<u>Blue Open Studio Recipes – MS Access, Grid Sample Project V2 Extended Technical</u> <u>Description</u>

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.

Recipe Send and Receive					
RecipeName	Filter:			_ 🛃 ?	
Recipe1	Sort:	None ~			
Recipe2					
Recipe3	S	Send	Recieve		
Preview				PLC Values	
Recipe Name	MyBoolean	M	MyBoolean:		
			MyInteger:	0	
<		>	MyReal:	0.000000	
			wystring.		
Recipe, MS Access, Grid				÷₽ P	a 🛥 🕐

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.

	RecipeName
Recipe1	
Recipe2	
Recipe3	

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

Recipe Send and Receive							
Recipel	Filter:						
Recipe1		Sort: ASC ~					
Recipe2							
Recipe3							
Preview							
MyBoolean	MyInteger	MyReal					
	123	1.23					
¢		>					

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.

Recipe Send and Receive		
RecipeName	Filter: %2	?
Recipe2	Sort: ASC ✓	
	Send Recieve	

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

PLC Values						
MyBoolean:						
MyInteger:	123					
MyReal:	1.230000					
MyString:	This is a string					

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.

Recipe Edit						
	Filter:			🖌 ? So	rt: ASC ~	
Recipe Name	MyBoolean	MyInteger	MyReal	MyString		
Recipe1		123	1.230	String1		
Recipe2		456	4.560	String2		
Recipe3		789	7.890	String3		
Create New Recipe Vame: Create						
Recipe, MS Access, Grid					50 <u>vi</u> 2 🔮	

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	•	<mark>456</mark>	4.560	String2
Recipe3		789	7.890	String3
Test		444	4.440	ijklm
				,

In the Create Recipe Area two options are available.

Recipe Name	MyBoolean	MyInteger	MyReal	MyString
Recipe1		0	1.230	String1
Recipe2	•	456	4.560	String2
Recipe3	Ø	789	7.890	String3
Test		444	4.440	ijklm
Create New Recipe	Recipe Nar	ne: Recipe2		Create
Create New Recipe	Recipe Nar	ne: Recipe2		Create

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 Na	me: 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 v 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.



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File Home Share View						~ ?
Arr Pin to Quick Copy Paste Copy Copy Paste Copy Copy	Move Copy to * to *	the New item ▼ the Easy access ▼ the New	Properties Open *	Select all Select none Invert selection		
$\leftarrow \rightarrow \checkmark \uparrow \square \rightarrow$ This PC \rightarrow Drive (D:)	 Recipes, MS Access, Grid 	iv1.x v č	Search Recipes, MS	Access. Grid v1.x		م
		~				7
	 Name 		Date modified	Туре	Size	
	Alarm		11/19/2020 08:0	5 File folder		
	Config		7/17/2024 07:54	File folder		
	Database		7/18/2024 16:26	File folder		
	DataProtectio	n	11/19/2020 08:0	5 File folder		
💻 This PC	Hst		11/19/2020 08:0	5 File folder		
🧊 3D Objects	📙 IndustrialGrap	phics	7/19/2024 08:44	File folder		
E Desktop	Screen		7/18/2024 16:41	File folder		
Documents	Symbol		1/16/2024 09:57	File folder		
	Web		1/16/2024 09:57	File folder		
Musia	app.db		7/18/2024 16:41	SQLite	104 KB	
	BreakPoints.b	ĸt	7/18/2024 16:52	Text Document	1 KB	
Pictures	ProjectTimeSt	tamp.txt	7/18/2024 16:52	Text Document	1 KB	
🤗 Videos	👜 RecipeDataba	se.mdb	7/18/2024 11:13	Microsoft Access	544 KB	
Windows (C:)	😁 Recipes, MS A	Access, Grid.APP	7/18/2024 16:52	BLUE Open Studi	о 10 KB	
🚔 Drive (D:)	📋 Recipes, MS A	ccess, Grid.HSH	7/19/2024 08:44	HSH File	1 KB	
🚔 Local Disk (E:)	Revision Histo	ory.csv	1/16/2024 09:57	Microsoft Excel C	1 KB	
💣 Network	~					
16 items						

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

All Access Objects	⊙ <		Recipes X							
			ID 🔻	RecipeName 🗢	MyBoolean 🗢	MyInteger 👻	MyReal 🗢	MyString 🗢	Click to Add 🔜	-
Search	Q		:	Recipe1	1	0	1.23	String1		
Tables	^		:	2 Recipe2	0	456	4.56	String2		
ParameterTable				8 Recipe3	1	789	7.89	String3		
Recipes			40) Test	1	444	4.44	ijklm		
- necipes			4:	L Recipe4	0	0	0			
			43	3 Test2	1	444	4.44	ijklm		
		*	(New)	0	0	0			

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.

Recipe Edit									
C		Filter:			Sort: None	~			
Recipe Na	me	MyBoolean	MyInteger	MyReal	MyString				
Recipe1			6	1.230	String1				
Recipe2			456	4.560	Strina2				

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.

9	- oriorou_reoperaneion	v	integer		000010 0010
10	M PLC_MyBoolean	0	Boolean	¥	PLC tag
11		0	Integer	Y	PLC tag
12	✓ PLC_MyReal	0	Real	Y	PLC tag
13	DLC_MyString	0	String	¥	PLC tag

Example for Modbus.

Description:								
MAIN DRIVER SHEET								
Disable:								
Read Completed: Read Status:								
	Aire -							
Vrite Completed: Write Status:								
The completed.	lax:							
Tag Name	Station	I/O Address	Action	_	Scan	_	Div	Add
Tag Name	Contract Station	I/O Address	Action	~	Scan Q (All)	~	Div Q Filter text	Add
Tag Name Q Filter text PLC_MyBoolean	Station Q Filter text 127.0.0.1:502:1	VO Address Q Filter text 0X:1	Action Q (All) Read+Write	~ ~	Scan Q (All) Always	* *	Div Q Filter text	Add Q Filter t
Tag Name Q Filter text PLC_MyBoolean PLC_MyInteger	Station Q. Filter text 127.0.0.1:502:1 127.0.0.1:502:1	V/O Address Q Filter text 0X:1 4X:1	Action Q (All) Read+Write Read+Write	> > >	Scan Q (All) Always Always	> > >	Q Filter text	Add Q Filter t
Tag Name Q. Filter text PLC_MyBoolean PLC_MyInteger PLC_MyReal	Station Q. Filter text 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1	I/O Address Q: Filter text 0X:1 4X:1 4X:2	Action Q (All) Read+Write Read+Write Read+Write	* * * * *	Scan Q (All) Always Always Always	> > > >	Q Filter text	Add Q Filter t
Tag Name Q Filter text PLC_MyBoolean PLC_MyInteger PLC_MyReal PLC_MyString	Station Q. Filter text 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1	I/O Address Q: Filter text 0X:1 4X:1 4X:2 4X:4	Action Q (All) Read+Write Read+Write Read+Write Read+Write	> > > > >	Scan Q (All) Always Always Always Always	> > > > >	Div Q Filter text	Add Q Filter t
Tag Name Q Filter text PLC_MyBoolean PLC_MyInteger PLC_MyReal PLC_MyString	Station Q. Filter text 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1	I/O Address Q. Filter text 0X:1 4X:1 4X:2 4X:4	Action Q (AII) Read+Write Read+Write Read+Write Read+Write Read+Write	> > > > > >	Scan Q (AII) Always Always Always Always Always	> > > > > >	Div Q Filter text	Add Grant Filter t
Tag Name Q. Filter text PLC_MyBoolean PLC_MyInteger PLC_MyReal PLC_MyString	Station Q. Filter text 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1	I/O Address Q. Fitter text 0X:1 4X:1 4X:2 4X:4	Action Q (All) Read+Write Read+Write Read+Write Read+Write Read+Write	<pre>> > > > > > > > > ></pre>	Scan Q (All) Always Always Always Always Always Always Always	> > > > > > > >	Div Q Filter text	Add Q Filter t
Tag Name Q. Filter text PLC_MyBoolean PLC_MyReal PLC_MyString	Station Q. Filter text 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1	I/O Address Q. Filter text 0X:1 4X:1 4X:2 4X:4	Action Q (All) Read+Write Read+Write Read+Write Read+Write Read+Write Read+Write	<pre>> > ></pre>	Scan Q (All) Always Always Always Always Always Always Always		Div Filter text	Add Q Filter t
Tag Name Q. Filter text PLC_MyBoolean PLC_MyInteger PLC_MyReal PLC_MyString	Station Q Filter text 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1 127.0.0.1:502:1	I/O Address Q. Filter text 0X:1 4X:1 4X:2 4X:4	Action Q (All) Read+Write Read+Write Read+Write Read+Write Read+Write Read+Write		Scan Q (All) Always Always Always Always Always Always Always Always	> > > > > > > > > > > >	Div Q Filter text	Add Q Filter t

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



Object Proper	ties				×
Rep	blace	Hint: Send Re	cipe to PLC/Device	Group of Symbols Group of Symbols	•
		Grour	of Symbols	Command Text Linked Picture	
		Calanta	or cymbolo.		
		Select a compo	nen to ear proper	IC3.	
Configuration					
"On Down On While On Up Type: VBScript	On Right Down On Right Up (On Double Click On Touch On T	ouch Start On Touch Delta On Touch	Completed	
1 Declaring a Vi 2 Dim DBResult 3 'Selected_Rec 4 If SSelected_R 5 DBResult=5 6 If DBResult 7 SShowMe 8 End If 9 Else	ariable to hold the result of th ipeName is a string tag set in ecipeName ⇔"" Then DBSelect("RecipeDatabase", < 0 Then ssageBox("DB Select Error: '	e DB Select Function n the grid object Advanced Prr "Recipes", "PLC_MyBoolean, " & DBResult,0+48, "SQL Erro	operties Selected Values Property, PLC_MyInteger,PLC_MyReal,PLC_ r″)	it contains the string of the selected Recipe Name _MyString","MyBoolean.MyInteger,MyReal,MyString","R	acipeName=" & \$Selected_RecipeName & [,] ,1)
10 \$ShowMess 11 End If	ageBox("Recipe not Selected	d. Please Select a Recipe.",	0+48,"Recipe not Selected")		
Options	Force Reep	Release			Key
Require confirmation	E-Sign Key C	Dnly			
Disable:					Security: 0
					OK

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_MyR eal,PLC MyString","MyBoolean,MyInteger,MyReal,MyString","RecipeName='" & \$Selected RecipeName & """, "", 1)

Shift Alt Ctrl ···· Cancel

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",



Project Explorer

▼ ₽ Х



	Recipes	×	
\angle	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.

+strCondition

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

"RecipeName="" & \$Selected_RecipeName & """,

+strOrder -

"",

→optNumMaxRows

1)





Configuration	×
"On Down On While On Up On Right Down On Right Up On Double Click On Touch Ont Touch Della On Touch Completed Type VBScript •	
1 Declaring a Variable to hold the result of the DBExecute Function 2 Dim BPRisult 3 convert bool 0/ instead of false/true. Bool field in database is numeric 4 in BPRisult 4 in BPRisult 5 if SPLC_MyBoolean=True Then 6 Bool1 = 1 7 Etice 8 Bool1 = 0 9 End if 11 13elected_RecipeName is a string tag set in the grid object Advanced Properties Selected Values Property, it contains the string of the selected Recipe Name 13 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 14 Selected_RecipeName is a string tag set in the grid object Advanced Properties Reload Property 15 Selected_RecipeName is a string tag set in the grid object Advanced Properties Reload Property 16 If Selected_RecipeName is a string tag set in the grid object Advanced Properties Reload Property 17 Selected_RecipeName is a string tag set in the grid object Advanced Properties Reload Property 17 Selected_RecipeName is a string tag set in the grid object Advanced Properties Reload Property 17 Selected_RecipeName is a string tag set in the grid object Advanced Properties Reload Property 17 Selected_RecipeName is a Selected Properties Reload Properties 17 Selected_RecipeName is a Selected_Properties Reload Property 17 Selected_RecipeName is UPDATE RecipesSET MyBoolean = " & Bool1 & ", MyInteger = " & SPLC_MyReal & ", MyReal = " & SPLC_MyReal & ", MyString = " & SPLC_MyString &" WHERE RecipeName LIKE " & SSelected_RecipeName & " 17 Selected_RecipeNames_SET DegleSelected_RecipeName LIKE " & SSelected_RecipeName & " 18 Selected_RecipeSelected_Selected_RecipeName 18 Selected_RecipeSelected_RecipeName_IKE " & SSelected_RecipeName & " 19 Selected_RecipeSelected_RecipeName_IKE " & SSelected_RecipeName_IKE " & SSelected_RecipeNam	
Options Key Bradle Focus Force Beaue confirmation E.Sign Key Only Should be focus	ft At
OK	Cancel

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



Expanded Function

\$DBExecute("RecipeDatabase",

► DBExecute + (+ strDBConn + -

"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	×											
2	ID	~	RecipeNam	ne 🔻	MyBoolean 🗢	MyInteger 👻	MyReal 🗢	MyString 🔻	✓ MyBoolean2 マ	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				
		4	0 NewRecipeTom		0	110	1.2	String 4	369				
*		(New)		0	0	0		0	0	0		

Design View (right-click on Tab)

	Recipes X					
2	Field Name	Data Type				
1	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.

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Add variables to Project.

Project Tags × Recipe1_1366x768.SCC									
	Name ~	Array Size	Туре						
	Q PLC*2	Q Filter text	Q (All)	4					
20	m PLC_MyBool2	0	Boolean	4					
18	◆PLC_MyInteger2	0	Integer	4					
21	✓ PLC_MyReal2	0	Real	4					
22	PLC_MyString2	0	String	~					
*			Integer	~					

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_MyR eal,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