

WEINTEK LABS., INC.

# SQL Query

## Basic and Advanced Mode

Demo Project

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## 1. Overview and Operation

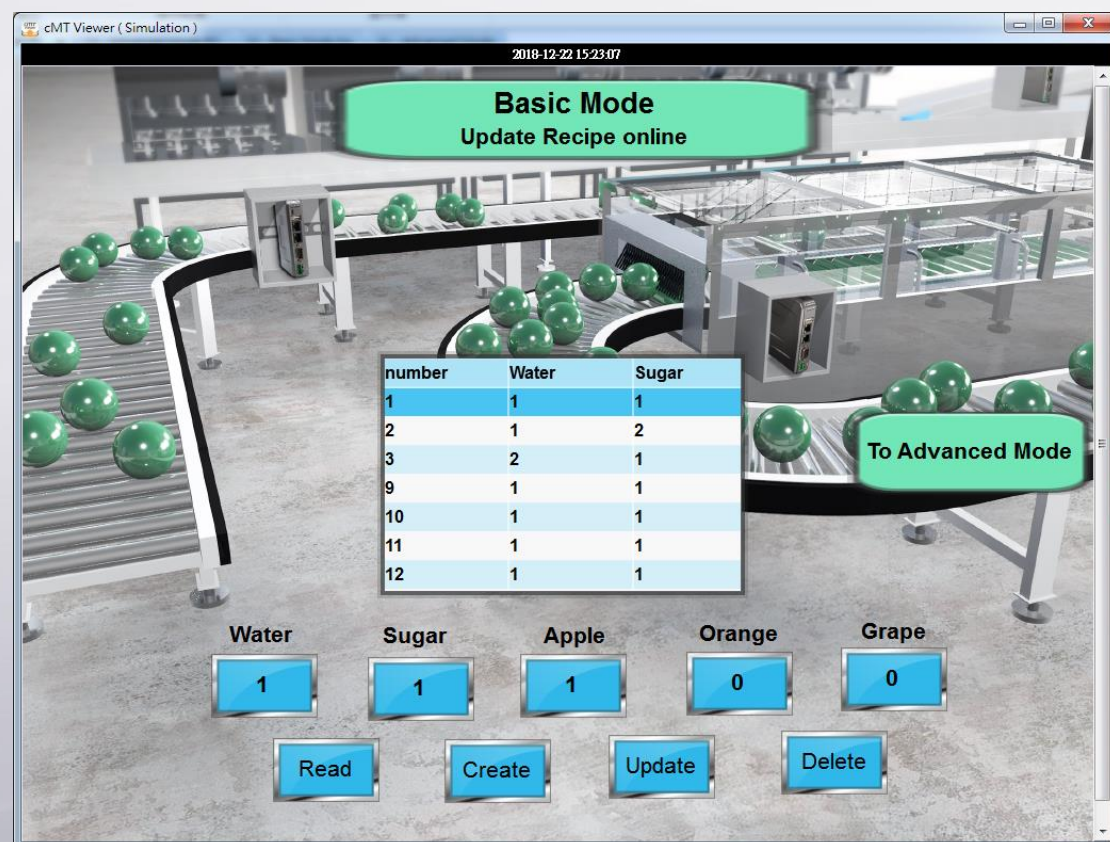
### Overview

The following demo will introduce how to use the Basic Mode and Advanced Mode of SQL Query to read and modify the data in MySQL database. In Advanced mode, the data in the database can be read and operated with SQL language.

### Operation

#### Basic Mode

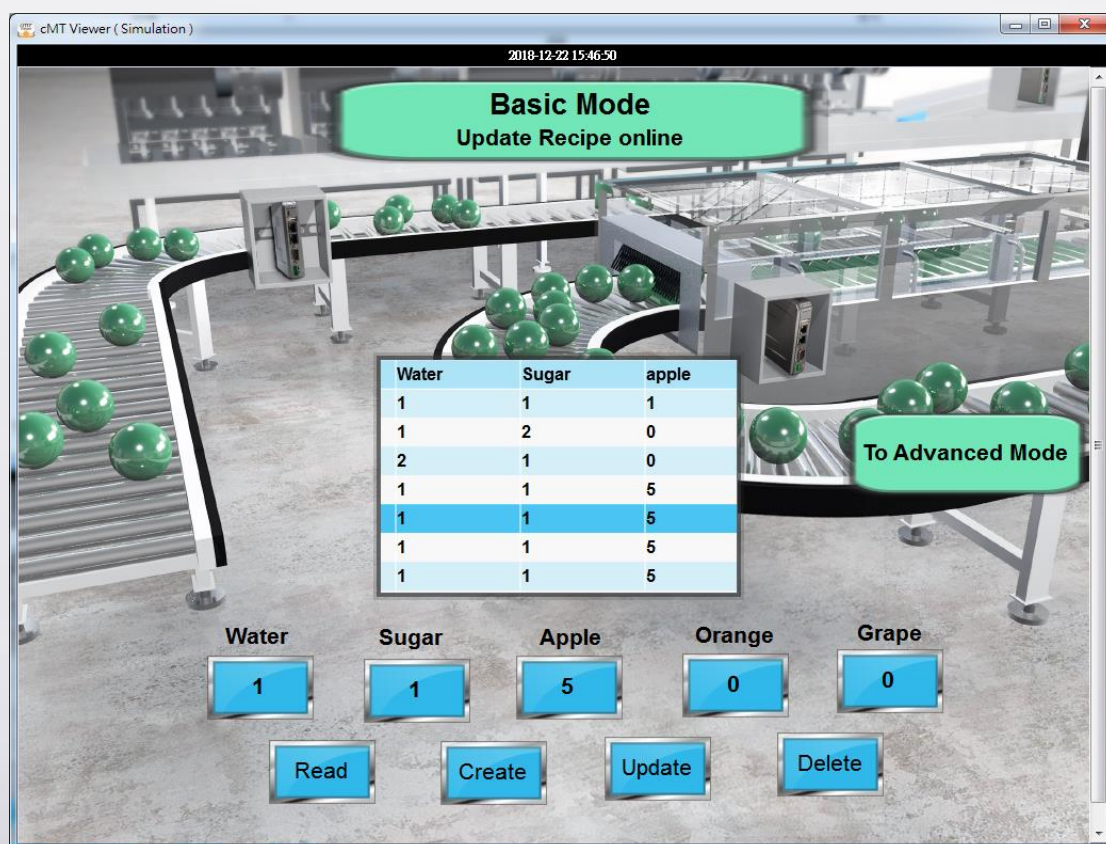
1. Execute Online Simulation.
2. In Basic Mode window, press Read to read the data in the database.



3. Input the value in the Numeric objects of Water/Sugar/Apple/Orange/

Grape. Press Update to add new data in the database. Press Read again to update the data shown in SQL Result Query Viewer.

4. Choose a row in SQL Result Query Viewer, the data will be shown in the Numeric objects of Water/Sugar/Apple/Orange/Grape. Change the data in each object and press Update. Press Update to alter the data in the database. Press Read again to update the data shown in SQL Result Query Viewer.

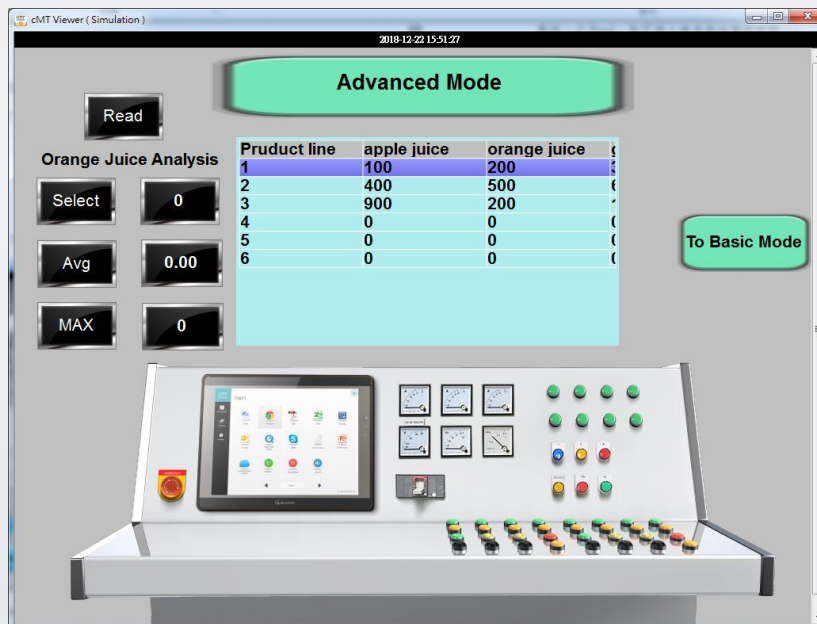


5. Choose a row in SQL Query Result Viewer and press Delete, the row in the database will be deleted. Press Read again to update the data shown in SQL Query Result Viewer.

## Advanced Mode

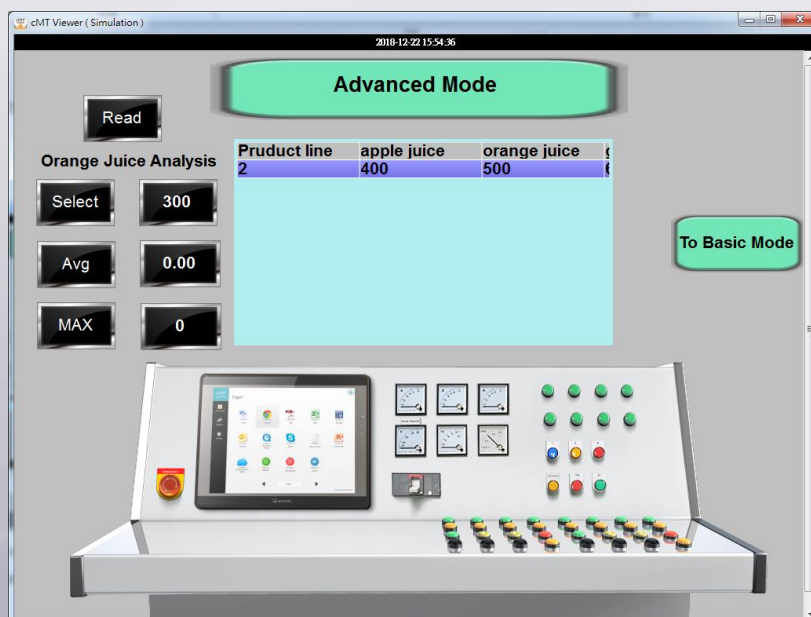
1. Execute Online Simulation.
2. Press the To Advanced Mode button to switch to advanced mode window.

Press Read to read the data in the database.



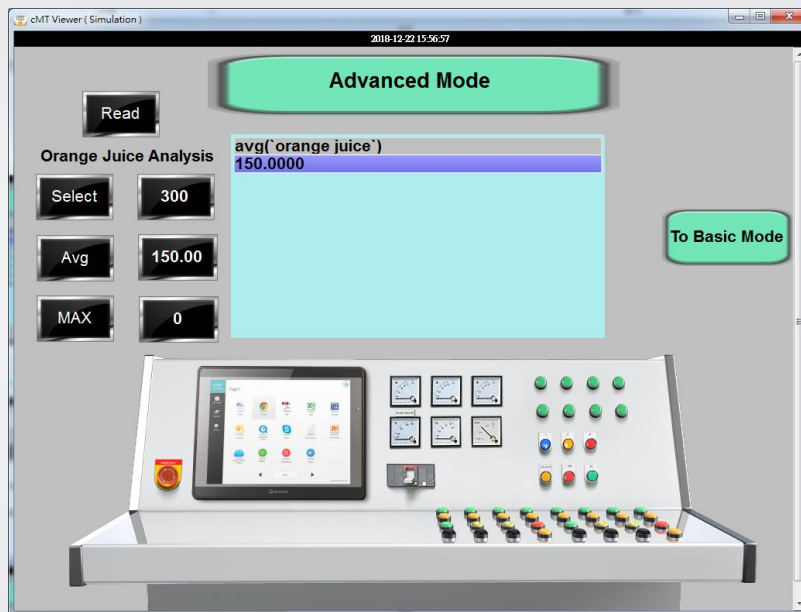
3. Pressing Select button can filter the data by the column "Orange Juice".

Input 300 in the Numeric object next to Select button and then press Select. SQL Query Viewer will show the data which Orange Juice is greater than 300.

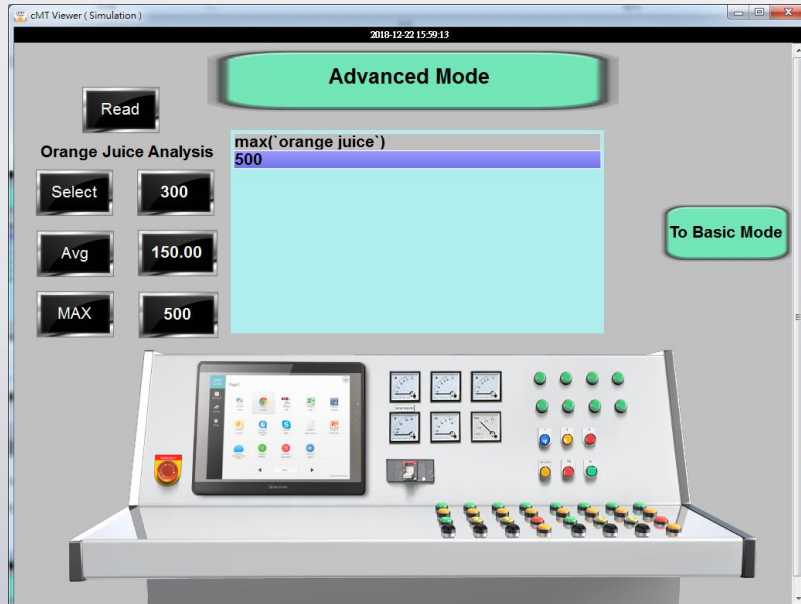




4. Pressing Avg button can calculate the average value of “Orange Juice” column. Press Avg button to show the result.



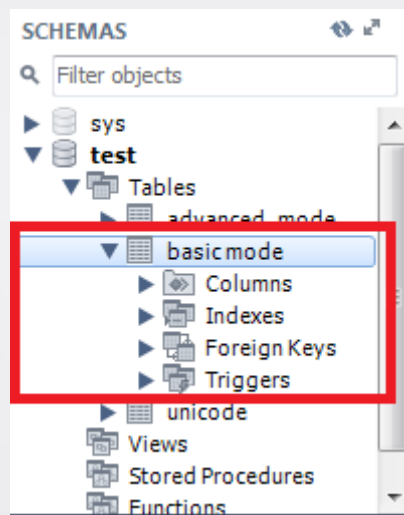
5. Pressing MAX button can find the maximum value in “Orange Juice” column. Press Max button to show the result.




## 2. Setting up the Screen

### Basic Mode

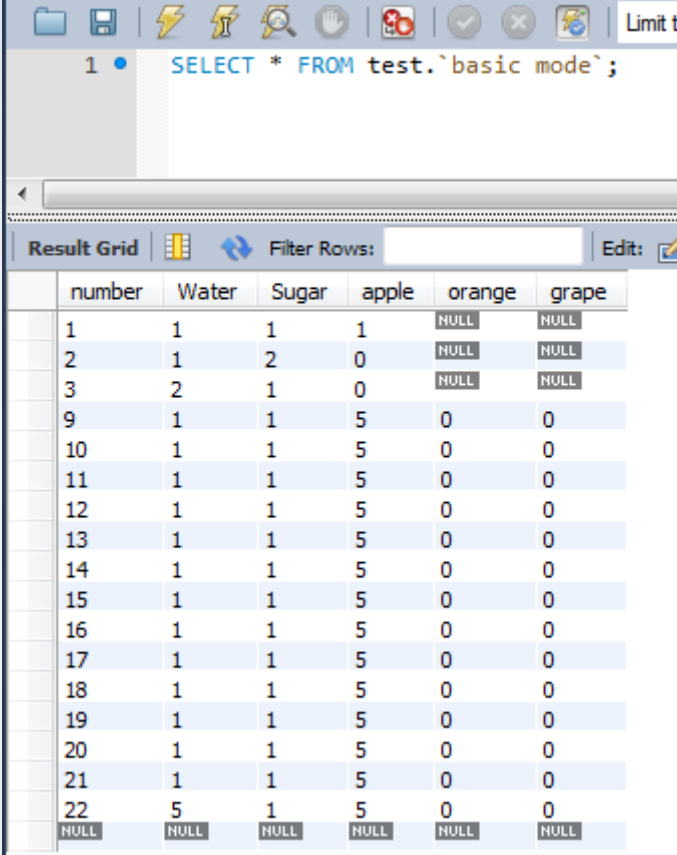
**Step 1.** Create a table named “basic mode” in MySQL database.



**Step 2.** Create each column in the table. When using basic mode, AI option must be selected.

	Table Name:	basic mode									
	Collation:	utf8 - default collation									
	Comments:										
Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression	
number	INT(11)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Water	INT(11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL	
Sugar	INT(11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL	
apple	INT(11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL	
orange	INT(11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL	
grape	INT(11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL	

**Step 3.** Enter the data in each column.

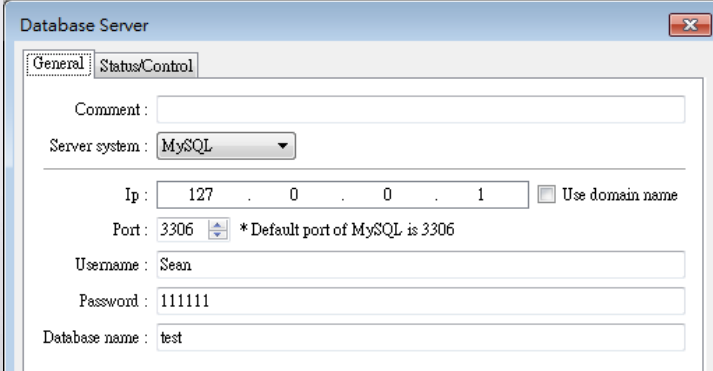


1 • `SELECT * FROM test.`basic mode`;`

Result Grid Filter Rows: Edit:

	number	Water	Sugar	apple	orange	grape
1	1	1	1	1	NULL	NULL
2	1	1	2	0	NULL	NULL
3	2	1	0	0	NULL	NULL
9	1	1	5	0	0	0
10	1	1	5	0	0	0
11	1	1	5	0	0	0
12	1	1	5	0	0	0
13	1	1	5	0	0	0
14	1	1	5	0	0	0
15	1	1	5	0	0	0
16	1	1	5	0	0	0
17	1	1	5	0	0	0
18	1	1	5	0	0	0
19	1	1	5	0	0	0
20	1	1	5	0	0	0
21	1	1	5	0	0	0
22	5	1	5	0	0	0
NULL	NULL	NULL	NULL	NULL	NULL	NULL

**Step 4.** In EasyBuilder Pro, choose [Database Server] in the Data/History tab and set up each setting.



Database Server

General Status/Control

Comment :

Server system : MySQL

Ip : 127 . 0 . 0 . 1 ☐ Use domain name

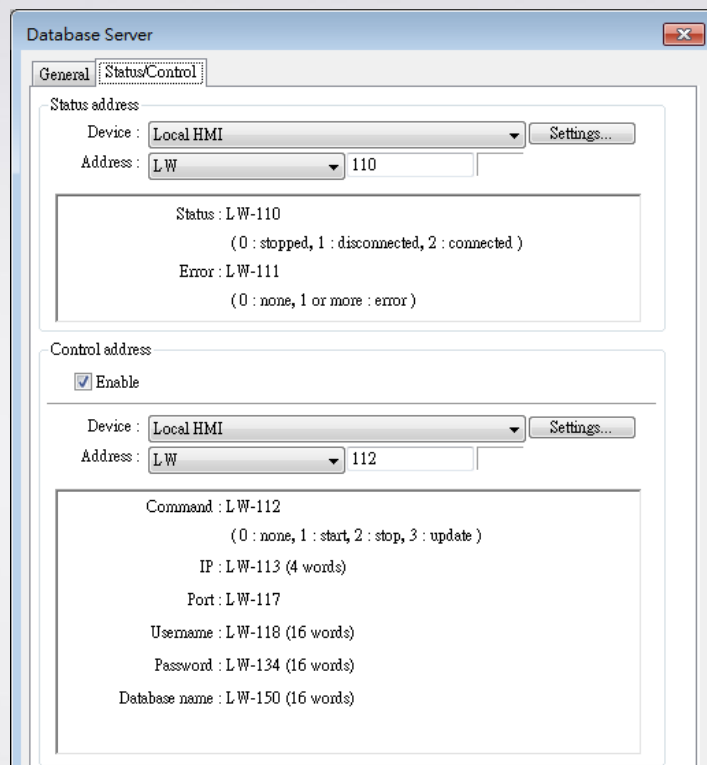
Port : 3306 \*Default port of MySQL is 3306

Username : Sean

Password : 111111

Database name : test





**Database Server**

General | **Status/Control**

Status address

Device : Local HMI Settings...

Address : LW 110

Status : LW-110  
( 0 : stopped, 1 : disconnected, 2 : connected )

Error : LW-111  
( 0 : none, 1 or more : error )

Control address

☒ Enable

Device : Local HMI Settings...

Address : LW 112

Command : LW-112  
( 0 : none, 1 : start, 2 : stop, 3 : update )

IP : LW-113 (4 words)

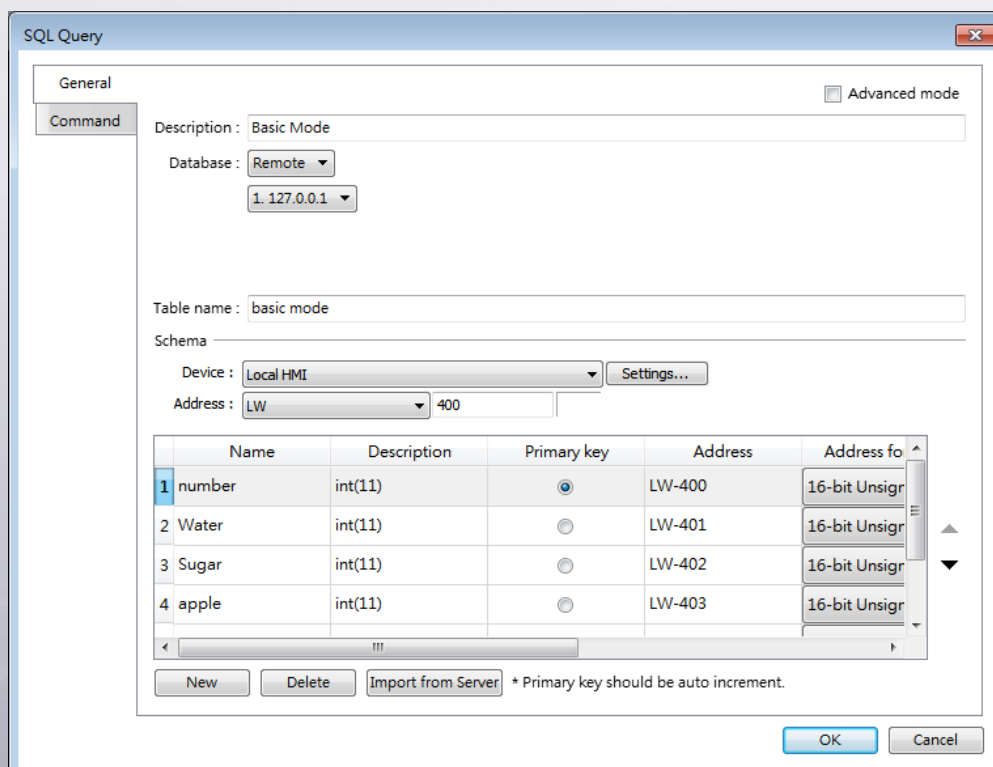
Port : LW-117

Username : LW-118 (16 words)

Password : LW-134 (16 words)

Database name : LW-150 (16 words)

**Step 5.** Choose [SQL Query] in the Data/History tab. Fill in Basic mode in [Description]. Choose the database server. Set [Table name] as basic mode. Set the Address in [Schema]. Press [Import from Server].



**SQL Query**

General | Command

Advanced mode

Description : Basic Mode

Database : Remote

1.127.0.0.1

Table name : basic mode

Schema

Device : Local HMI Settings...

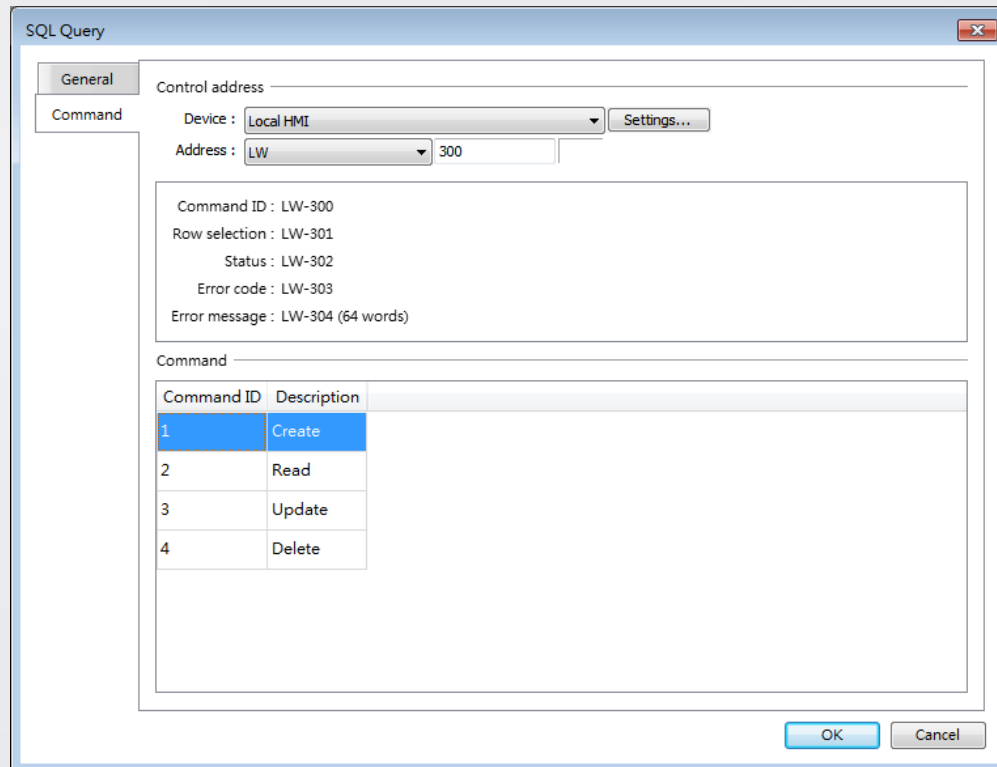
Address : LW 400

	Name	Description	Primary key	Address	Address fo
1	number	int(11)	<input checked="" type="radio"/>	LW-400	16-bit Unsign
2	Water	int(11)	<input type="radio"/>	LW-401	16-bit Unsign
3	Sugar	int(11)	<input type="radio"/>	LW-402	16-bit Unsign
4	apple	int(11)	<input type="radio"/>	LW-403	16-bit Unsign

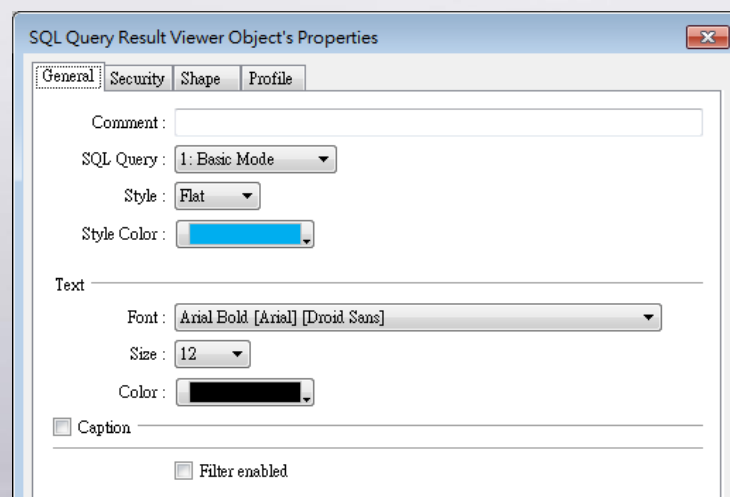
New Delete Import from Server \* Primary key should be auto increment.

OK Cancel

**Step 6.** Set [Control] address in Command tab. Entering value 1 in control address will execute Create command. Entering value 2 will execute Read command, and so on.

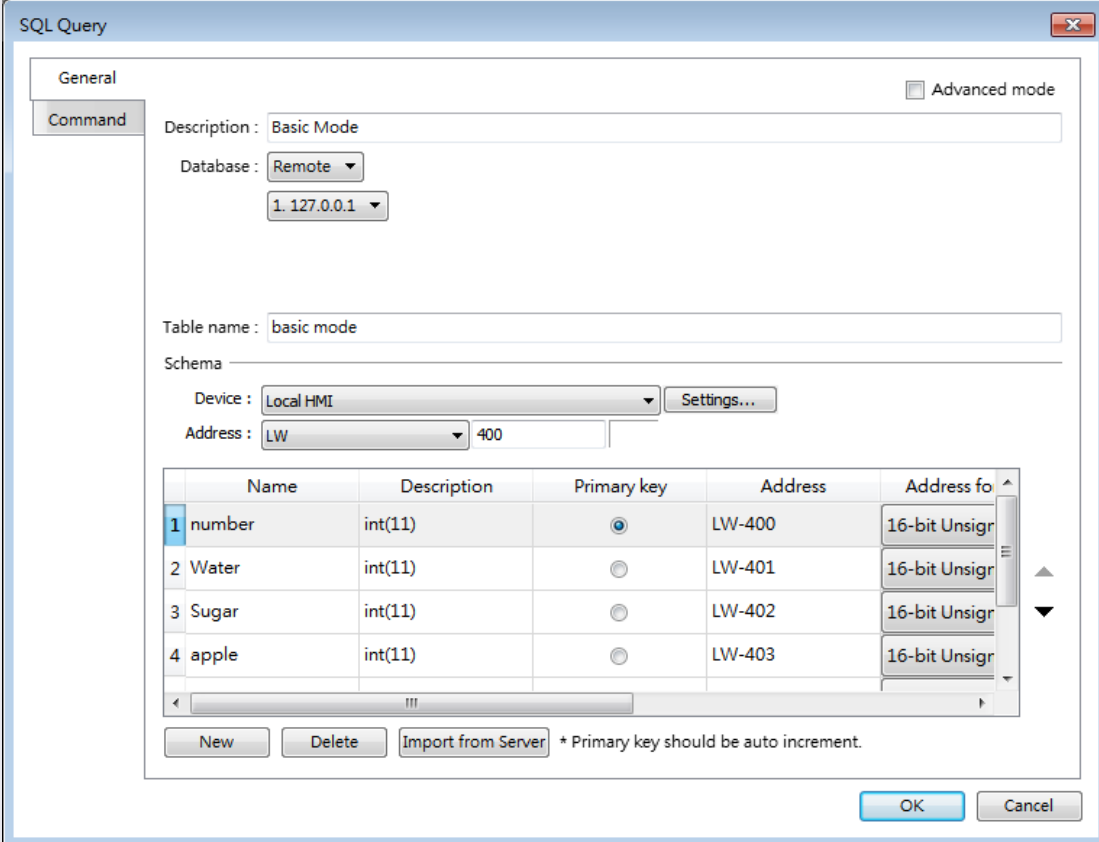


**Step 7.** Create a [SQL Query Result Viewer]. Choose Basic Mode in [SQL Query].



**Step 8.** Create 5 Numeric objects using the addresses selected in [Schema] in [SQL Query]. Which correspond to the columns of

Water/Sugar/Apple/Orance/Grape. The addresses are LW-401 to LW-405.



SQL Query

General

Advanced mode

Command

Description : Basic Mode

Database : Remote

1.127.0.0.1

Table name : basic mode

Schema

Device : Local HMI

Settings...

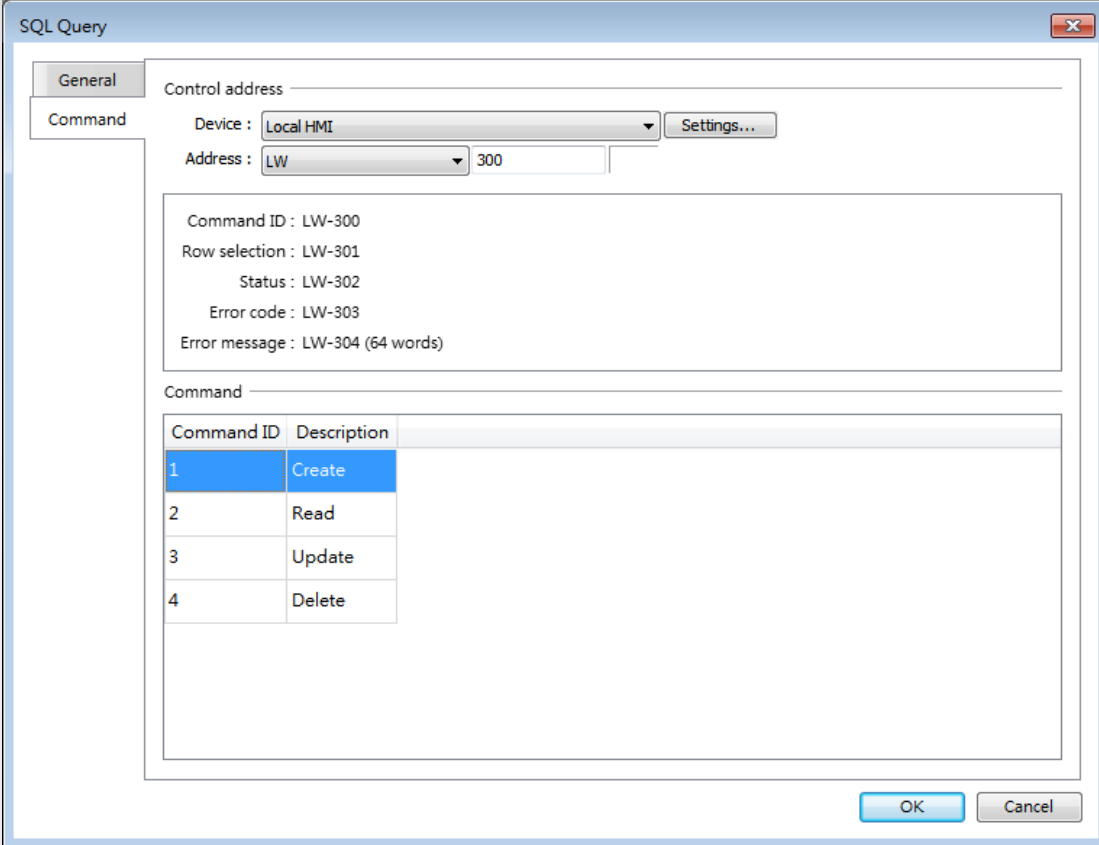
Address : LW 400

	Name	Description	Primary key	Address	Address fo
1	number	int(11)	<input checked="" type="radio"/>	LW-400	16-bit Unsign
2	Water	int(11)	<input type="radio"/>	LW-401	16-bit Unsign
3	Sugar	int(11)	<input type="radio"/>	LW-402	16-bit Unsign
4	apple	int(11)	<input type="radio"/>	LW-403	16-bit Unsign

New Delete Import from Server \* Primary key should be auto increment.

OK Cancel

**Step 9.** Create 4 Set Word objects with LW-300, which is the [Command Address] in SQL Query. Writing constant value 1 will execute Create command, Writing constant value 2 will execute Read command, and so on.

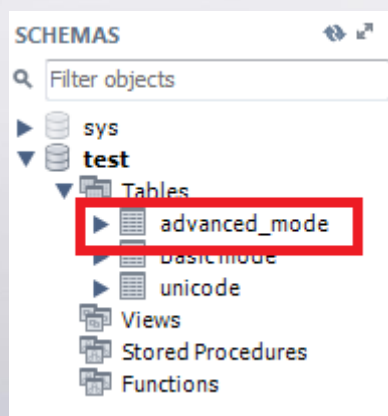


The SQL Query dialog box is shown with the 'General' tab selected. It contains fields for 'Control address', 'Device' (set to 'Local HMI'), and 'Address' (set to 'LW' and '300'). Below these fields, there is a text area displaying command details: 'Command ID : LW-300', 'Row selection : LW-301', 'Status : LW-302', 'Error code : LW-303', and 'Error message : LW-304 (64 words)'. A 'Command' section at the bottom features a table with four rows: '1 Create', '2 Read', '3 Update', and '4 Delete'. The 'OK' and 'Cancel' buttons are at the bottom right.


Command ID	Description
1	Create
2	Read
3	Update
4	Delete

## Advanced Mode

**Step 1.** Create a table named “advanced\_mode” in MySQL database.




**Step 2.** Create each column in the advanced\_mode table. **Do not** select AI option.



 Table Name:   
 Collation:   
 Comments:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
Product line	INT(11)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
apple juice	INT(11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
orange juice	INT(11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
grape juice	INT(11)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
test	VARCHAR(45)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL

Step 3. Create data in each column.

Result Grid



 Filter Rows:

Edit

	Product line	apple juice	orange juice	grape juice
	1	100	200	300
	2	400	500	600
	3	900	200	100
	4	0	0	0
	5	0	0	0
	6	0	0	0
	NULL	NULL	NULL	NULL

Step 4. Choose [SQL Query] in the Data/History tab. Select Advanced Mode check box on the top left corner.

SQL Query

General ☒ Advanced mode

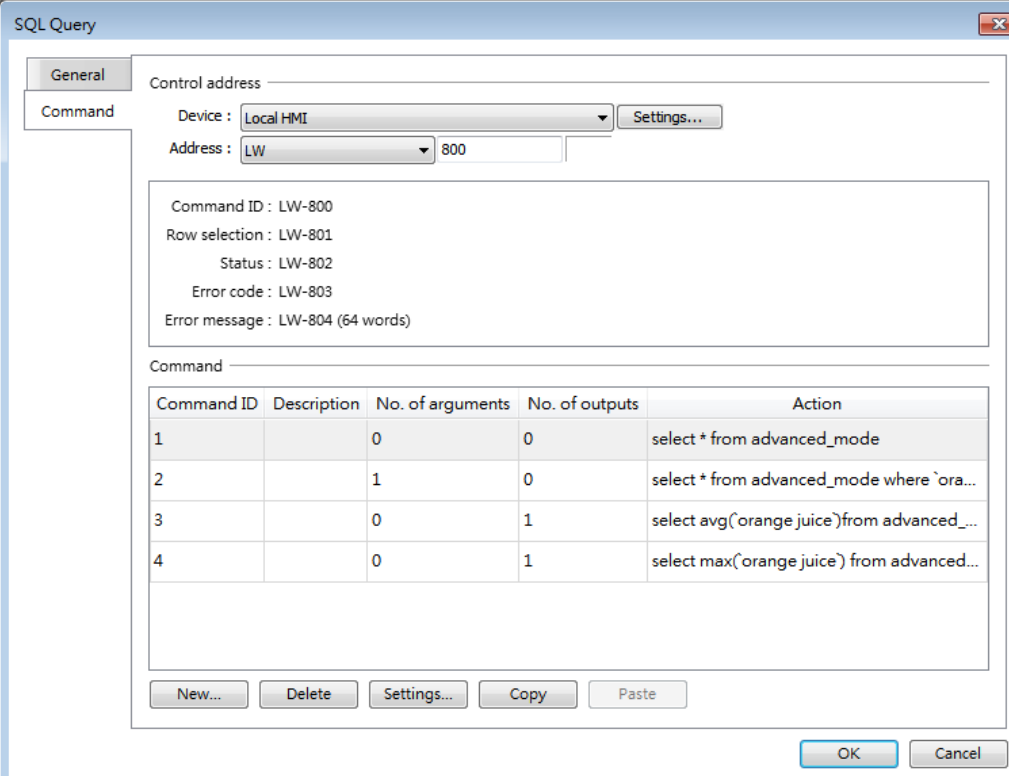
Command

Description:

Database:

OK Cancel

Step 5. Set [Control address] in the Command tab.



SQL Query

General

Control address

Device : Local HMI Settings...

Address : LW 800

Command ID : LW-800  
Row selection : LW-801  
Status : LW-802  
Error code : LW-803  
Error message : LW-804 (64 words)

Command

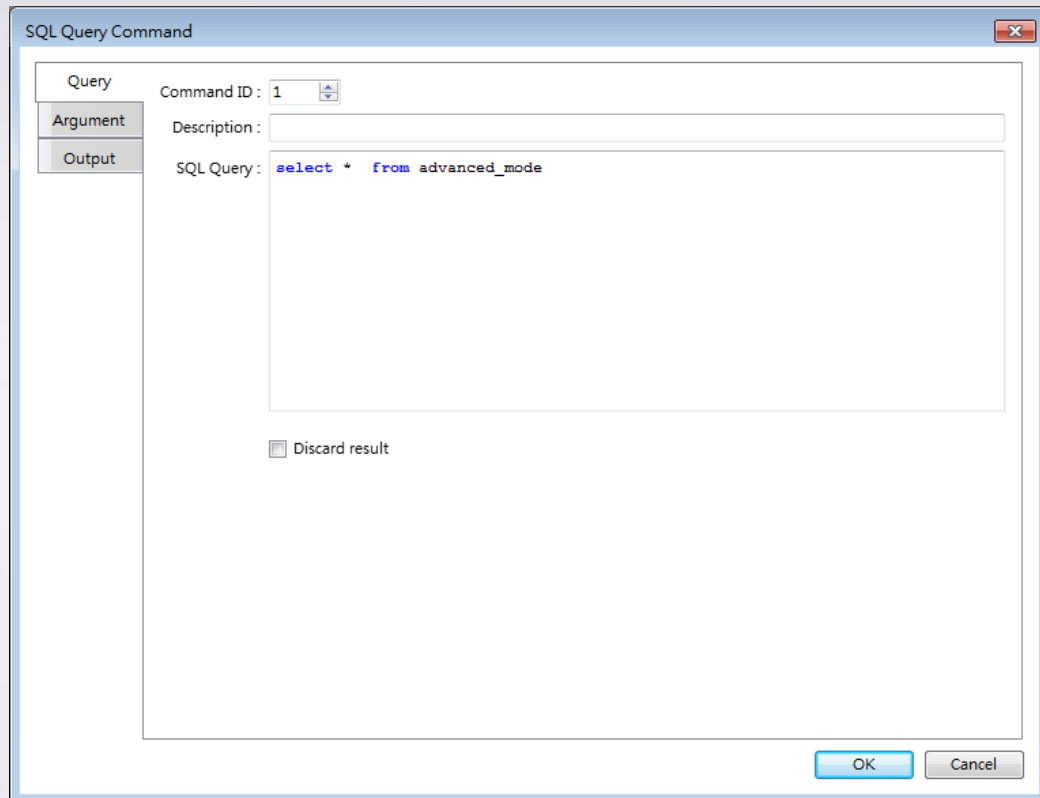
Command ID	Description	No. of arguments	No. of outputs	Action
1		0	0	select * from advanced_mode
2		1	0	select * from advanced_mode where `ora...
3		0	1	select avg('orange juice')from advanced_...
4		0	1	select max('orange juice') from advanced...

New... Delete Settings... Copy Paste

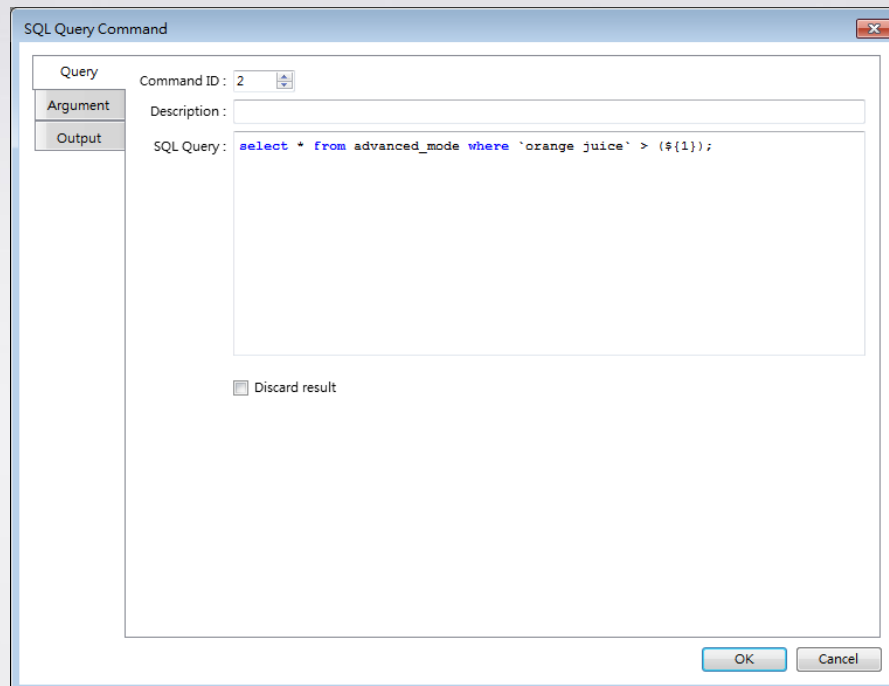
OK Cancel

Step 6. Create the first SQL command. Put **select \* from advanced\_mode** in SQL Query. The asterisk “\*” means to choose all the columns, advanced\_mode is the table name in the database.

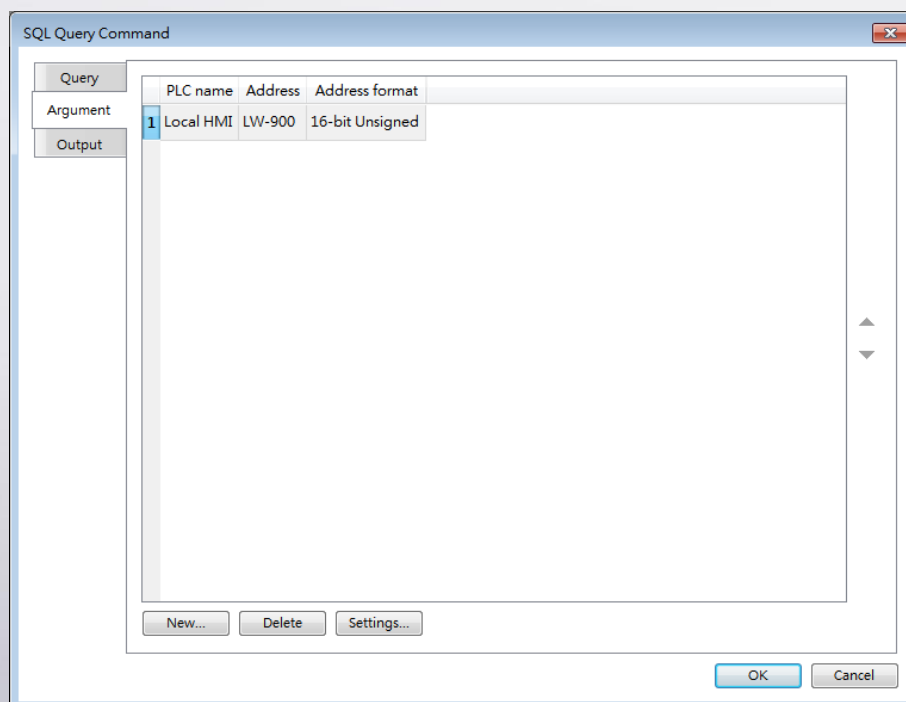




**Step 7.** Create the second SQL command. Put **select \* from advanced\_mode** **where `orange juice` > (\${1})**; in SQL Query. The asterisk “\*” means to choose all the columns, **advanced\_mode** is the table name in the database. **‘orange juice’** is for assigning the orange juice column. **\${1}** means there’s one argument.

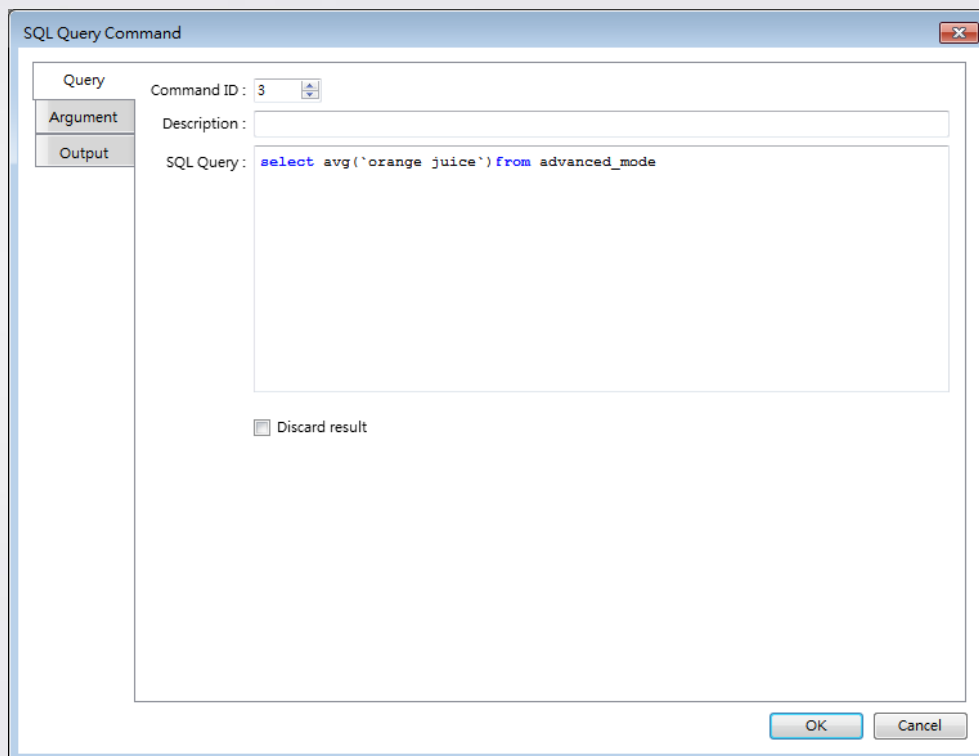


**Step 8.** Create a new address LW-900 in Argument tab. The Address format is 16-bit Unsigned.

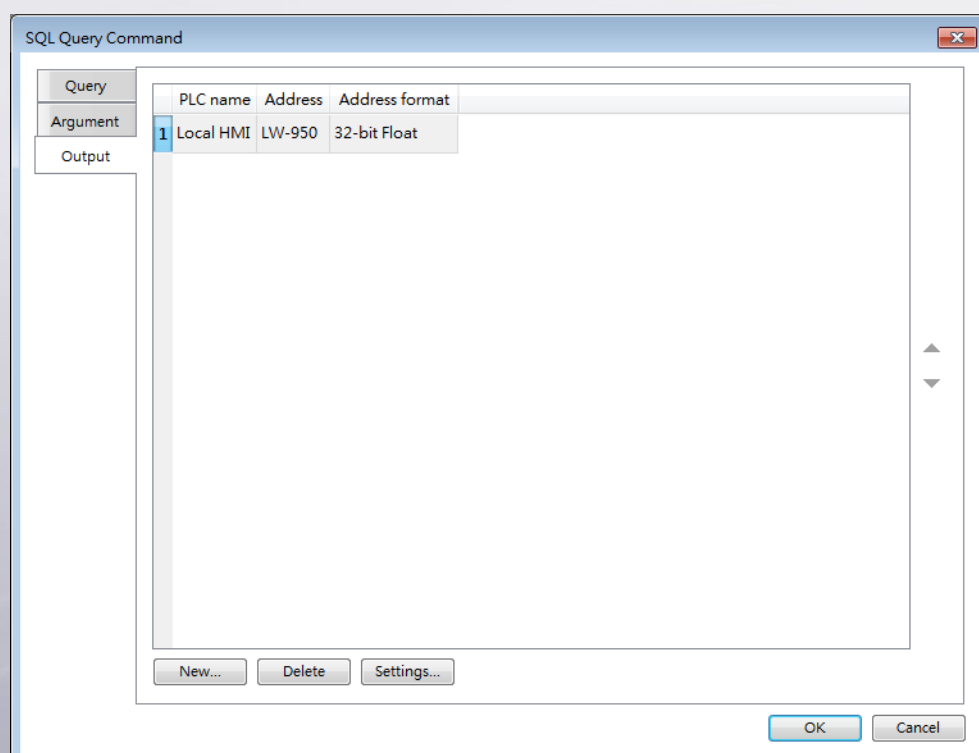


**Step 9.** Create the third SQL command. Put **select avg(`orange juice`)from advanced\_mode;** in SQL Query. The asterisk “\*” means to choose all the columns, **advanced\_mode** is the table name in the database.’

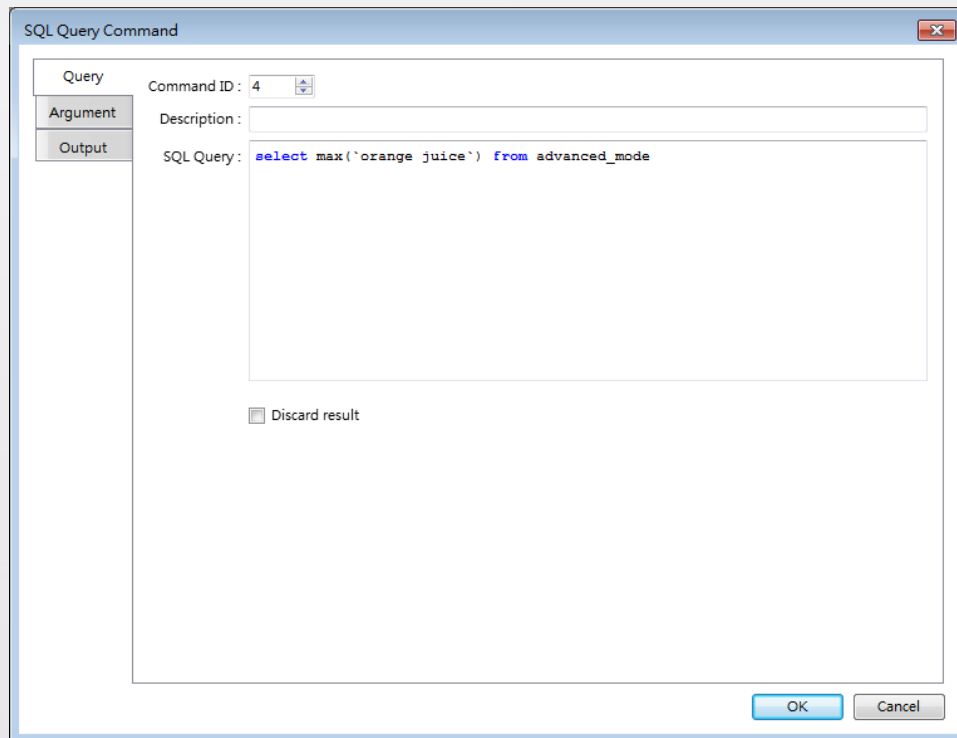
**orange juice'** is for assigning the orange juice column, which means to calculate the average value in orange juice column.



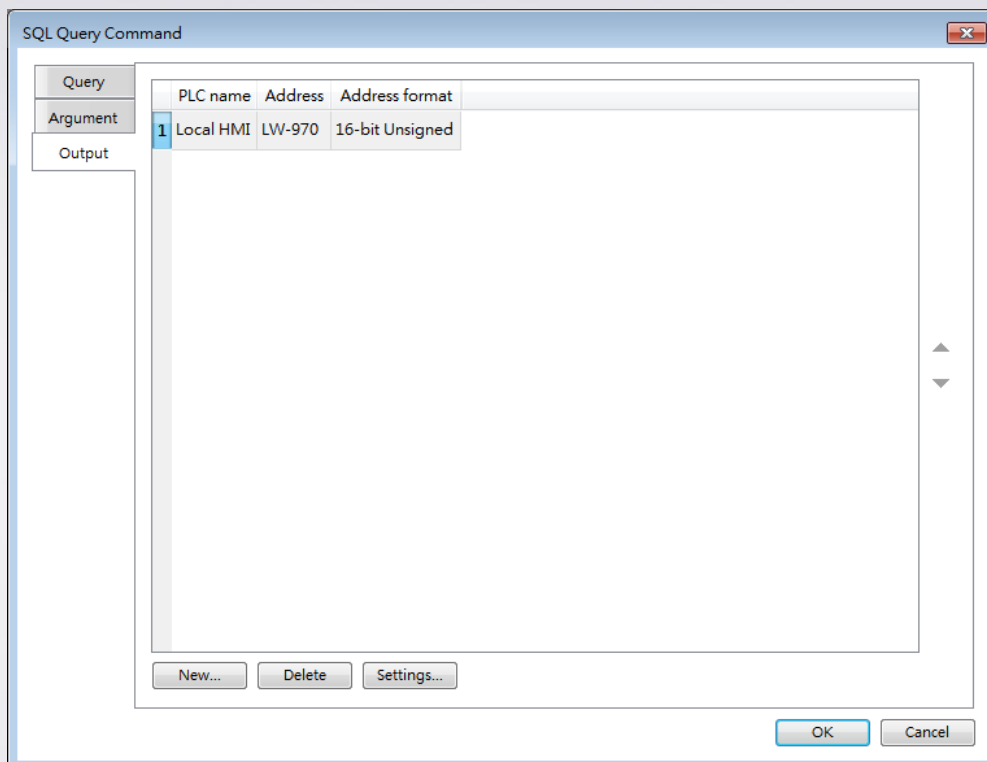
**Step 10.** Create a new address LW-950 in Output tab. The Address format is 32-bit Float.



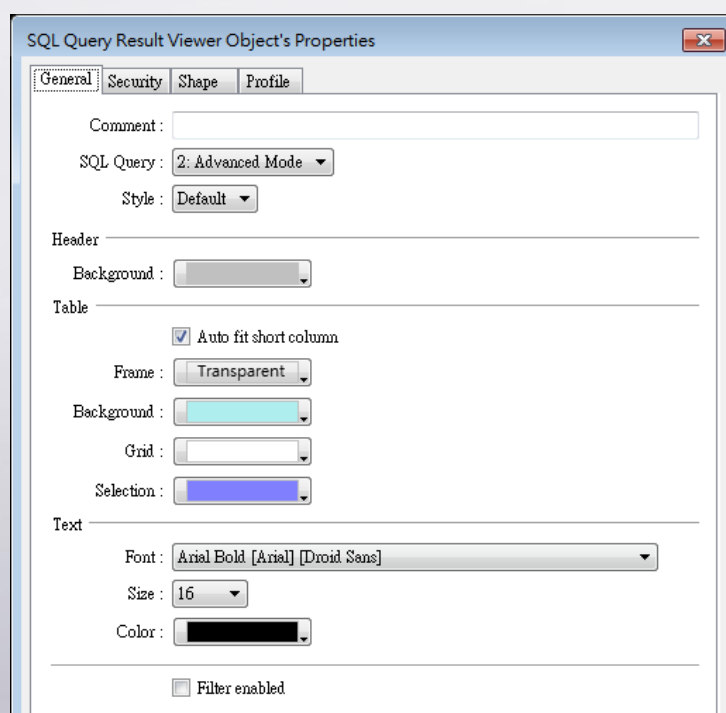
**Step 11.** Create the fourth SQL command. Put **select max(`orange juice`) from advanced\_mode;** in SQL Query. **advanced\_mode** is the table name in the database. **'orange juice'** is for assigning the orange juice column, which means to calculate the maximum value in orange juice column.



**Step 12.** Create a new address LW-970 in Output tab. The Address format is 16-bit Unsigned.



**Step 13.** Create a [SQL Query Result Viewer]. Choose Advanced Mode in [SQL Query].



**Step 14.** Create 4 Set Word objects corresponding to the control address LW-800 in [SQL Query]. Writing constant value 1 will execute command ID 1 (Create command). Writing constant value 2 will

execute command ID 2 (Filter command), and so on.

**Step 15.** Create a Numeric object and set the address to be LW-900, which is the Argument address of [Command ID] 2 to set up the filtering condition.

**Step 16.** Create a Numeric object and set the address to be LW-950, which is the Output address of [Command ID] 3 to show the result.

**Step 17.** Create a Numeric object and set the address to be LW-970, which is the Output address of [Command ID] 4 to show the result.



### 3. Addresses

The addresses of objects used in this demonstration are listed below.

Object	Address	Object ID	Description
Database Server	LW-110		Status address
Database Server	LW-112		Control address
SQL Query 1	LW-400		Basic Mode Schema address
SQL Query 1	LW-300		Basic Mode Control address
SQL Query 2	LW-800		Advanced Mode Control address
SQL Query 2	LW-900		Advanced Mode Command ID 2 Argument address
SQL Query 2	LW-950		Advanced Mode Command ID 3 Output address
SQL Query 2	LW-970		Advanced Mode Command ID 4 Output address
Window 10			
Numeric	LW-401	NE_0	Water column data
Numeric	LW-402	NE_1	Sugar column data
Numeric	LW-403	NE_2	Apple column data
Numeric	LW-404	NE_3	Orange column data
Numeric	LW-405	NE_4	Grape column data
Set Word	LW-300	SW_0	Read command, Write constant

			value 2
<b>Set Word</b>	LW-300	SW_1	Create command, Write constant value 1
<b>Set Word</b>	LW-300	SW_2	Update command, Write constant value 3
<b>Set Word</b>	LW-300	SW_3	Delete command, Write constant value 4
<b>Window 11</b>			
<b>Set Word</b>	LW-800	SW_0	Read command, Write constant value 1
<b>Set Word</b>	LW-800	SW_1	Filter command, Write constant value 2
<b>Set Word</b>	LW-800	SW_2	Avg command, Write constant value 3
<b>Set Word</b>	LW-800	SW_3	Max command, Write constant value 4
<b>Numeric</b>	LW-900	NE_0	Filter command argument address
<b>Numeric</b>	LW-950	NE_1	Avg command output address
<b>Numeric</b>	LW-970	NE_2	Max command output address