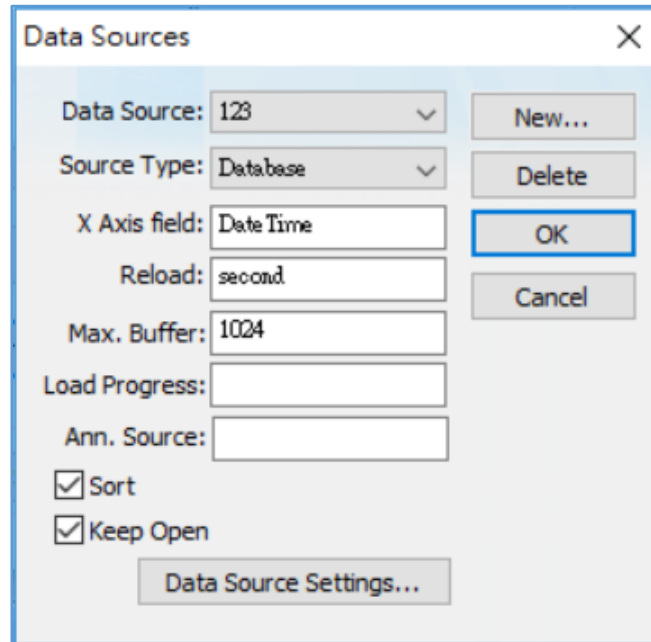


2. Double-click the trend chart to open the object properties window
3. Press [Data Sources], click [New], enter the name, and then press the [Create] button

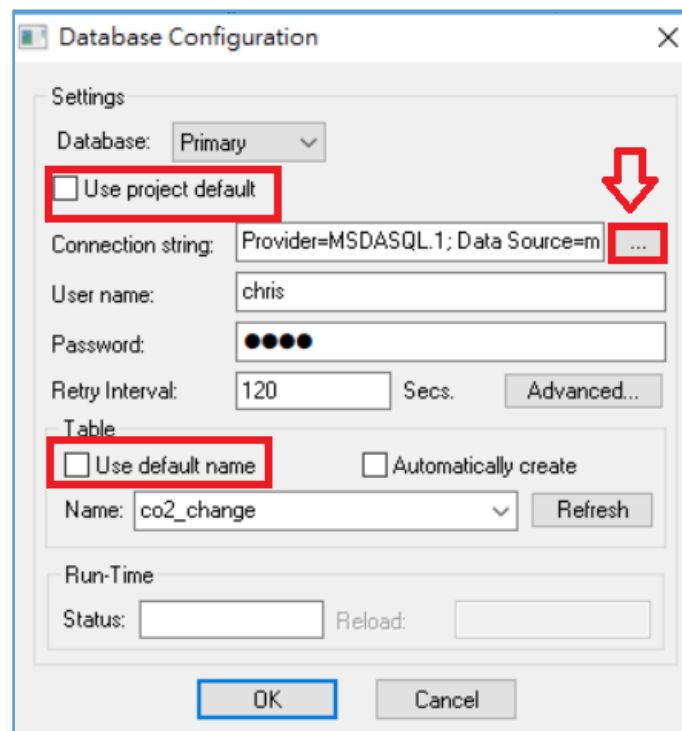


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4. Fill the name of the time record in SQL into the blank of X Axis field

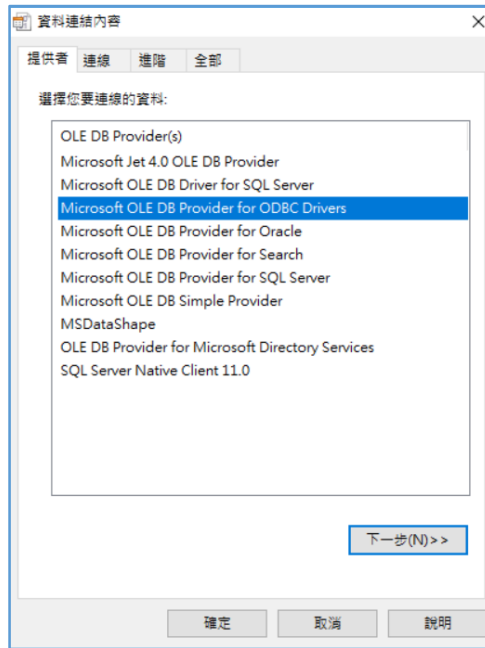


5. Click [Data Source Settings], cancel the checkbox of [Use project default] and [Use default name], and click the [...] button

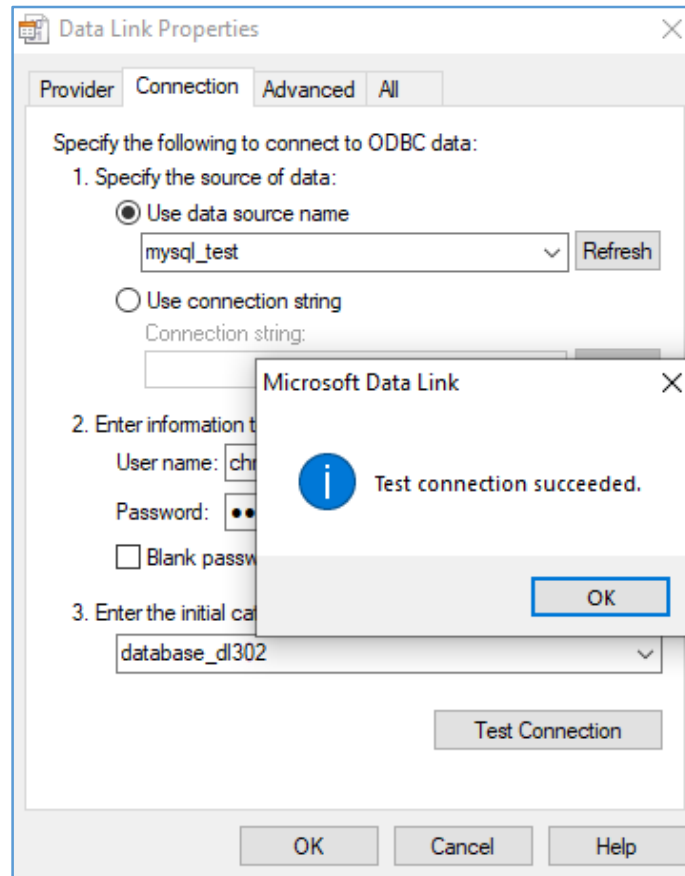


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6. After clicking [Microsoft OLE DB Provider for ODBC Drivers], click Next

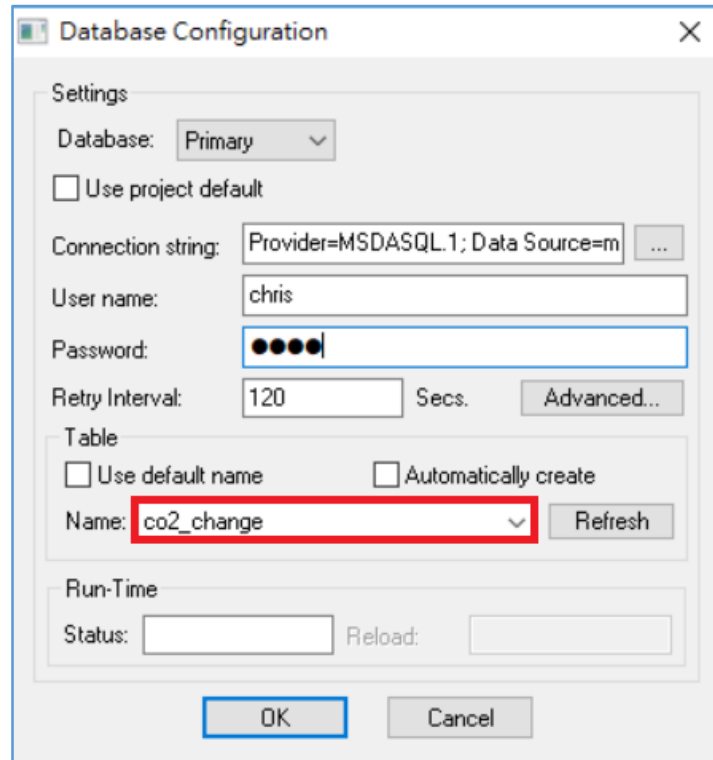


7. Fill in the content of [Connect], after the test connection is successful, click [OK]

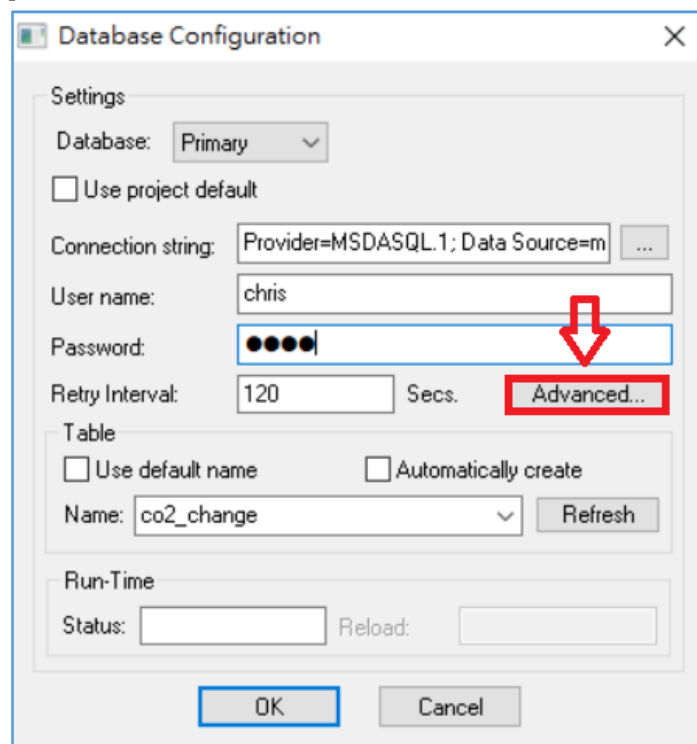


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8. After selecting the data table to be read, press [OK]



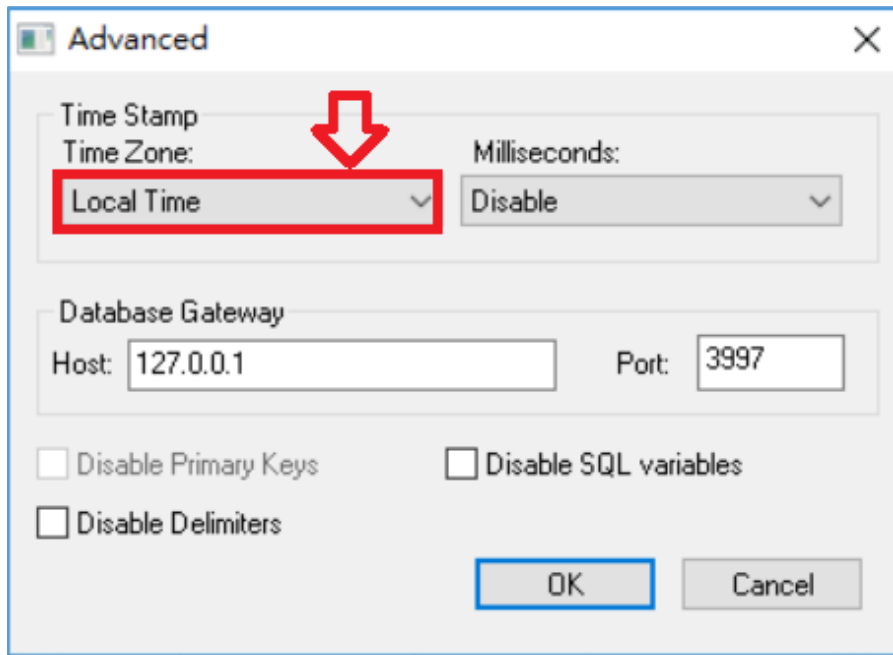
9. Click [Advanced]



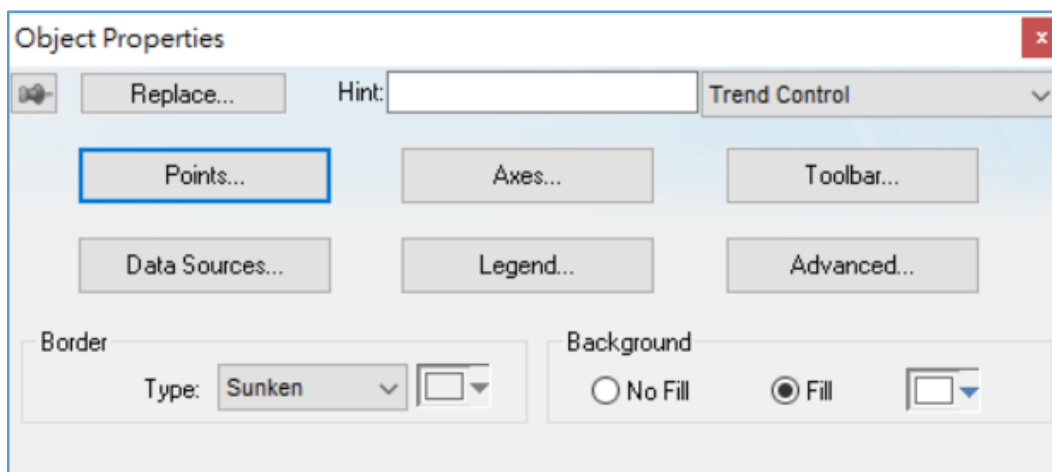


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10. Select [Time Zone] option as [Local Time] (choose according to personal situation)

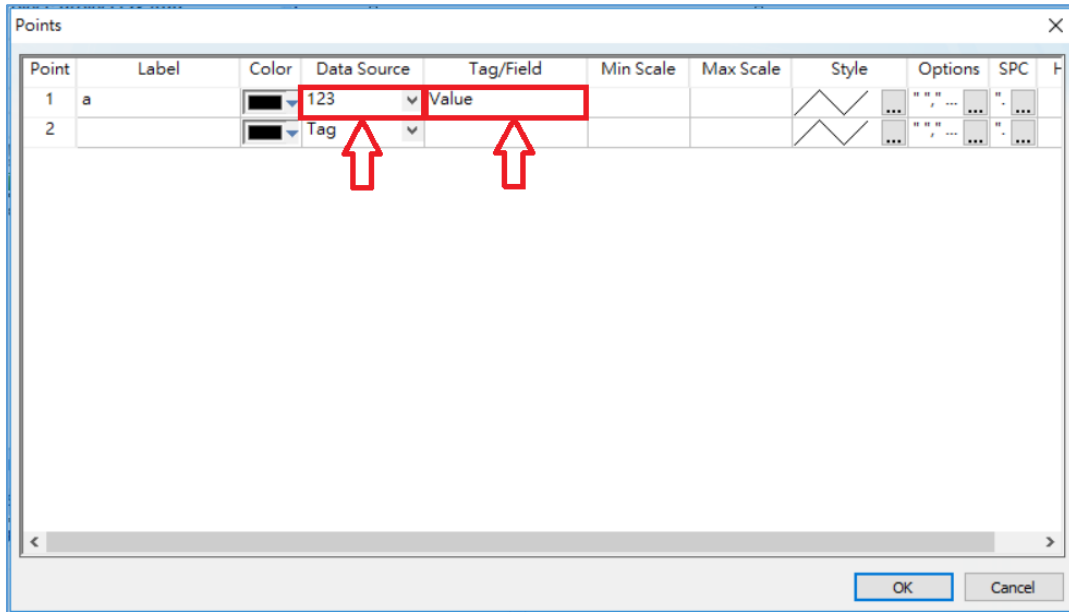


11. Double-click the trend chart to open the object properties window and click [Points]

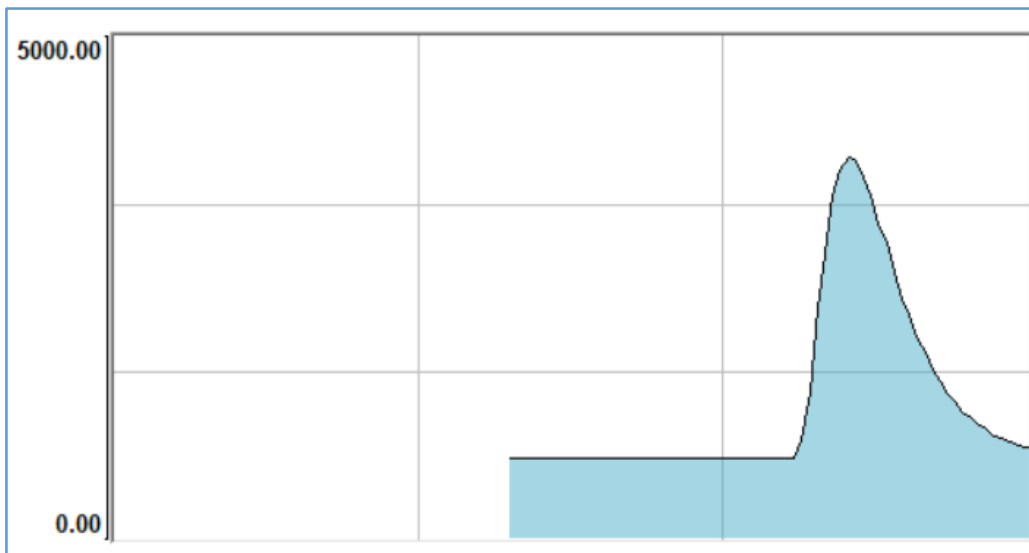


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12. After selecting and filling in the Data Source and Tag/Field to be used, click [OK]



13. Finished!



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#### 4.1. Appendix: How IWS access remote MySQL database through ODBC

##### Step 1 : Installation Environment (This example uses following PC Environment)

- (1) Server: Install MySQL Workbench
- (2) Client: Install ODBC for MySQL

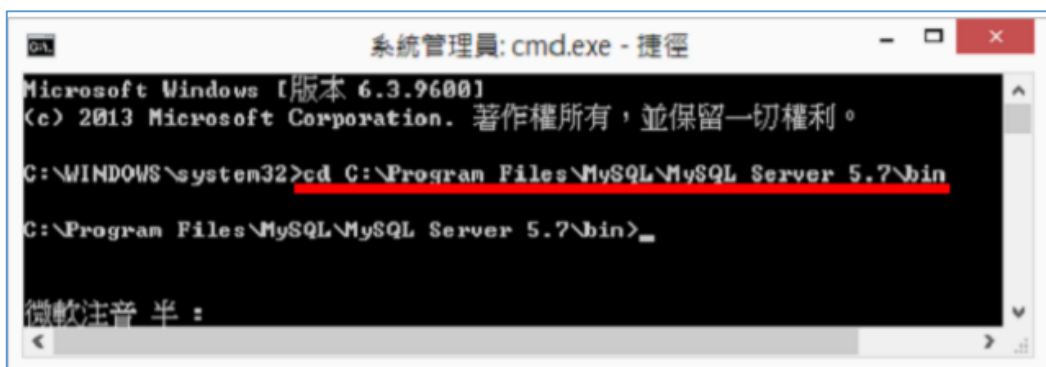
	Server Side	Client Side
OS Version	Windows 8.1 Professional	Windows 7 Professional
MySQL Workbench Version	v6.3.9 ( MySQL Installer 5.7.18, x86 32bit ) <a href="https://dev.mysql.com/downloads/file/?id=470091">https://dev.mysql.com/downloads/file/?id=470091</a>	N/A
InduSoft Version	N/A	v8.0.2.0
ODBC for MySQL	N/A	V5.3.8 (win32) <a href="https://dev.mysql.com/downloads/file/?id=470365">https://dev.mysql.com/downloads/file/?id=470365</a>

##### Step 2 : Open MySQL Server Remote connection Permission (Server Side)

- (1) Execute as Administrator: C:\Windows\system32\cmd.exe
- (2) Switch the document to where "MySQL.exe" located

```
>cd C:\Program Files\MySQL\MySQL Server version\bin
```

Note: version is the installed version. This example is 5.7

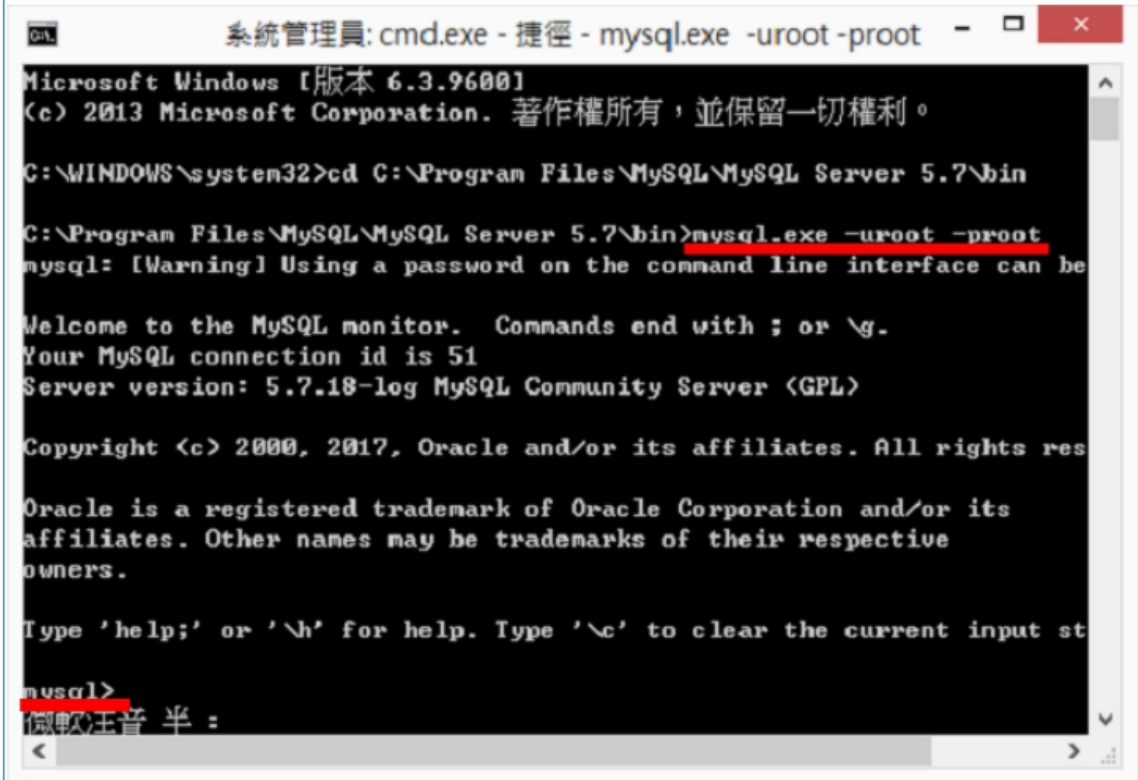


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### (3) Login MySQL server (The account / password is set during installation)

```
>mysql -uroot -proot
```

Remarks: -u **account** -p **password** (-u -p followed by account password directly without spaces). After successful login, you will see mysql>



```
系統管理員: cmd.exe - 捷徑 - mysql.exe -uroot -proot
Microsoft Windows [版本 6.3.9600]
(c) 2013 Microsoft Corporation. 著作權所有，並保留一切權利。
C:\WINDOWS\system32>cd C:\Program Files\MySQL\MySQL Server 5.7\bin
C:\Program Files\MySQL\MySQL Server 5.7\bin>mysql.exe -uroot -proot
mysql: [Warning] Using a password on the command line interface can be
insecure.
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 51
Server version: 5.7.18-log MySQL Community Server <GPL>

Copyright (c) 2000, 2017, Oracle and/or its affiliates. All rights reserved.

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

### (4) Enter the command to set permissions

```
> GRANT ALL PRIVILEGES ON *.* TO USERNAME@IP IDENTIFIED BY PASSWORD;
```

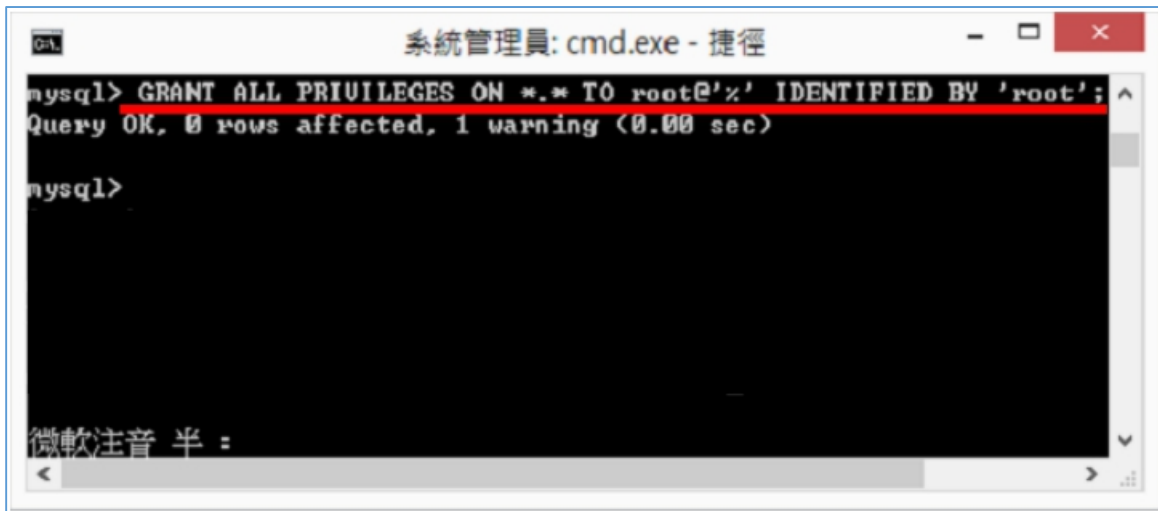
Remarks: USERNAME is generally the default **root**; if the IP set to '**%**', all computers can connect; PASSWORD is the connection password

#### Example:

```
mysql>GRANT ALL PRIVILEGES ON *.* TO root@172.17.20.176 IDENTIFIED BY root;
Allow 172.17.20.176 to log in using account root and password root
```

```
mysql>GRANT ALL PRIVILEGES ON *.* TO root@'%' IDENTIFIED BY root;
Allow all computers to log in with account root and password root
```

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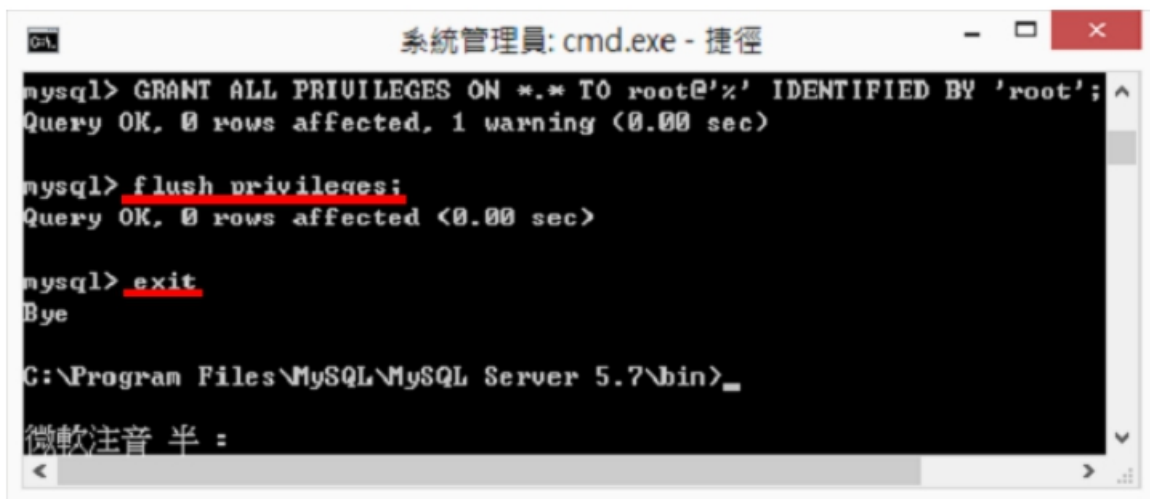


```
系統管理員: cmd.exe - 捷徑
mysql> GRANT ALL PRIVILEGES ON *.* TO root@'%' IDENTIFIED BY 'root';
Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql>
```

(5) Update permission settings and leave MySQL

```
mysql> FLUSH PRIVILEGES;
mysql> quit;
```



```
系統管理員: cmd.exe - 捷徑
mysql> GRANT ALL PRIVILEGES ON *.* TO root@'%' IDENTIFIED BY 'root';
Query OK, 0 rows affected, 1 warning (0.00 sec)

mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)

mysql> exit
Bye

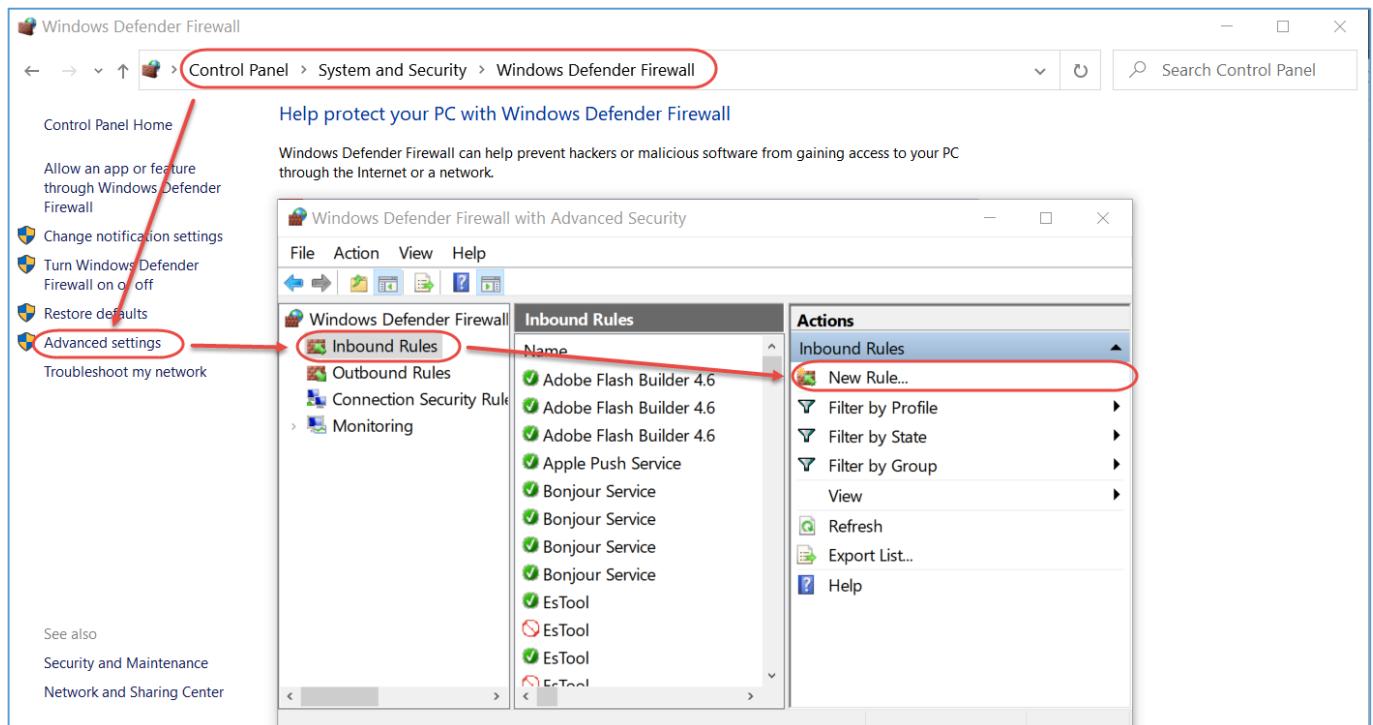
C:\Program Files\MySQL\MySQL Server 5.7\bin>
```

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### Step 3 : Add " Inbound Rules " in the Windows Defender Firewall (Server)

Allow MySQL pass through the firewall Port 3306, so that the remote device can access the MySQL services

(1) Open " Control Panel " → Windows Defender Firewall → Advanced Settings → Inbound Rules → New Rule



(2) Refer to following settings (Captures)

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New Inbound Rule Wizard

### Rule Type

Select the type of firewall rule to create.

**Steps:**

- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

What type of rule would you like to create?

Program  
Rule that controls connections for a program.

Port  
Rule that controls connections for a TCP or UDP port.

Predefined:  
@FirewallAPI.dll,-80200  
Rule that controls connections for a Windows experience.

Custom  
Custom rule.

< Back   **Next >**   Cancel

New Inbound Rule Wizard

### Protocol and Ports

Specify the protocols and ports to which this rule applies.

**Steps:**

- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

Does this rule apply to TCP or UDP?

TCP

UDP

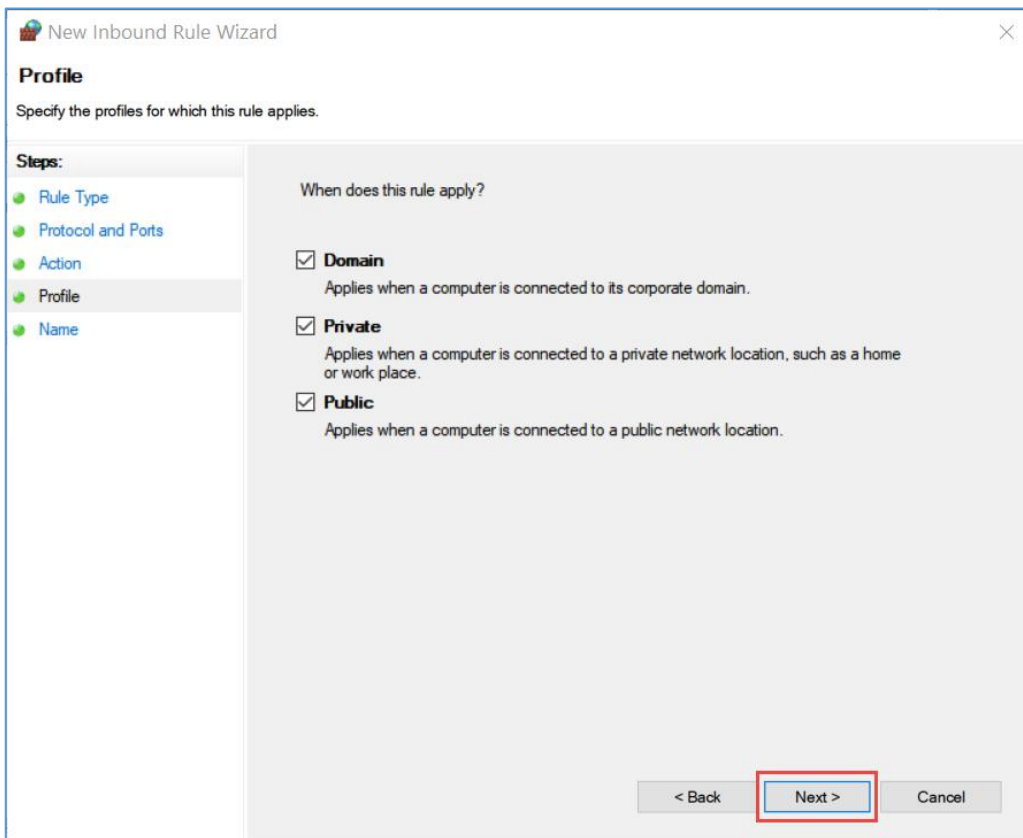
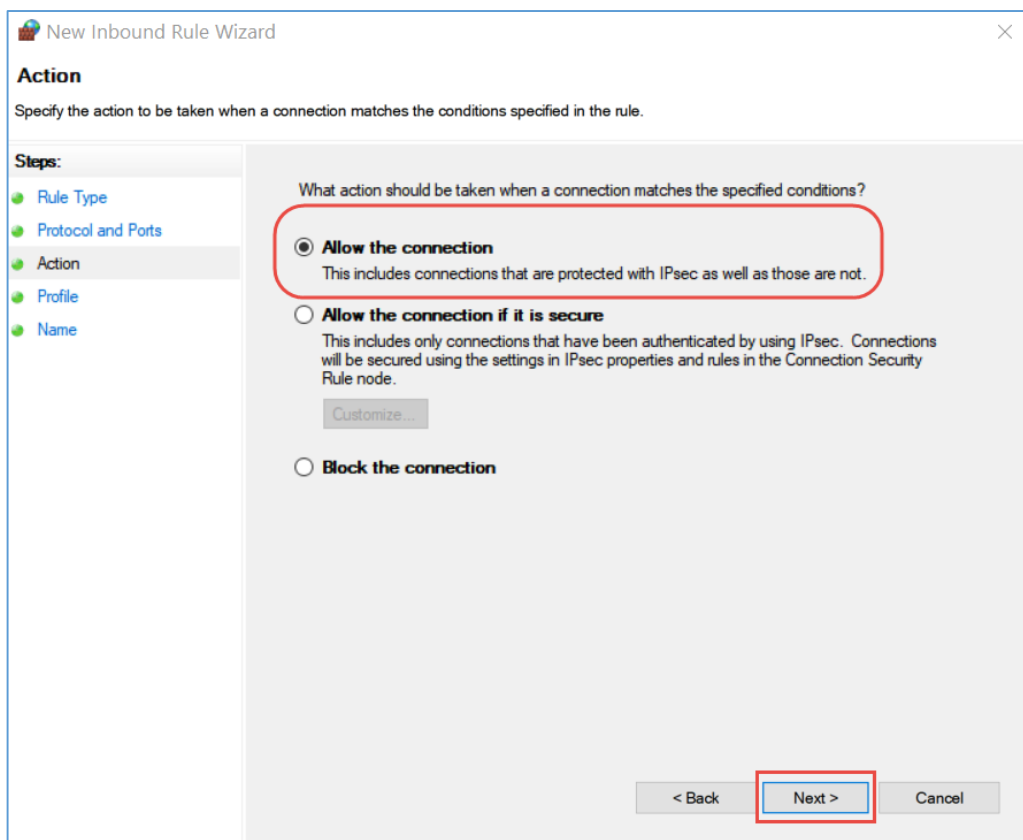
Does this rule apply to all local ports or specific local ports?

All local ports

Specific local ports: 3306  
Example: 80, 443, 5000-5010

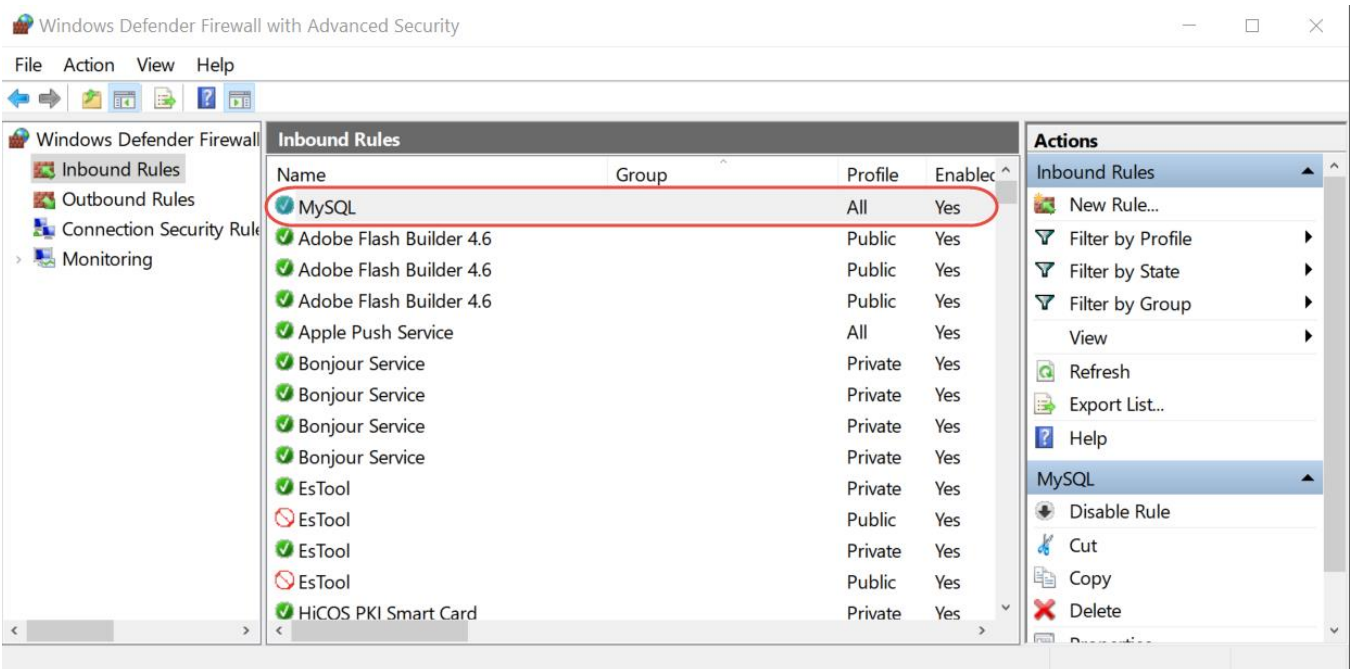
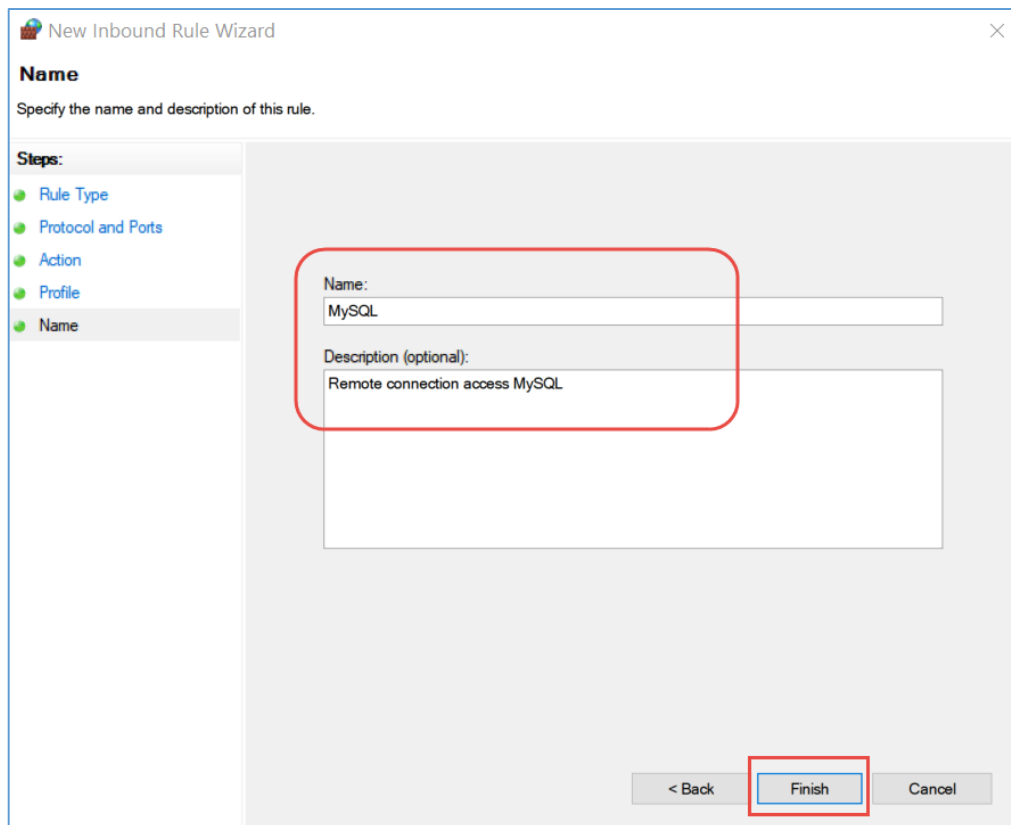
< Back   **Next >**   Cancel

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#### Step 4 : Set up ODBC Connections (Client)

(1) Execute as Administrator: C:\Windows\SysWOW64\odbcad32.exe → Add



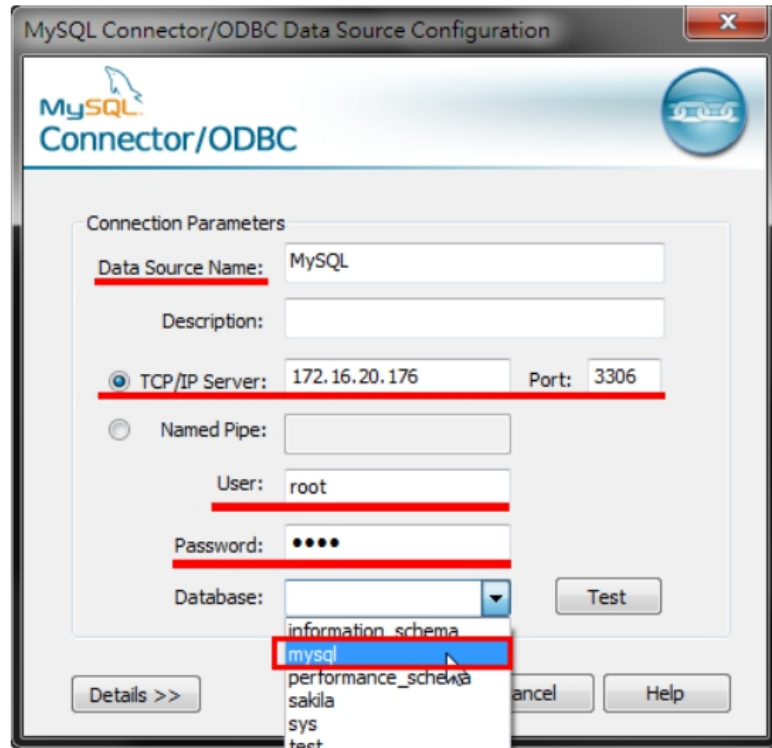
Select File resource:



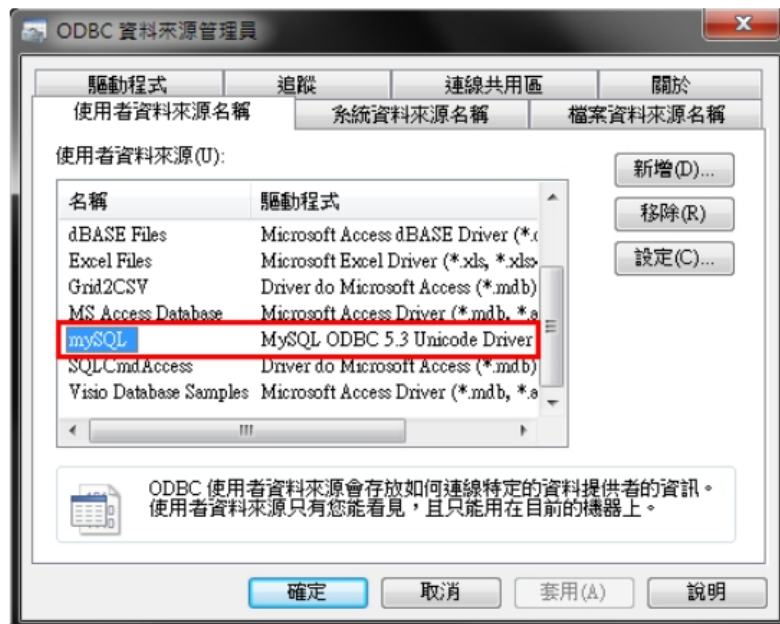
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(2) Set the connection name (used by IWS) / server IP, Port / login account password / database. Press OK to close when finished

Note: The database (Schema) have to create in advance and can add using the MySQL Workbench management tool.



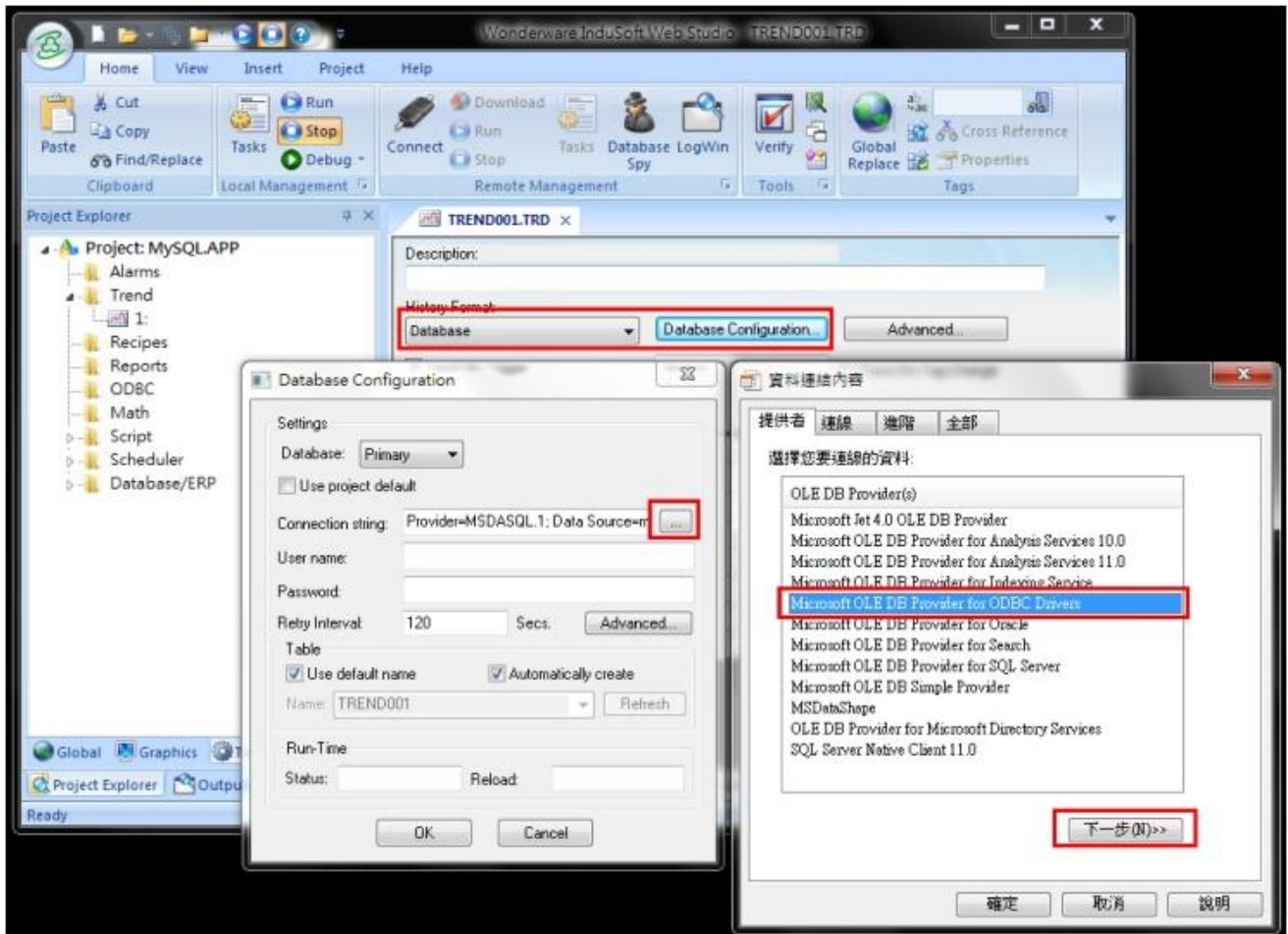
(3) Make sure the ODBC connection established successfully



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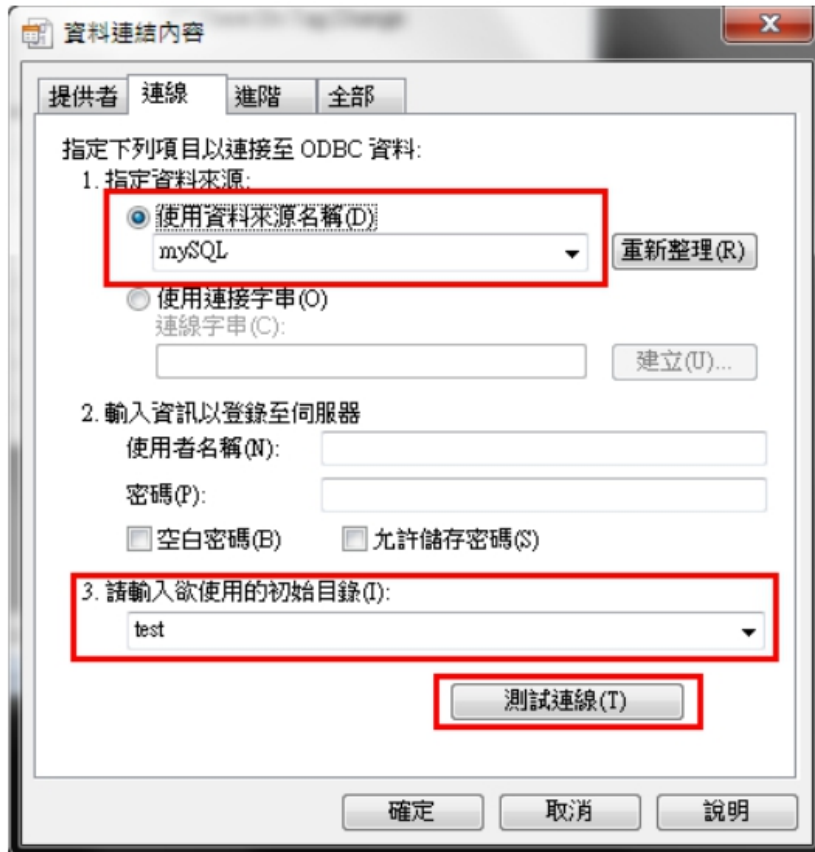
### Step 5 : Set up InduSoft database connection (Client)

(1) Take the trend chart form as an example. Under "Provide" Tag, chooses Microsoft OLE DB Provider for ODBC Drivers



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(2) Set the data source name (mySQL) → the database to be used (test) →test connection



(3) Successfully connected means to complete the setting.