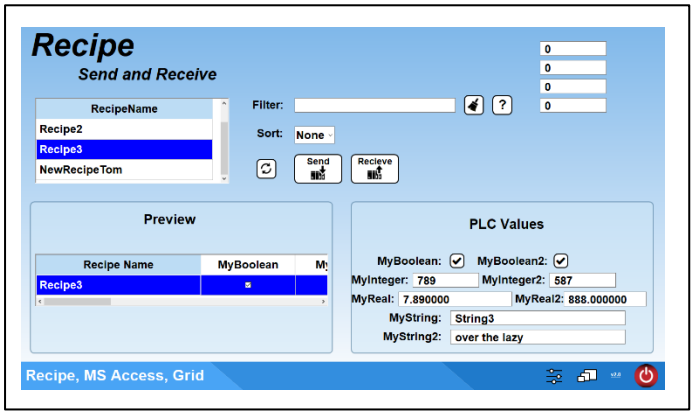
Pro-face
by Schneider Electric

Sample Templates Document: Blue Open Studio Recipes and MS Access



Document copyright policy:

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.
Failure to observe this information can result in injury or equipment damage.

Safety Information

Important Information

NOTICE

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation and has received safety training to recognize and avoid the hazards involved.

About the Book

At a Glance

Document Scope

This manual describes how to use this product.

Validity Note

This documentation is valid for this product.
The technical characteristics of the device(s) described in this manual also appear online at *https://www.proface.com/en/download/search?fileTypeId=manual*.

The characteristics presented in the present document should be the same as those that appear online. In line with our policy of constant improvement we may revise content over time to improve clarity and accuracy. In the event that you see a difference between the document and online information, use the online information as your reference.

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Product names used in this manual may be the registered trademarks owned by the respective proprietors.

Related Documents

You can download the manuals related to this product, such as the software manual, from our support site at *https://www.proface.com/en/download/blue/manual*.

Product Related Information

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In the event this product does not run properly due to whatever reason, it may be difficult or impossible to identify a function. Functions that may present a hazard if not immediately executed, such as a fuel shut-off, must be provided independently of this product. The machine's control system design must take into account the operator being unable to control the machine or making mistakes in the control of the machine.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

The application of this product requires expertise in the design and programming of control systems. Only persons with such expertise should be allowed to program, install, alter, and apply this product.

- Follow all local and national safety standards.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

For additional information, refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control" and to NEMA ICS 7.1 (latest edition), "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems" or their equivalent governing your particular location.

Table of Contents

Blue Open Studio Recipes – MS Access, Grid Sample Project V2 Extended

Technical Description

The purpose of this example project is to provide a simple way to manage recipes for small scale recipe projects.

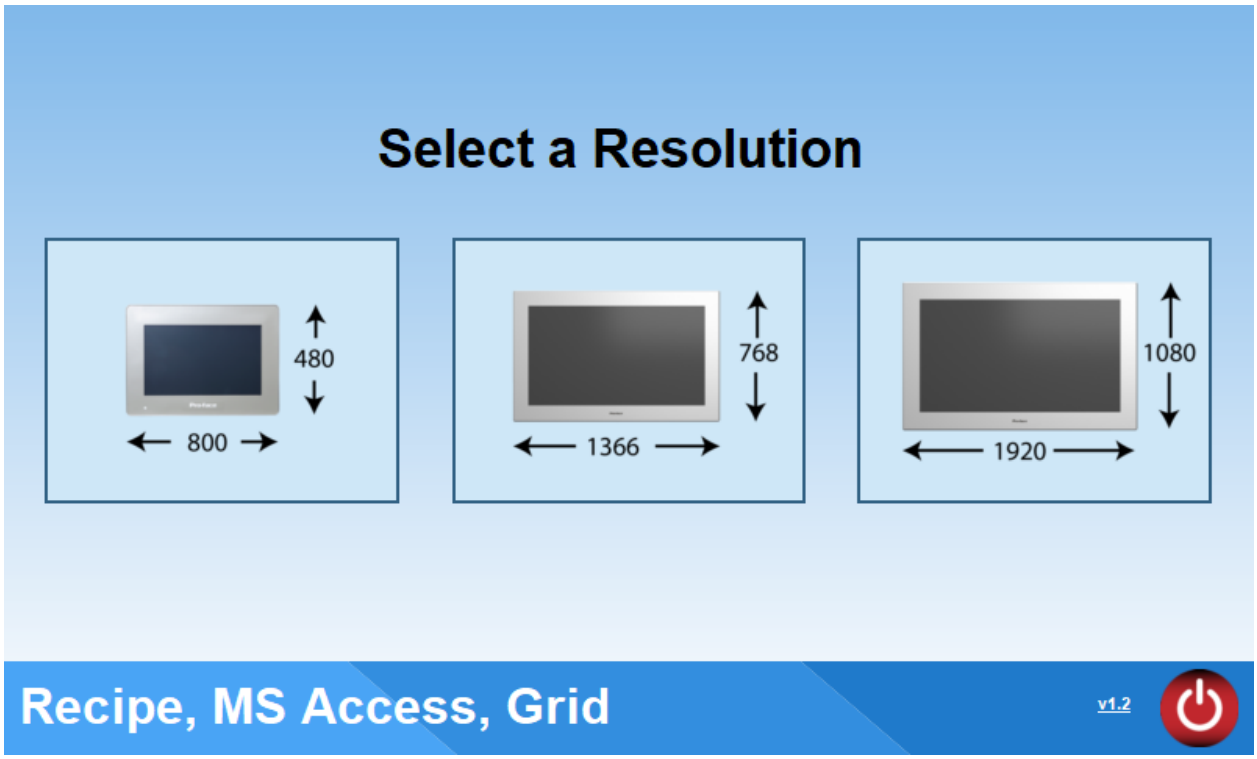
The Project uses an Access Database to contain the Recipes in a single table. You can edit the Recipes in Access or in the BOS Runtime project.

This document will show you how to use the project, how to integrate the project to your use, how the project works and how you can add ingredients to the built in recipes.

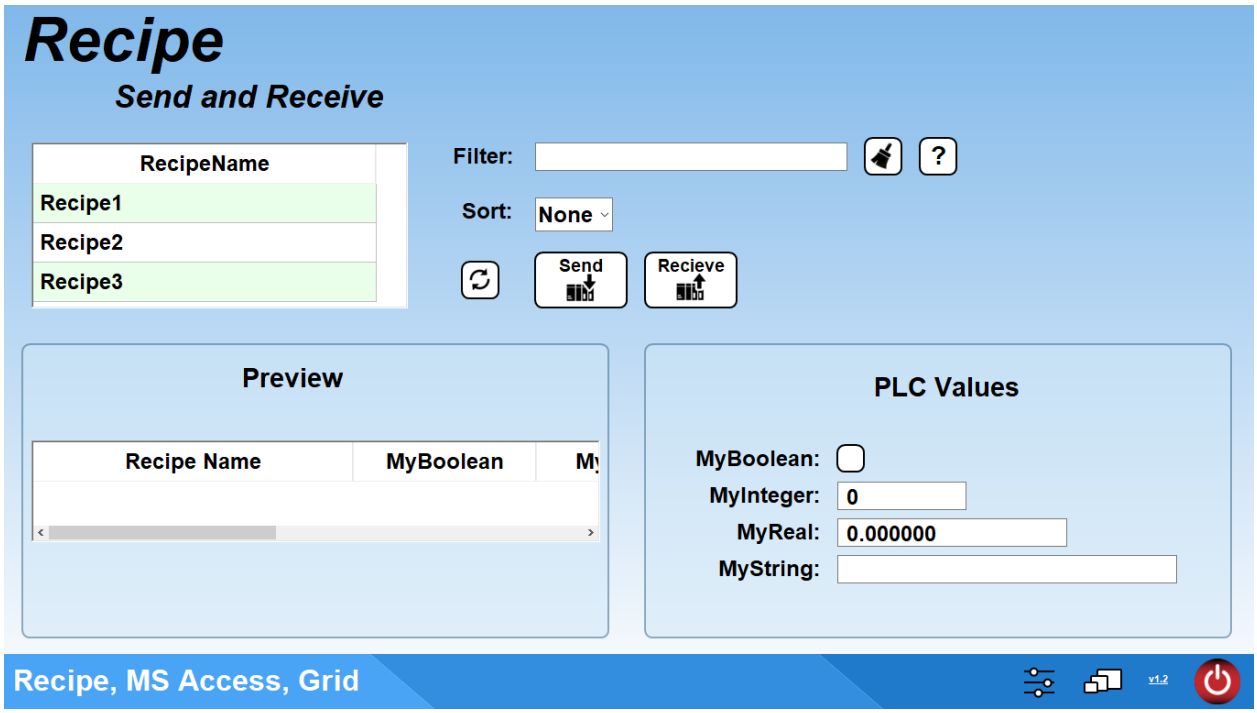
Section 1 -How to use project

Running project from local build time.

Opening Screen

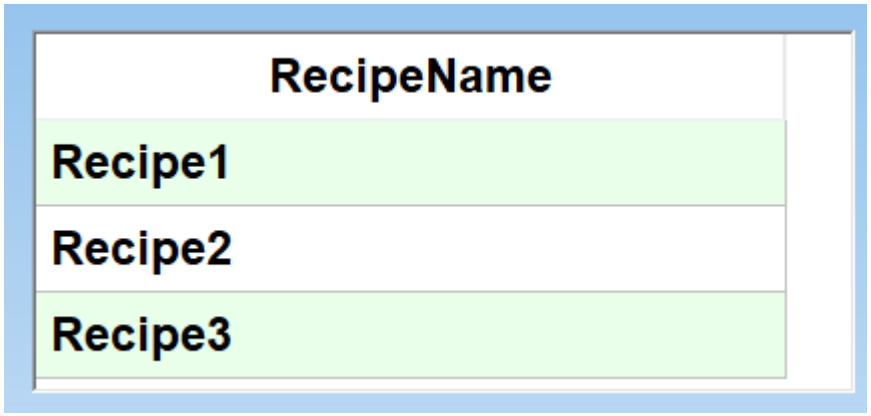


Select a desired Resolution. This will check to make sure the current monitor can accept the selected resolution and then change screen to Recipe1_x where x equals selected resolution.

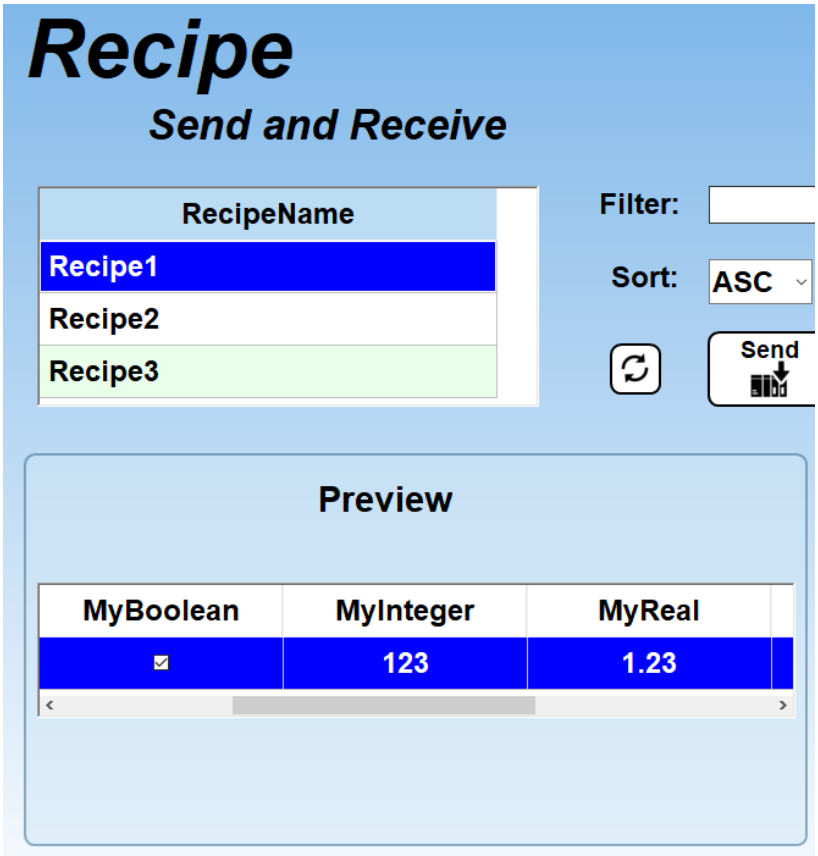


This is the Recipe Send and Receive Screen.
This screen is for Sending and Receiving Recipes between the Access database and sudo-PLC variables.

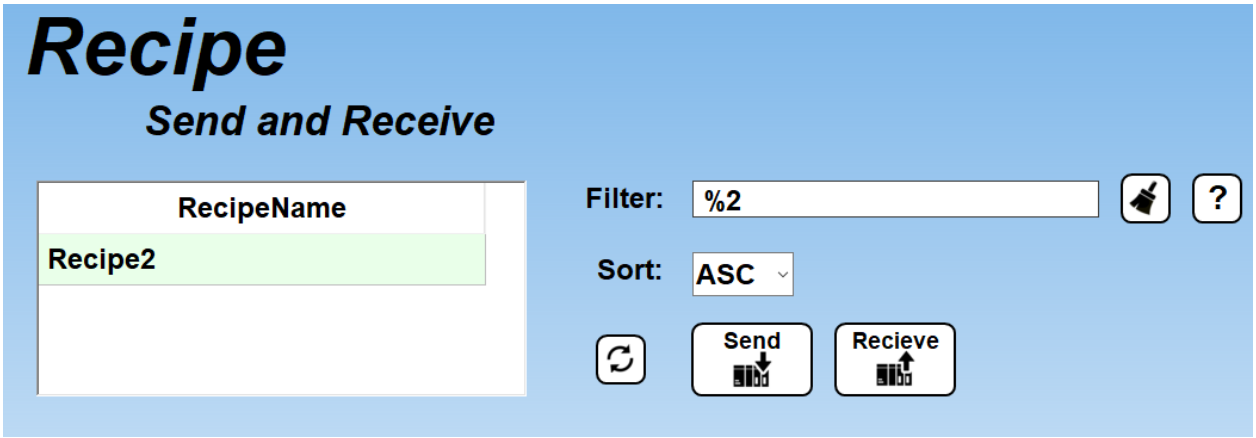
When selecting a Recipe in the RecipeName Grid.



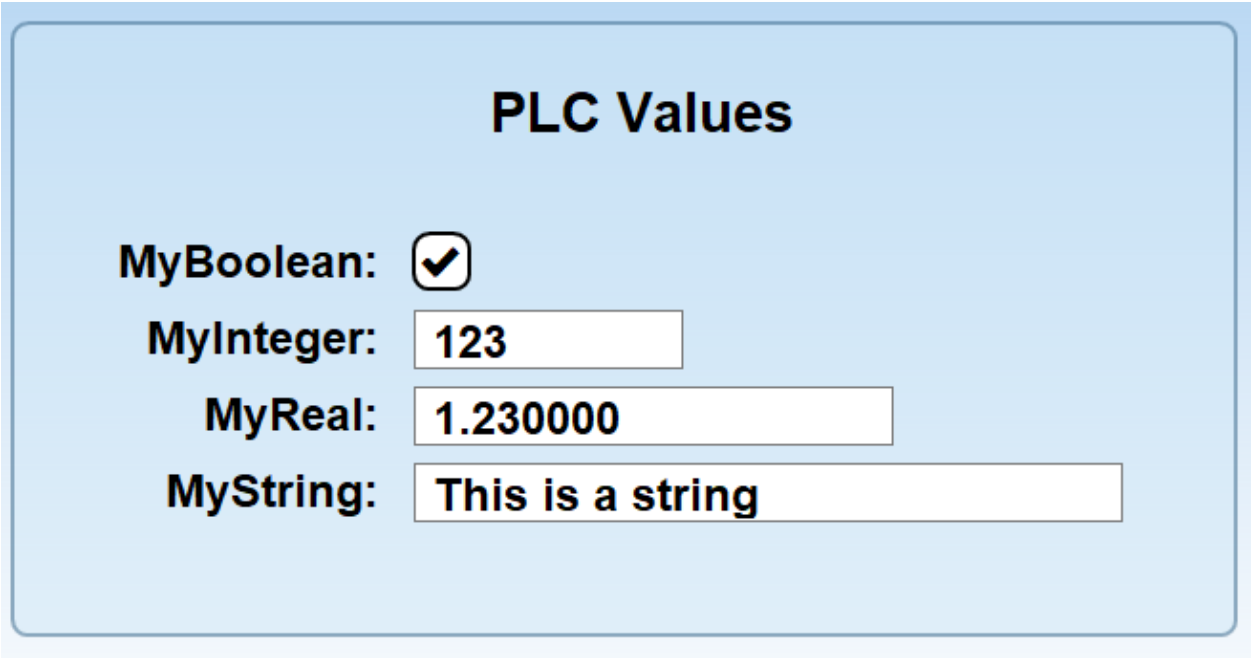
Will populate the Preview with the Recipe values in the database.



You can also filter and sort the RecipeName Grid. Clicking on the broom icon clears the filter and the ? gives a window showing the different wildcards possible for the filter. The Cycle button refreshes the grid with the filer applied.

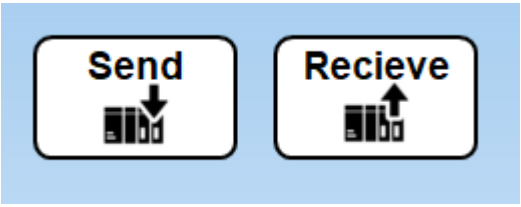


The PLC Values Section allow you to enter and view the sudo-PLC values.



Sending and Receiving Recipes to and from the sudo-PLC Values.

There are two objects on the screen.



Send uses the DBSelect Command to read up the values of the selected recipe from the database and transfers it to the sudo-PLC variables.

Receive uses the DBExecute Command to read the values of the sudo-PLC variables and writes them to the selected recipe in the database.

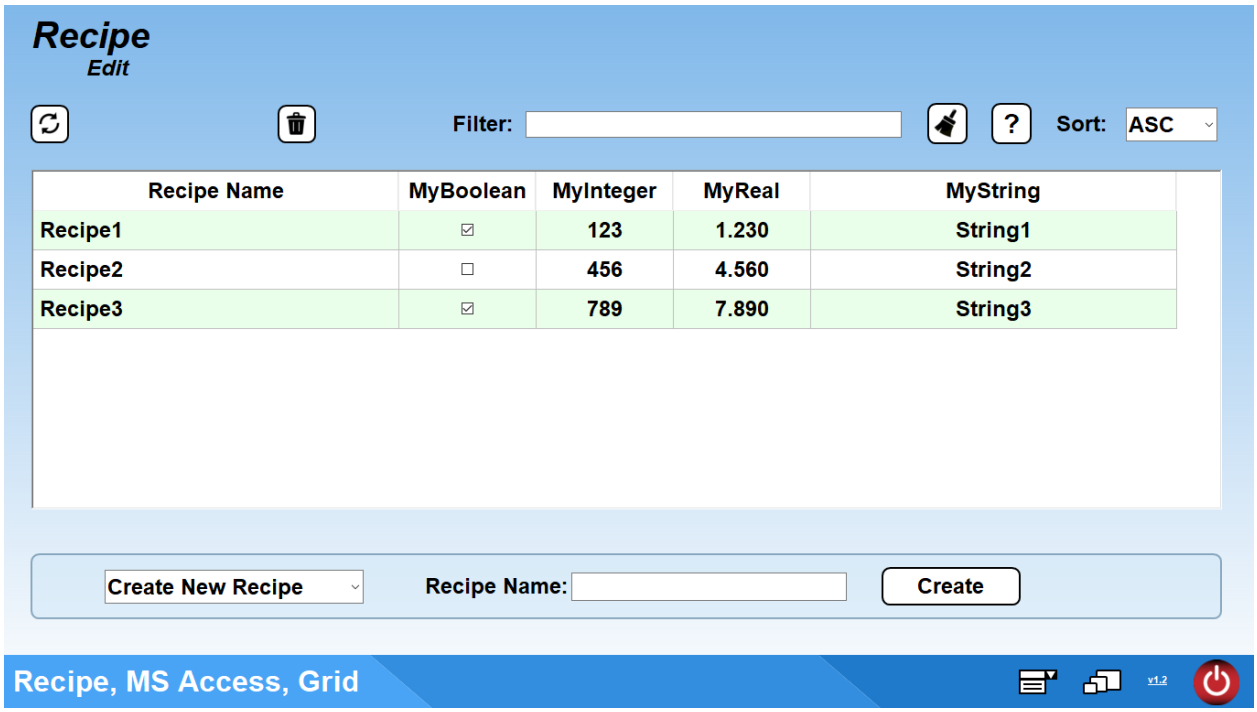
Title, Navigation and Version bar.

Navigates to a Recipe Edit Screen. RecipeEdit_x x is selected resolution.

Navigates back to the Resolution Selection Screen.

Exits the runtime viewer.

Recipe Edit Screen.

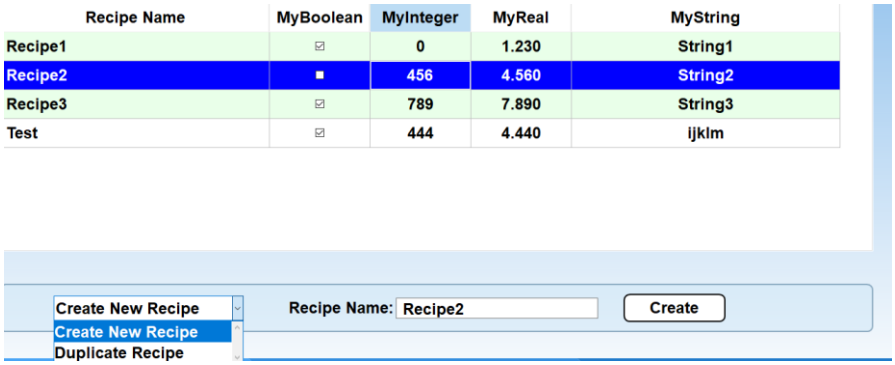


This screen allows you to edit and add recipes to the recipe database.

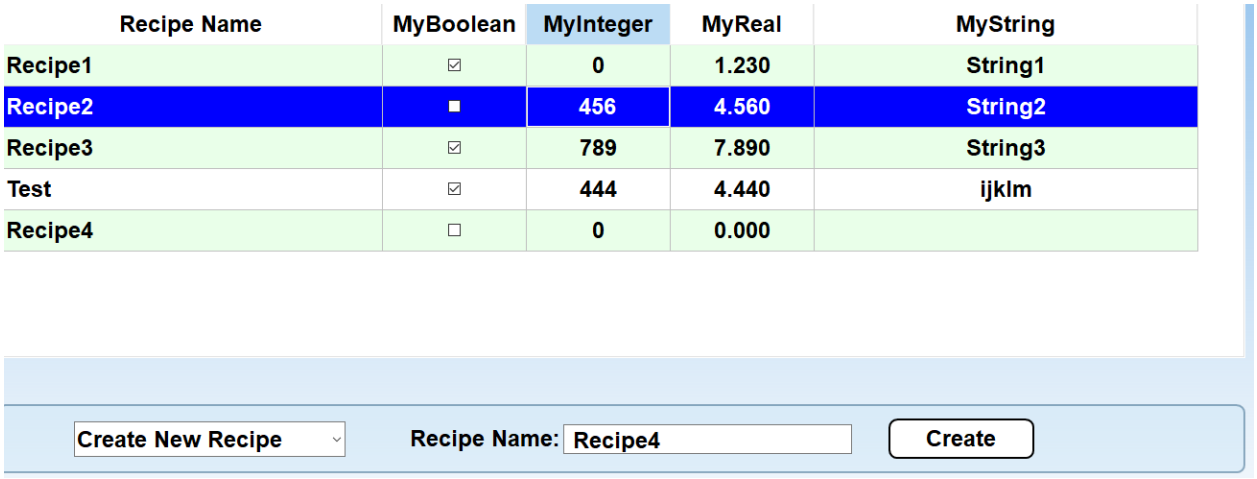
When you enter new values in to the selected Recipe parameter it will change the value in the database file.

Recipe Name	MyBoolean	MyInteger	MyReal	MyString
Recipe1	☑	0	1.230	String1
Recipe2	■	456	4.560	String2
Recipe3	☑	789	7.890	String3
Test	☑	444	4.440	ijklm

In the Create Recipe Area two options are available.



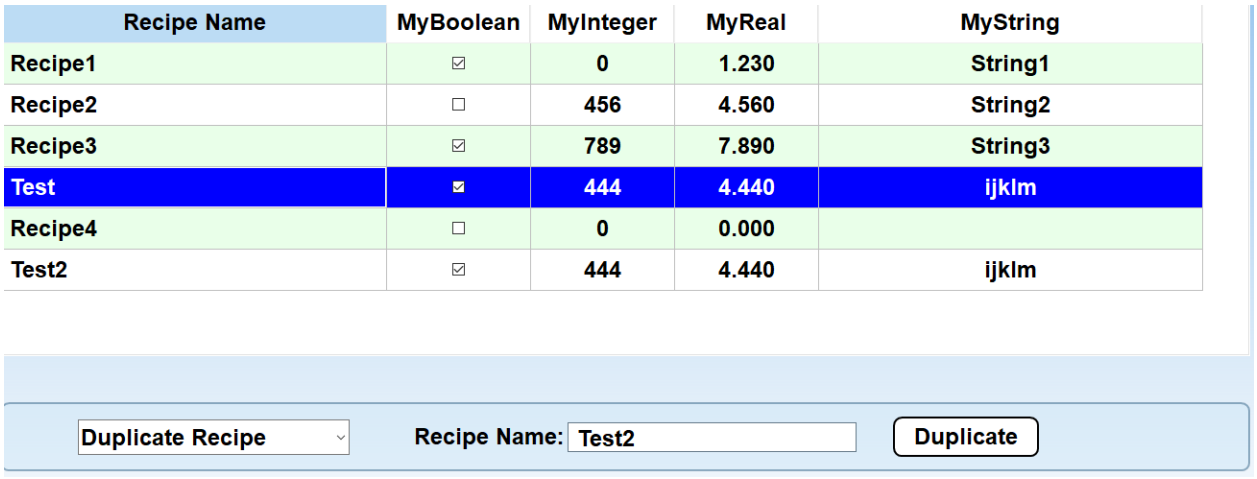
Create New Recipe will create a new recipe with the name entered and zero values.



Recipe Name	MyBoolean	MyInteger	MyReal	MyString
Recipe1	☑	0	1.230	String1
Recipe2	■	456	4.560	String2
Recipe3	☑	789	7.890	String3
Test	☑	444	4.440	ijklm
Recipe4	☐	0	0.000	

Create New Recipe Recipe Name: Recipe4 Create

Duplicate Recipe creates a new recipe with the name entered and the value duplicated from the selected recipe in the grid.

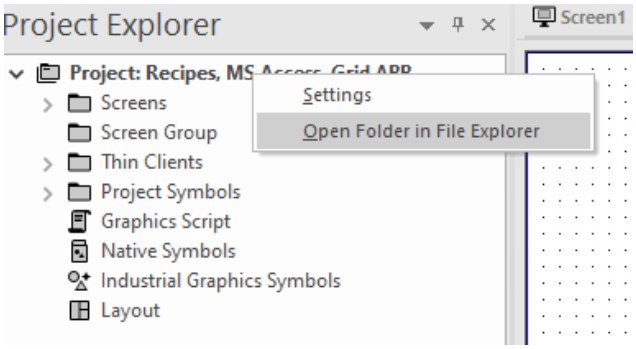


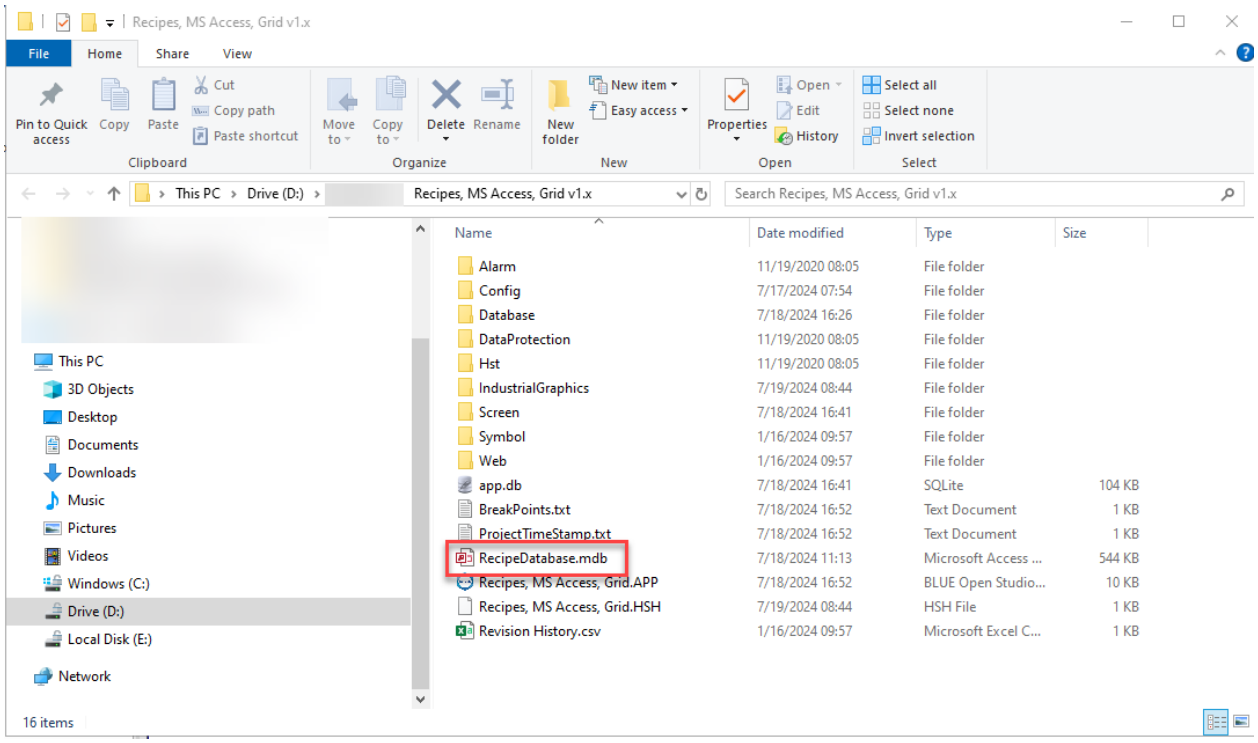
Recipe Name	MyBoolean	MyInteger	MyReal	MyString
Recipe1	☑	0	1.230	String1
Recipe2	☐	456	4.560	String2
Recipe3	☑	789	7.890	String3
Test	■	444	4.440	ijklm
Recipe4	☐	0	0.000	
Test2	☑	444	4.440	ijklm

Duplicate Recipe Recipe Name: Test2 Duplicate

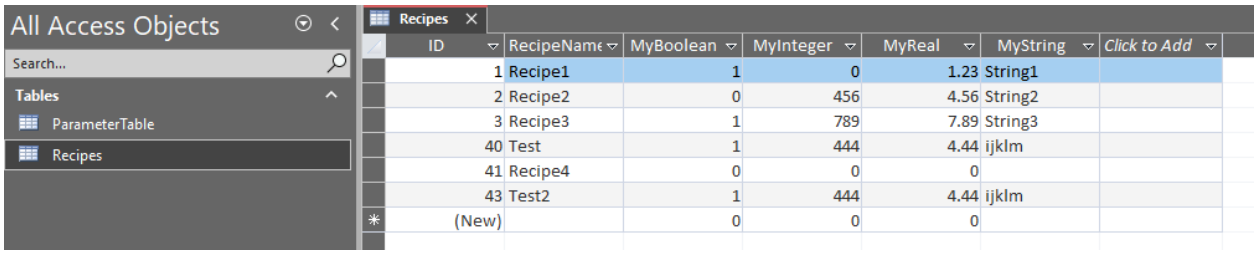
Section 2 -Using Access to add Recipes and modify Recipe Values.

This project includes a MS Access Database file. The file(s) are within the BOS Project Folder. Right click on the project name in the BOS build time environment to access the project folder directly.



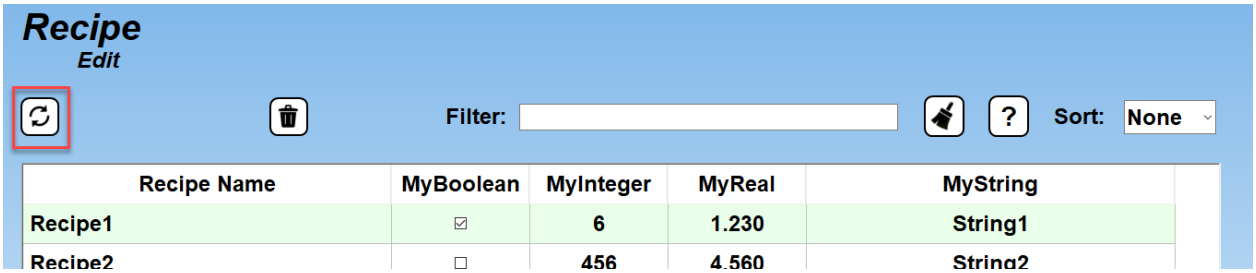


In Access open the Recipes Table to add and edit Recipes.

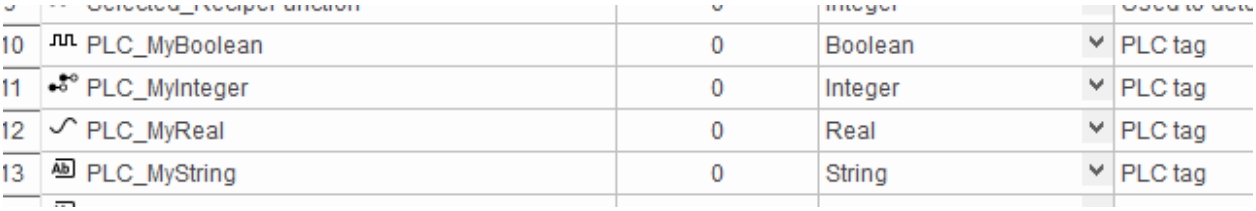


From the Recipe Edit Screen in the runtime project you can see the new values entered into

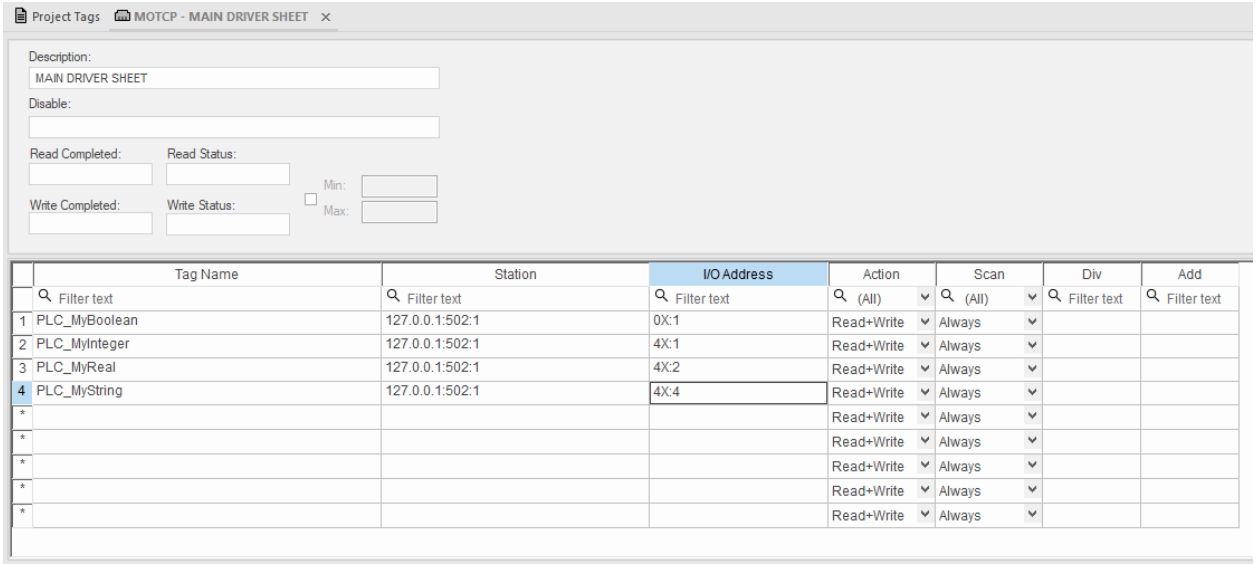
the database table by clicking the refresh button.



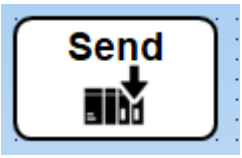
Section 3 - To use this project and build your own project around it, in the communication driver sheet simply add the “PLC” tags to the sheet and associate them with the correct addresses.

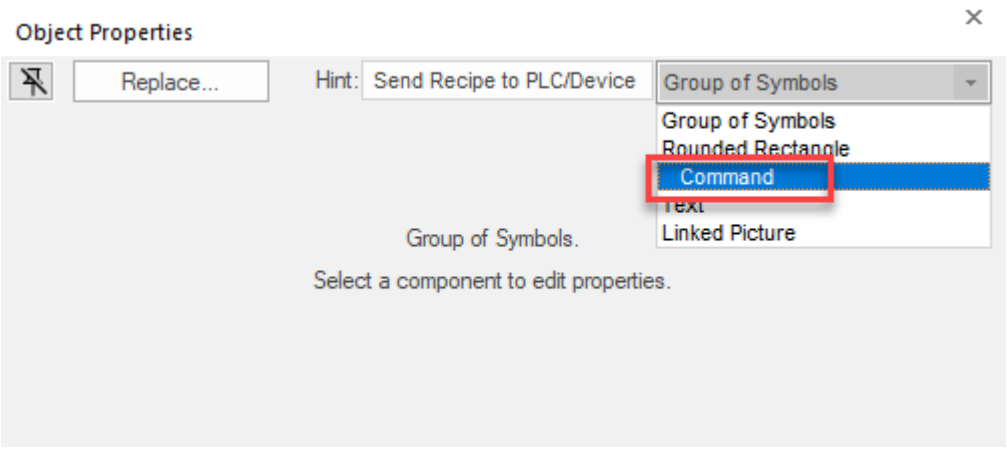


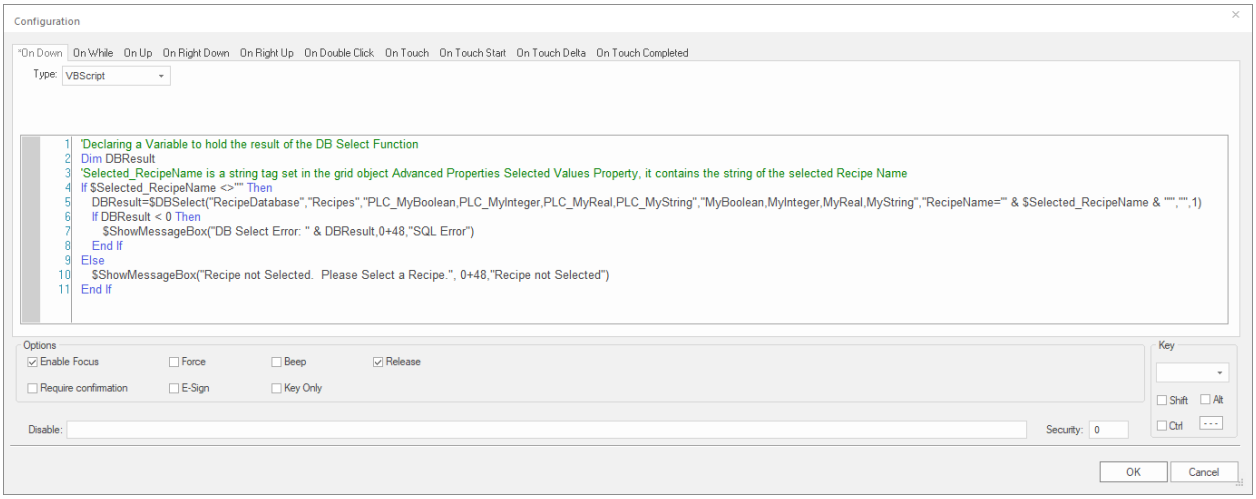
Example for Modbus.



Section 4 -How the Recipe Write and Recipe Read Functions.







Code:

```
'Declaring a Variable to hold the result of the DB Select Function
Dim DBResult
'Selected_RecipeName is a string tag set in the grid object Advanced Properties Selected Values Property, it contains the string of the selected Recipe Name
If $Selected_RecipeName <>"" Then
        DBResult=$DBSelect("RecipeDatabase","Recipes","PLC_MyBoolean,PLC_MyInteger,PLC_MyReal,PLC_MyString","MyBoolean,MyInteger,MyReal,MyString","RecipeName='" & $Selected_RecipeName & "'","",1)
        If DBResult < 0 Then
                $ShowMessageBox("DB Select Error: " & DBResult,0+48,"SQL Error")
        End If
Else
        $ShowMessageBox("Recipe not Selected.  Please Select a Recipe.", 0+48,"Recipe not Selected")
End If
```

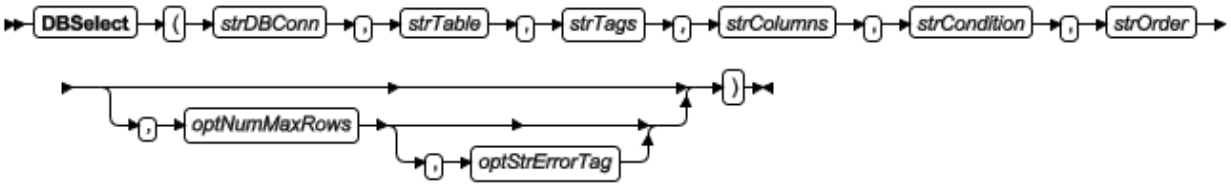
DBSelect Function

DBSelect is a built-in function that selects a result set from an external database (equivalent to a SQL SELECT statement), maps the columns of the result set to array tags in your project, and then copies the values from the result set to the array tags.

Function	Group	Execution	String Exp.	Windows	HMI Runtime	Thin Clients	Mobile Access
DBSelect	Database/ERP	Synchronous	No	Supported	Not supported	Supported	Supported

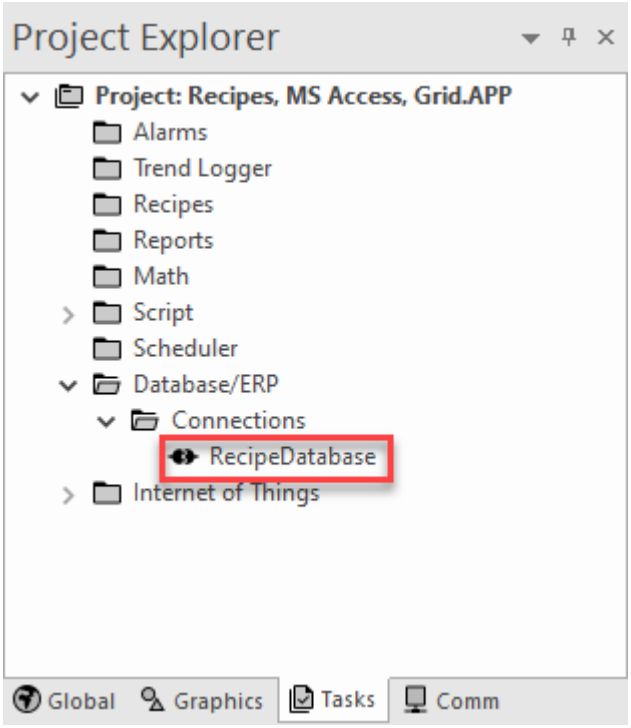
Syntax

```
DBSelect(strDBConn,strTable,strTags,strColumns,strCondition,strOrder,optNumMaxRows,optStrErrorTag)
```



Expanded Function

$DBSelect("RecipeDatabase","Recipes",



Recipes

ID	RecipeName
1	Recipe1
2	Recipe2
3	Recipe3
40	Test
41	Recipe4
43	Test2
(New)	

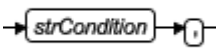
"PLC_MyBoolean,PLC_MyInteger,PLC_MyReal,PLC_MyString"

,"MyBoolean,MyInteger,MyReal,MyString"

strCondition

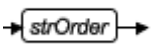
A statement specifying which rows in the database table or view to select. This is equivalent to the SQL WHERE clause and must follow the same syntax.

To select all the rows in the table or view, specify an empty string ("") for this parameter.

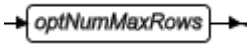


'RecipeName is Column (FROM) Selected_RecipeName is (WHERE) Variable holding selected row

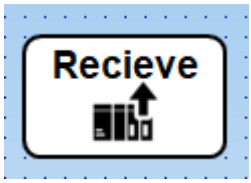
"RecipeName='" & $Selected_RecipeName & "'",

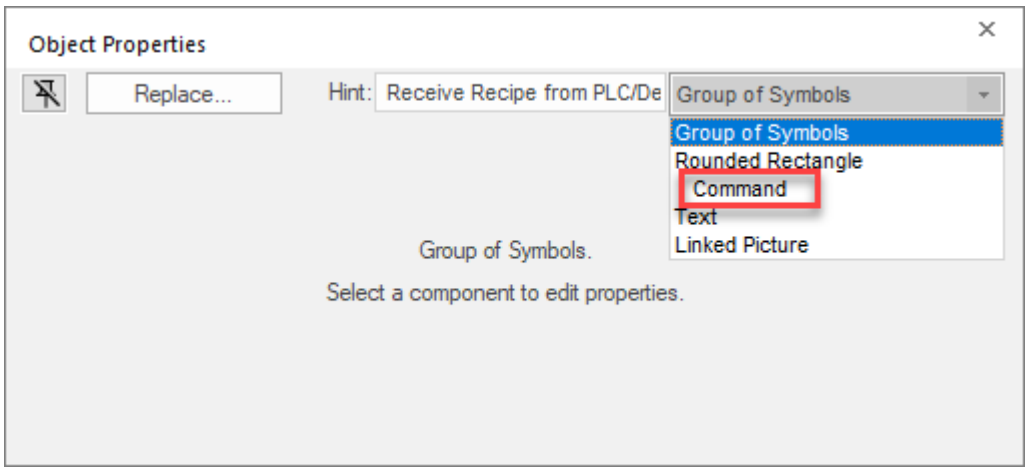


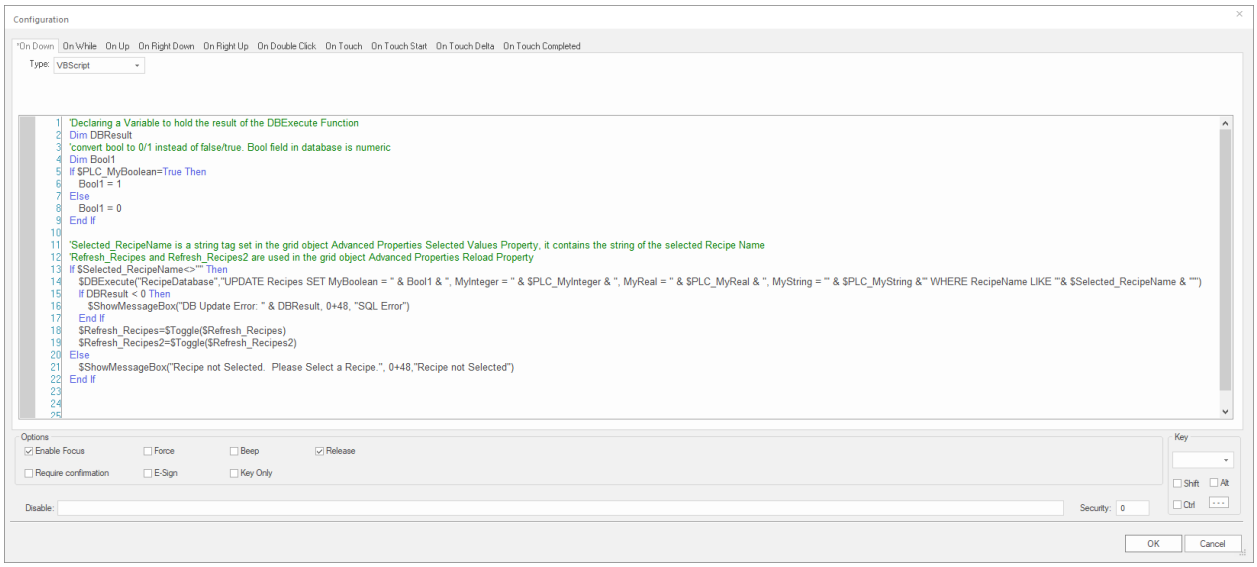
""",


optNumMaxRows

1)


Recieve


Object Properties
Replace...
Hint:
Receive Recipe from PLC/De
Group of Symbols
Group of Symbols
Rounded Rectangle
Command
Text
Linked Picture
Group of Symbols.
Select a component to edit properties.



Code:

```
Declaring a Variable to hold the result of the DBExecute Function
Dim DBResult
'convert bool to 0/1 instead of false/true. Bool field in database is numeric
Dim Bool1
If $PLC_MyBoolean=True Then
        Bool1 = 1
Else
        Bool1 = 0
End If

'Selected_RecipeName is a string tag set in the grid object Advanced Properties Selected Values Property, it contains the string of the selected Recipe Name
'Refresh_Recipes and Refresh_Recipes2 are used in the grid object Advanced Properties Reload Property
If $Selected_RecipeName<>"" Then
        $DBExecute("RecipeDatabase","UPDATE Recipes SET MyBoolean = " & Bool1 & ", MyInteger = " & $PLC_MyInteger & ", MyReal = " & $PLC_MyReal & ", MyString = '" & $PLC_MyString &"' WHERE RecipeName LIKE '"& $Selected_RecipeName & "'")
        If DBResult < 0 Then
                $ShowMessageBox("DB Update Error: " & DBResult, 0+48, "SQL Error")
        End If
        $Refresh_Recipes=$Toggle($Refresh_Recipes)
```

```
        $Refresh_Recipes2=$Toggle($Refresh_Recipes2)
Else
        $ShowMessageBox("Recipe not Selected.  Please Select a Recipe.", 0+48,"Recipe not Selected")
End If
```

DBExecute Function

DBExecute is a built-in scripting function that executes a custom SQL statement on an external database. If the statement is a query (e.g., SELECT), the database values are copied to specified array tags.

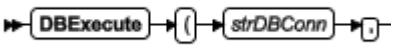
Syntax

Syntax

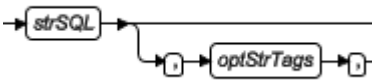
```
DBExecute(strDBConn,strSQL,opStrTags,optNumMaxRows,optStrErrorTag)
```

Expanded Function

```
$DBExecute("RecipeDatabase",
```



"UPDATE Recipes SET MyBoolean = " & Bool1 & ", MyInteger = " & $PLC_MyInteger & ", MyReal = " & $PLC_MyReal & ", MyString = '" & $PLC_MyString &"' WHERE RecipeName LIKE '"& $Selected_RecipeName & "



UPDATE SQL Statement = Modify Records in a Table

Section 5 -Adding Ingredients / Variables to the Recipes

In the Access Table View and the Recipes table open add additional columns (ingredients).

Datasheet View:

Recipes

ID	RecipeName	MyBoolean	MyInteger	MyReal	MyString	MyBoolean2	MyInteger2	MyReal2	MyString2	Click to Add
1	Recipe1	1	123	1.23	String1	456				
2	Recipe2	0	456	4.56	String2	789				
3	Recipe3	1	789	7.89	String3	589				
40	NewRecipeTom	0	110	1.2	String 4	369				
(New)		0	0	0		0	0	0		

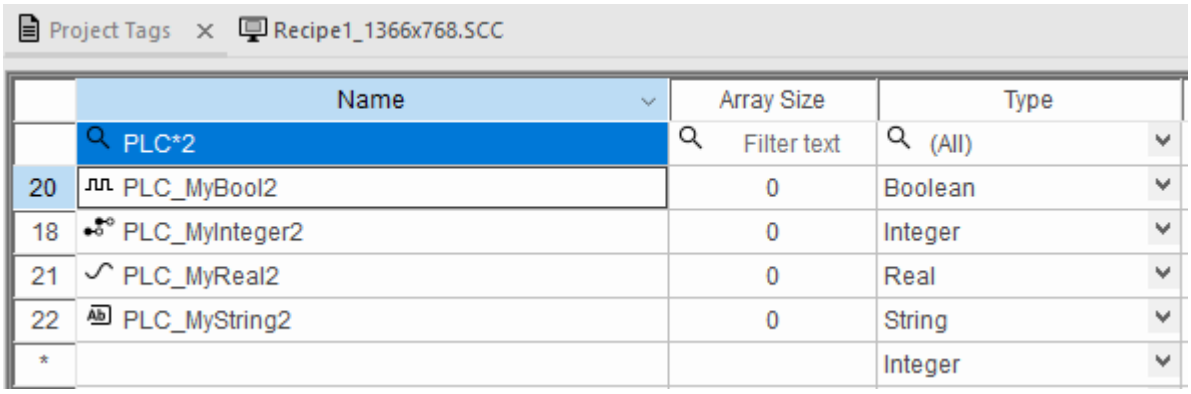
Design View (right-click on Tab)

Recipes

Field Name	Data Type
ID	AutoNumber
RecipeName	Long Text
MyBoolean	Number
MyInteger	Number
MyReal	Number
MyString	Short Text
MyBoolean2	Number
MyInteger2	Number
MyReal2	Number
MyString2	Short Text

Save the table.

Add variables to Project.



Need to add the correct Field Names and Variable Names to the DB commands, paying close attention to the alignment of the Fields versus Variable and proper use of quotes and comma separators.

Completed commands with additional ingredients.

Send – DBSelect

```
Declaring a Variable to hold the result of the DB Select Function
Dim DBResult
'Selected_RecipeName is a string tag set in the grid object Advanced Properties Selected Values Property, it contains the string of the selected Recipe Name
If $Selected_RecipeName <>"" Then
        DBResult=$DBSelect("RecipeDatabase","Recipes","PLC_MyBoolean,PLC_MyInteger,PLC_MyReal,PLC_MyString,PLC_MyBool2,PLC_MyInteger2,PLC_MyReal2,PLC_MyString2","MyBoolean,MyInteger,MyReal,MyString,MyBoolean2,MyInteger2,MyReal2,MyString2","RecipeName='" & $Selected_RecipeName & "'","",1)
        If DBResult < 0 Then
                $ShowMessageBox("DB Select Error: " & DBResult,0+48,"SQL Error")
        End If
Else
        $ShowMessageBox("Recipe not Selected.  Please Select a Recipe.", 0+48,"Recipe not Selected")
End If
```

Receive – DBExecute

```
'Declaring a Variable to hold the result of the DBExecute Function
Dim DBResult
'convert bool to 0/1 instead of false/true. Bool field in database is numeric
Dim Bool1, Bool2
If $PLC_MyBoolean=True Then
        Bool1 = 1
Else
        Bool1 = 0
End If

If $PLC_MyBool2=True Then
        Bool2 = 1
Else
        Bool2 = 0
End If

'Selected_RecipeName is a string tag set in the grid object Advanced Properties Selected Values Property, it contains the string of the selected Recipe Name
'Refresh_Recipes and Refresh_Recipes2 are used in the grid object Advanced Properties Reload Property
If $Selected_RecipeName<>"" Then
        $DBExecute("RecipeDatabase","UPDATE Recipes SET MyBoolean = " & Bool1 & ", MyBoolean2 = " & Bool2 & ", MyInteger = " & $PLC_MyInteger & ", MyInteger2 = " & $PLC_MyInteger2 & ", MyReal = " & $PLC_MyReal & ", MyReal2 = " & $PLC_MyReal2 & ", MyString = '" & $PLC_MyString &" ', MyString2 = '" & $PLC_MyString2 &"' WHERE RecipeName LIKE '"& $Selected_RecipeName & "'")
        If DBResult < 0 Then
                $ShowMessageBox("DB Update Error: " & DBResult, 0+48, "SQL Error")
        End If
        $Refresh_Recipes=$Toggle($Refresh_Recipes)
        $Refresh_Recipes2=$Toggle($Refresh_Recipes2)
Else
        $ShowMessageBox("Recipe not Selected.  Please Select a Recipe.", 0+48,"Recipe not Selected")
End If
```