

# emWin AppWizard Quick Start v2

MA35 Family

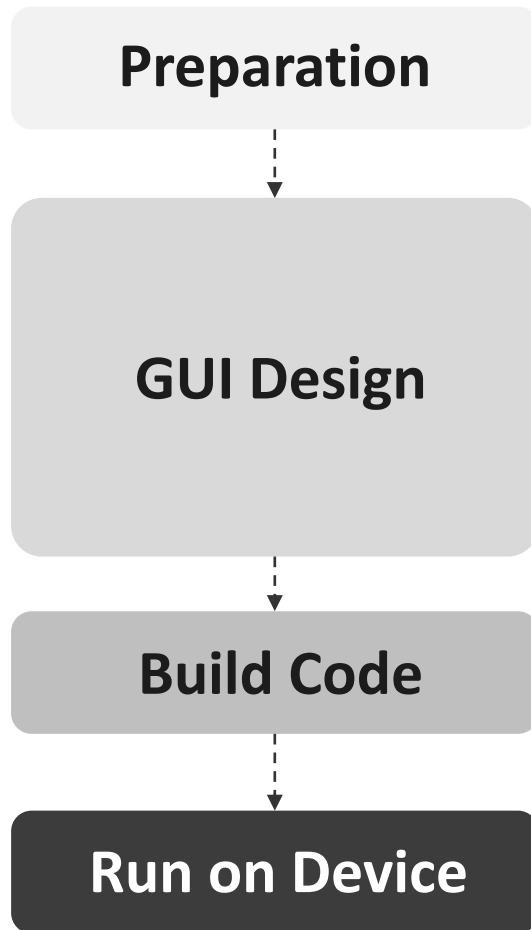
MU20 Eric

Joy of innovation  
**nuvoTon**

# | Agenda

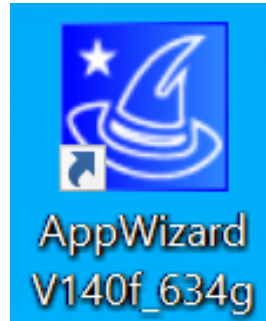
- Development Process
- AppWizard Tool for Nuvoton Demo
  - Screen Transitions
  - Animation intro
- Run it on MA35H0 EVB

# | Development Process



- Preparation Software Download and Unzip emWin Package :

[Download Link](#)



This demo uses AppWizard V140f\_634g for development.  
AppWizard path: *emWin package/emWin/Tool*

# AppWizard Tool

The screenshot displays the AppWizard Tool interface, which is divided into several functional areas:

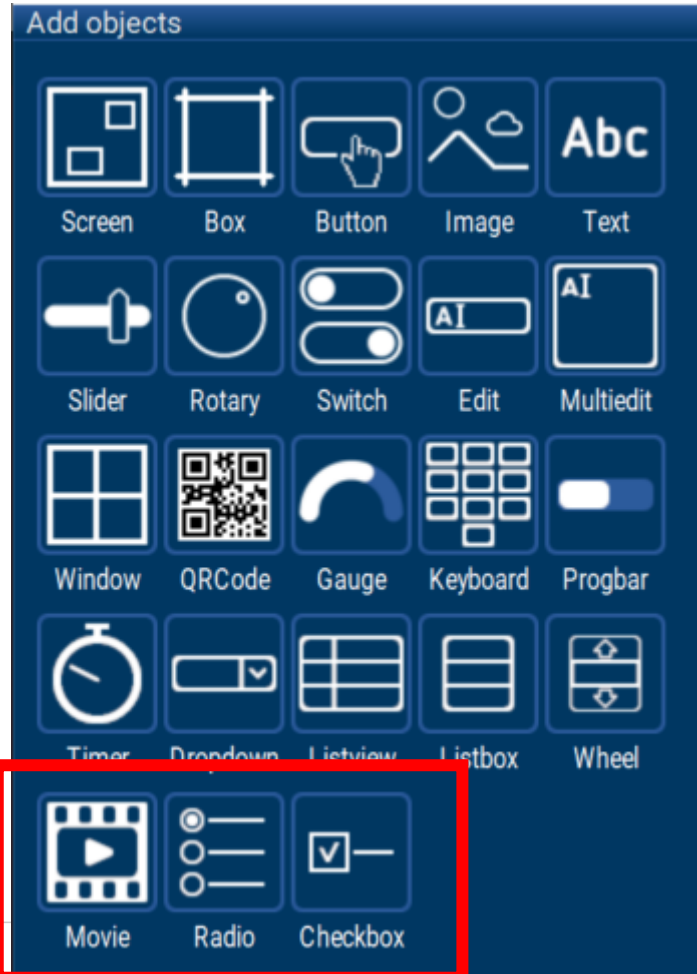
- Object:** A panel on the left containing a grid of UI widget icons such as Screen, Box, Button, Image, Text, Slider, Rotary, Switch, Edit, Multiedit, Window, and QRCode.
- Tree:** A hierarchical tree view below the Object panel, listing the objects currently in the project, including Button (ID\_SWITCH\_GB\_00), Window (ID\_WINDOW\_GLIMIT, ID\_WINDOW\_GPOSI...), Button (ID\_BUTTON\_00), Screen (ID\_SCREEN\_01), Box (ID\_BOX\_00), and Text (ID\_TEXT\_LABEL\_P...).
- Editor:** The central workspace for designing the application, showing a dark blue background with the "nuvoTon" logo.
- Setting Interaction:** A table at the bottom center defining the logic for object interactions.
- Object Properties:** A panel on the right for configuring the selected object (ID\_BUTTON\_00), including its position (190, -16), size (100, 55), and various styling options like text colors, background colors, and bitmaps.

**Advanced Setting** (Label for the bottom-left area)

	+	-	~	[	Emitter	Signal	Job	Receiver	Co
X	/				ID_SCREEN_00	INITDI...	SETVIS	ID_PROGBAR_TB_00	Hic
X	/				ID_SCREEN_00	INITDI...	SETVIS	ID_PROGBAR_GB_00	
X	/				ID_SCREEN_00	INITDI...	SETVIS	ID_PROGBAR_GL_00	
X	/				ID_SCREEN_00	INITDI...	SETVIS	ID_PROGBAR_GP_00	
X	/				ID_ROTARY_00	VALUE...	SETVA...	ID_VAR_GATE_VAL	Ma
X	/				ID_SLIDER_00	VALUE...	SETVA...	ID_VAR_GATE_VAL	If c
X	/				ID_VAR_GATE_VAL	VALUE...	SETVA...	ID_SLIDER_00	
X	/				ID_VAR_GATE_VAL	VALUE...	SETVA...	ID_ROTARY_00	
X	/				ID_VAR_GATE_VAL	VALUE...	SETVA...	ID_TEXT_CNT_00	Up

# | AppWizard Tool - Updated

V140f\_634g

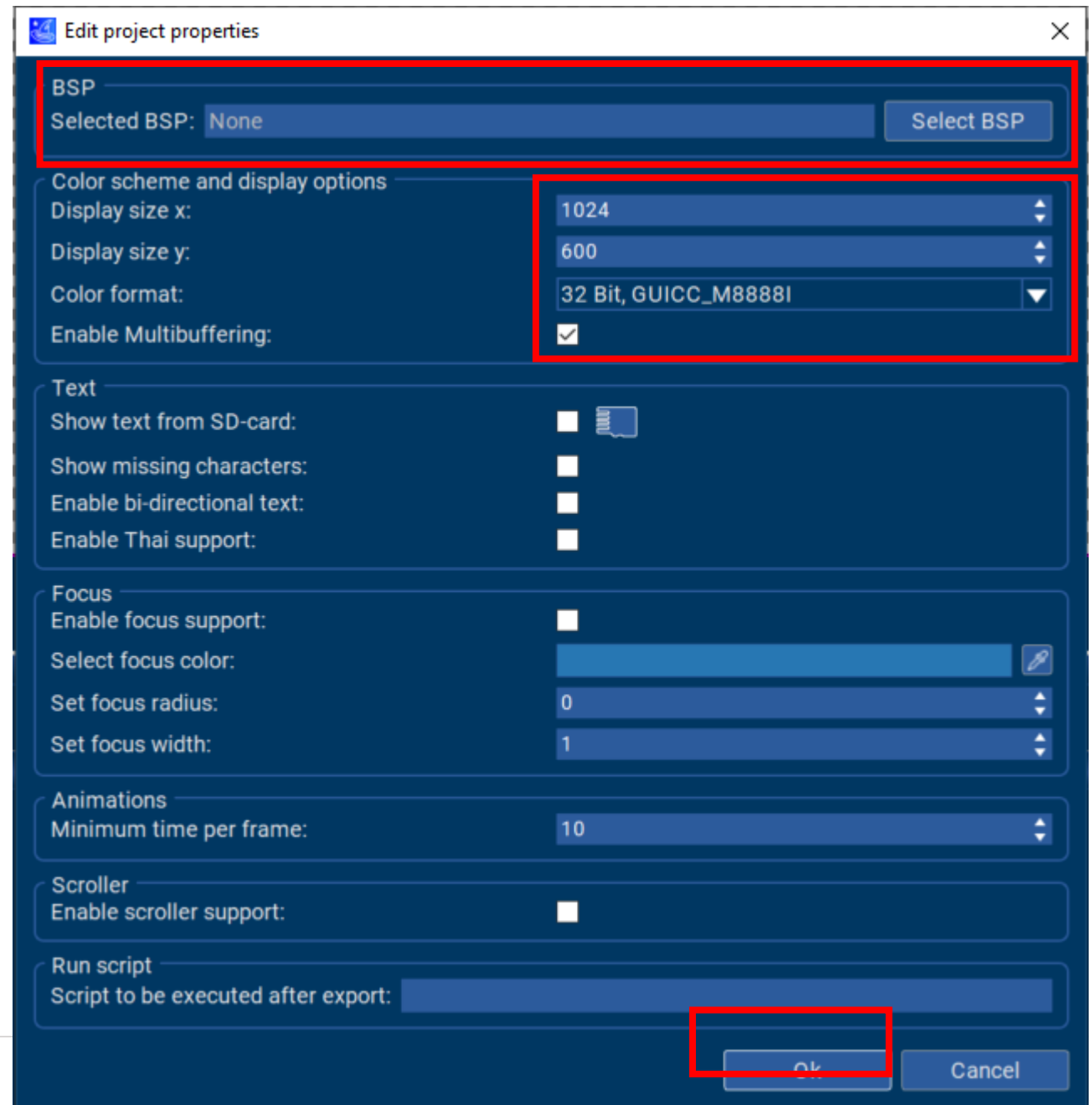
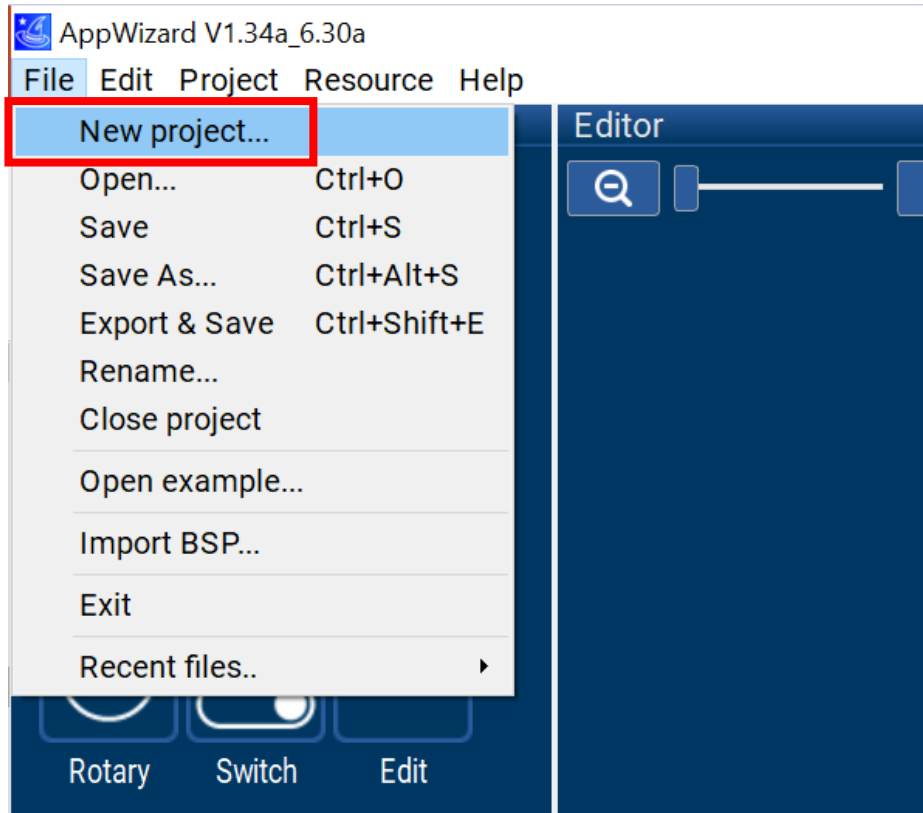


Add Object :

- Movie object for playing movie
- Radio object
- Checkbox with up to 3 states

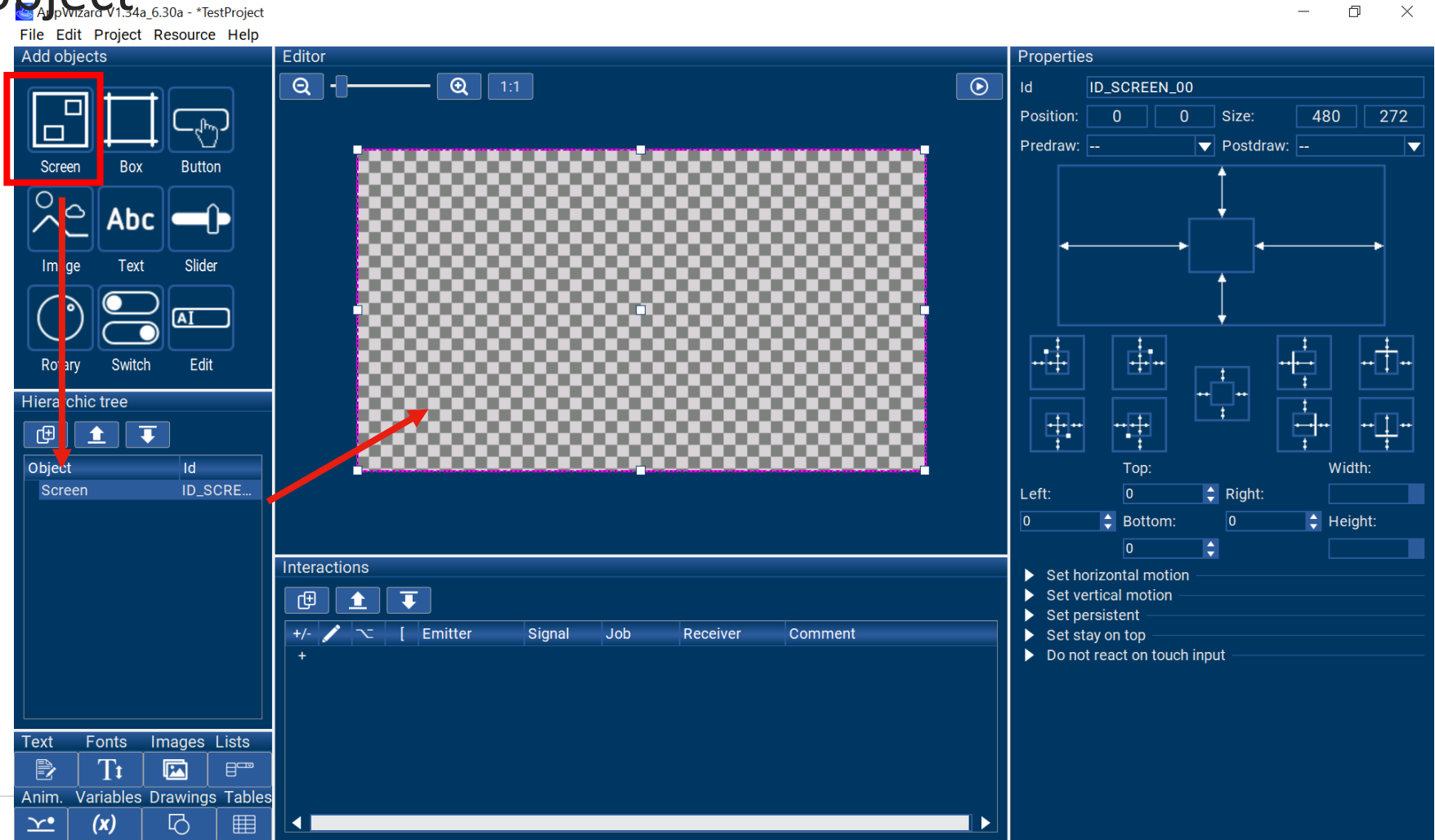
# Start AppWizard

- Create project



# Start AppWizard

- Add new **screen** object



Preparation

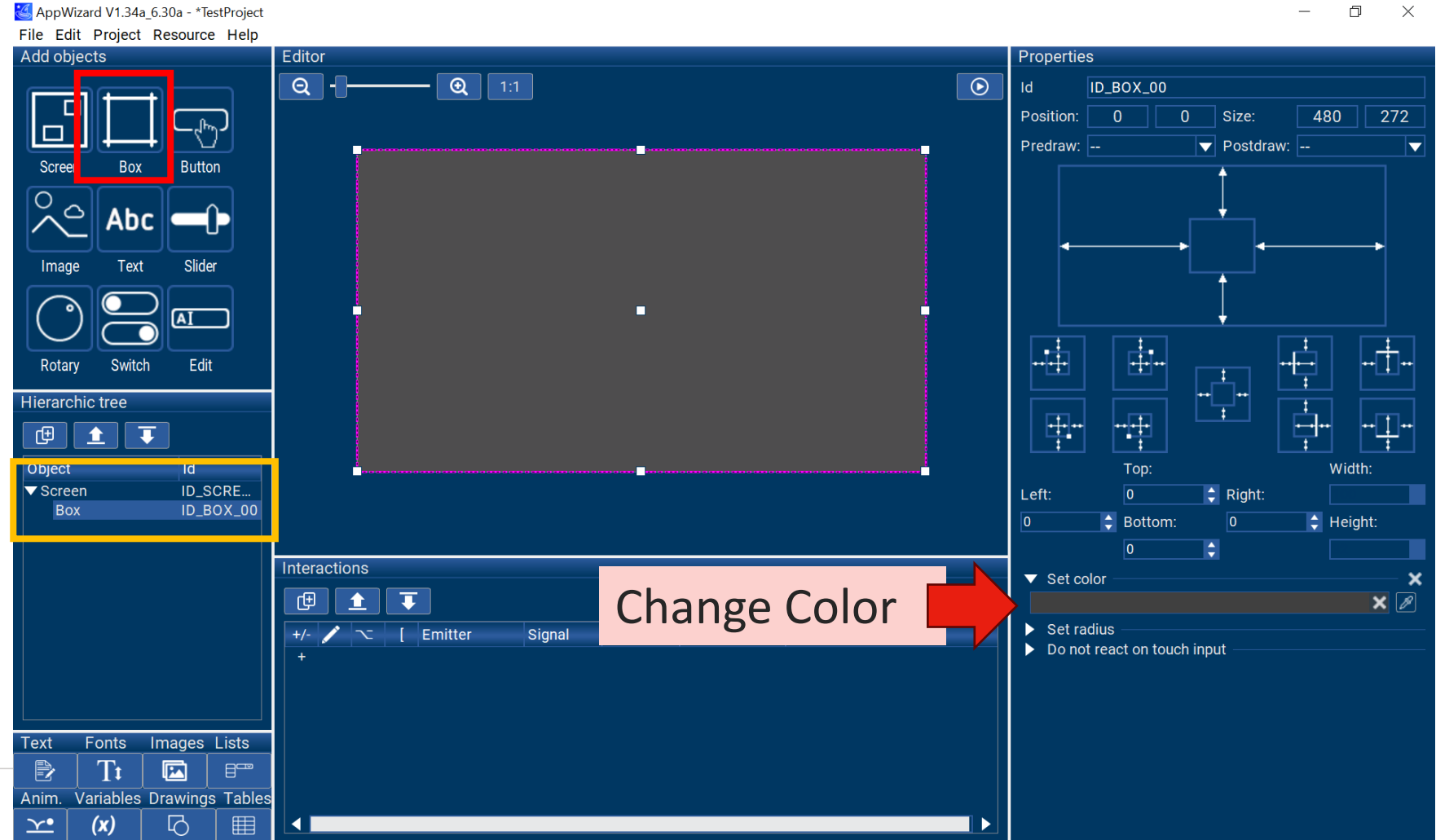
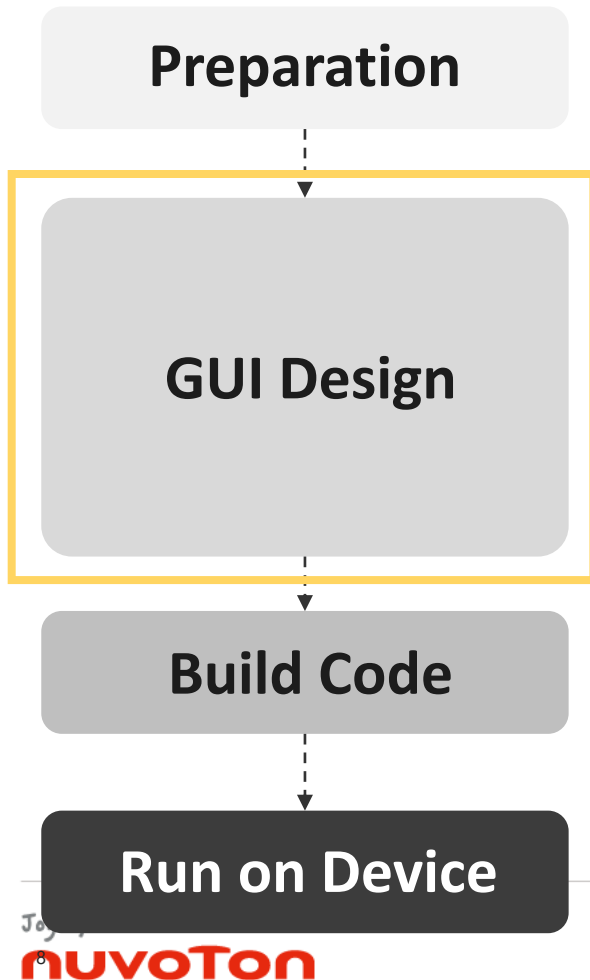
GUI Design

Build Code

Run on Device

# Start AppWizard

- Add new **box** object





# Start AppWizard

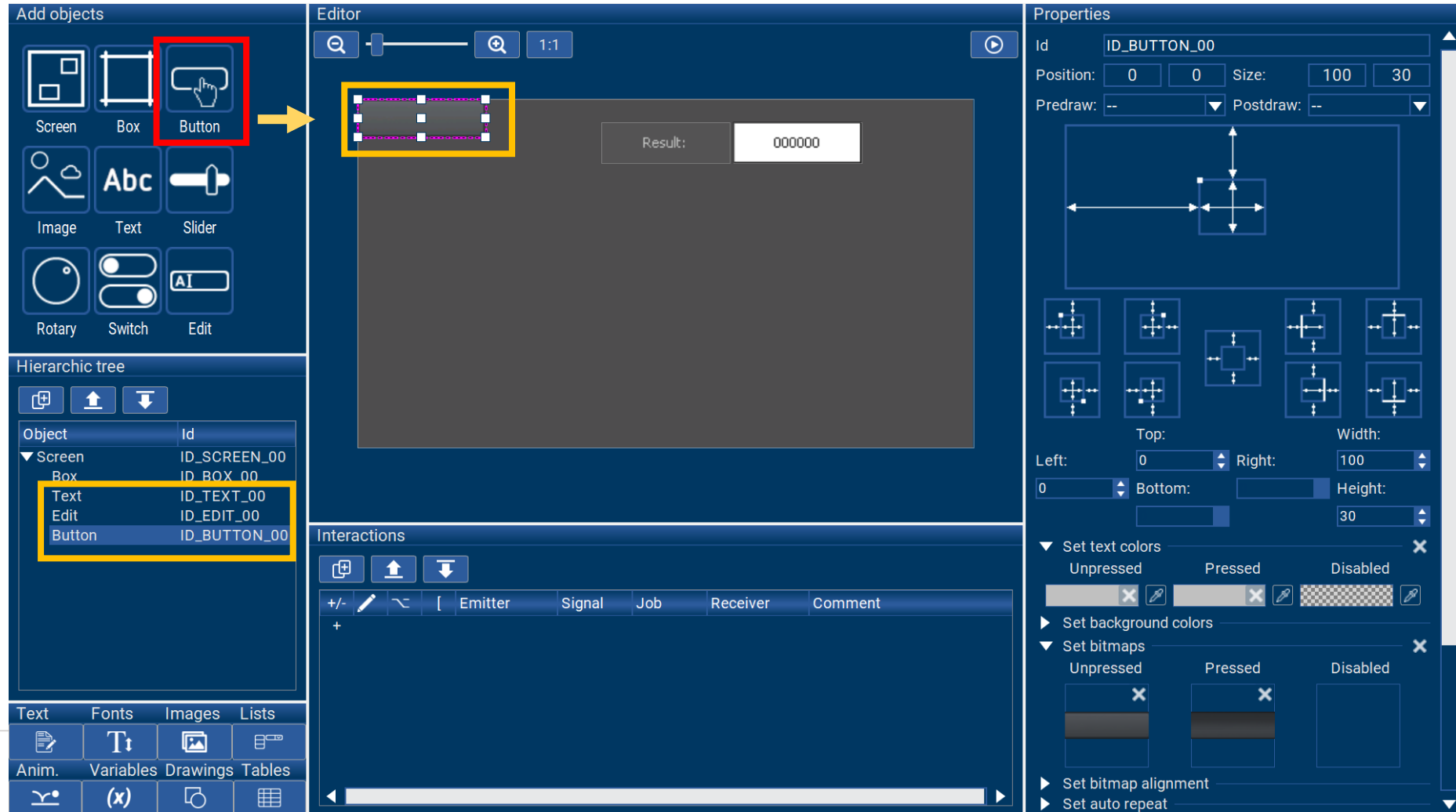
- Add new **button** object

Preparation

GUI Design

Build Code

Run on Device



# Start AppWizard

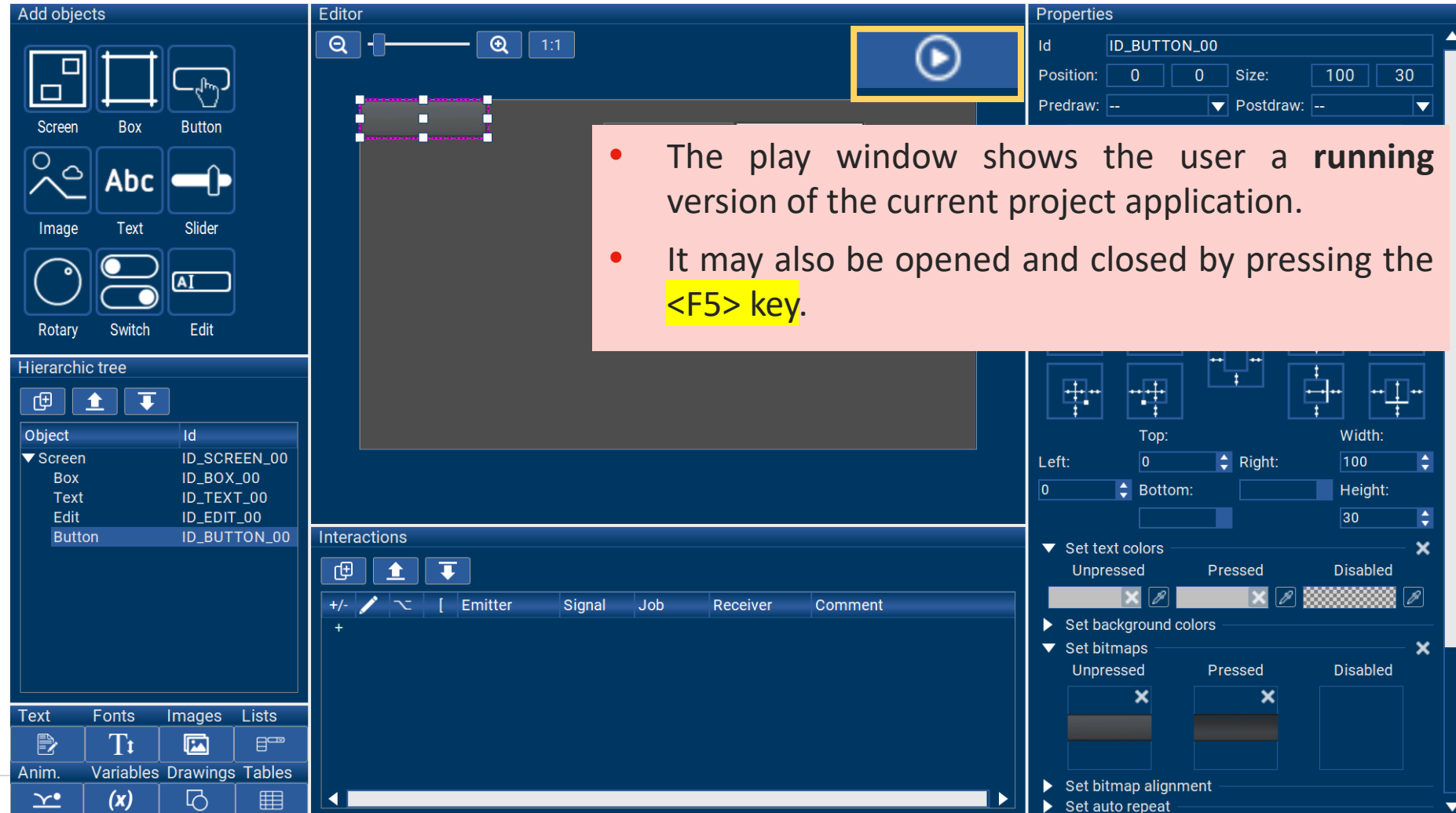
- Play window

Preparation

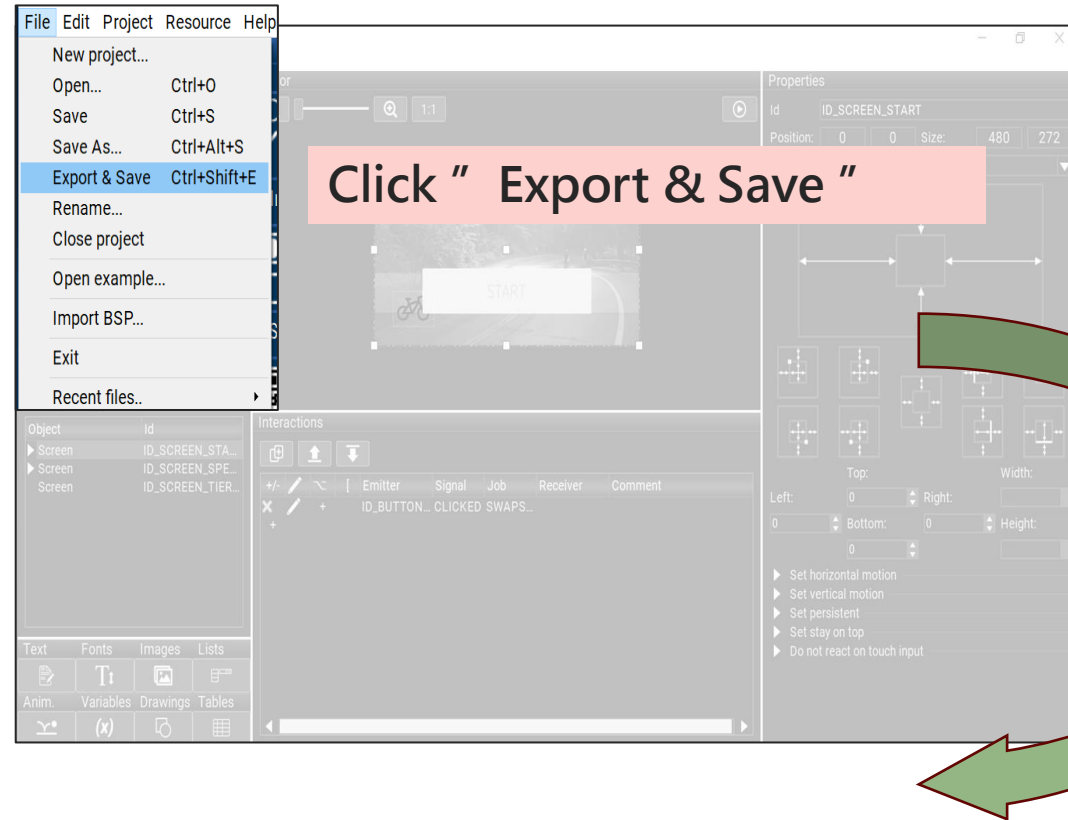
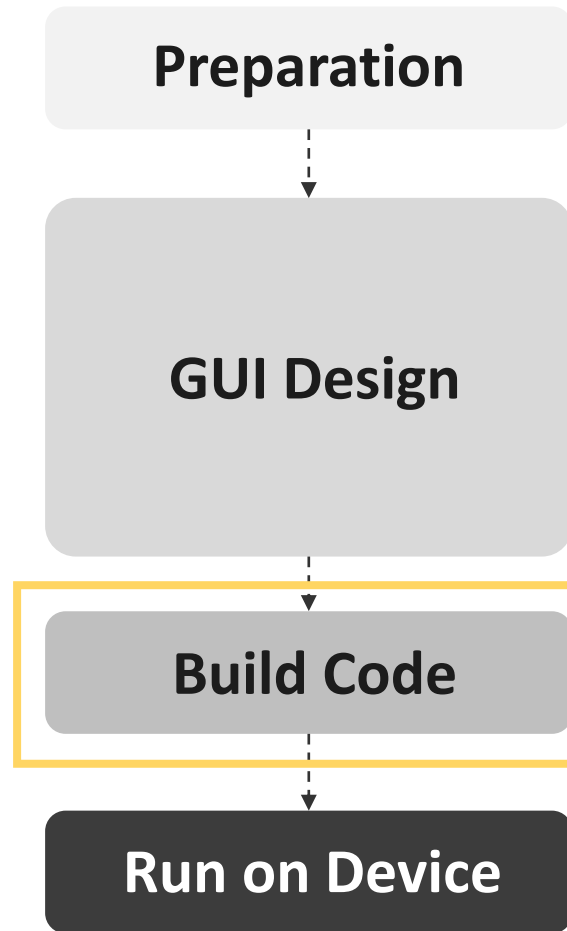
GUI Design

Build Code

Run on Device



# UI Design Flow



Export the code file



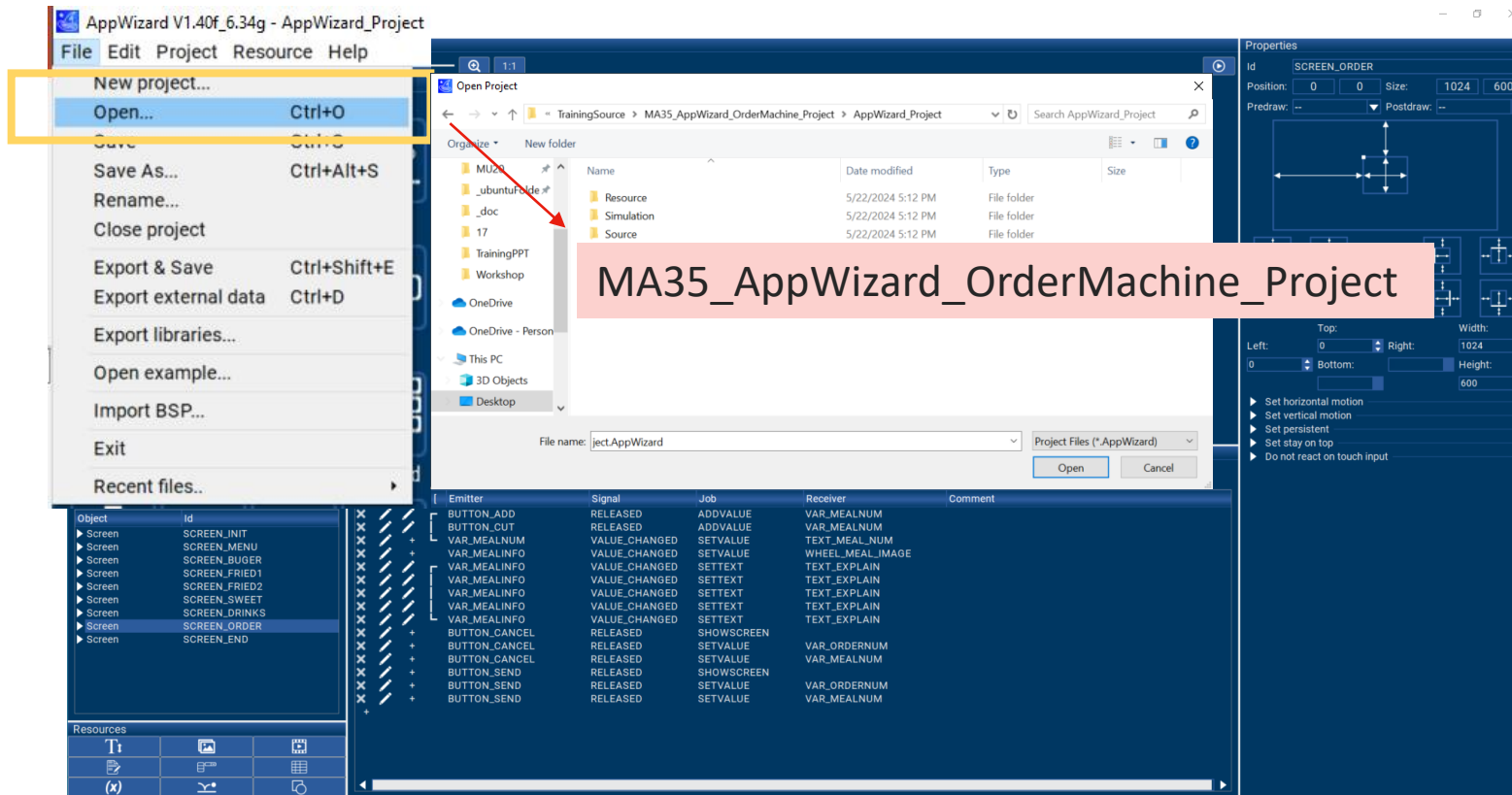
# Project **Exercise 1**

## Add Objects



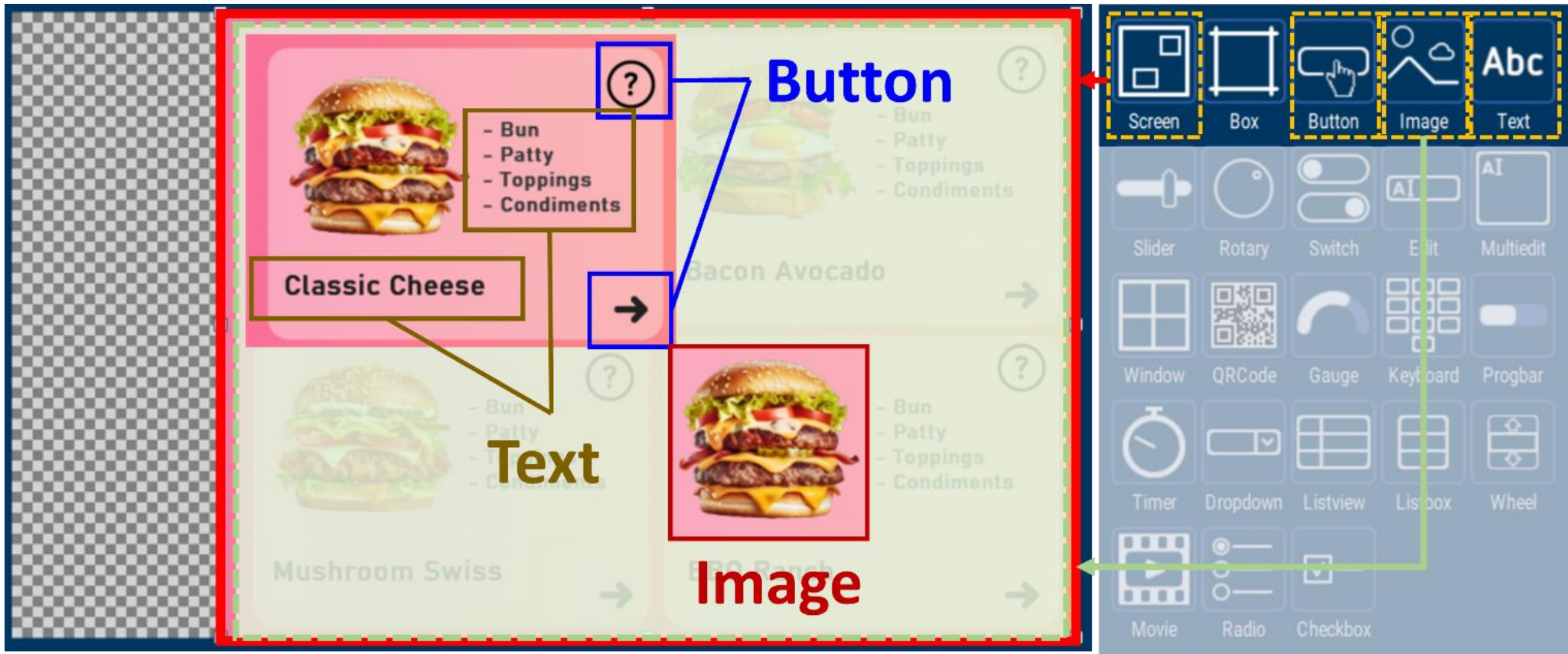
# Exercise 1 : Add Objects

- **Open** MA35\_AppWizard\_OrderMachine\_Project

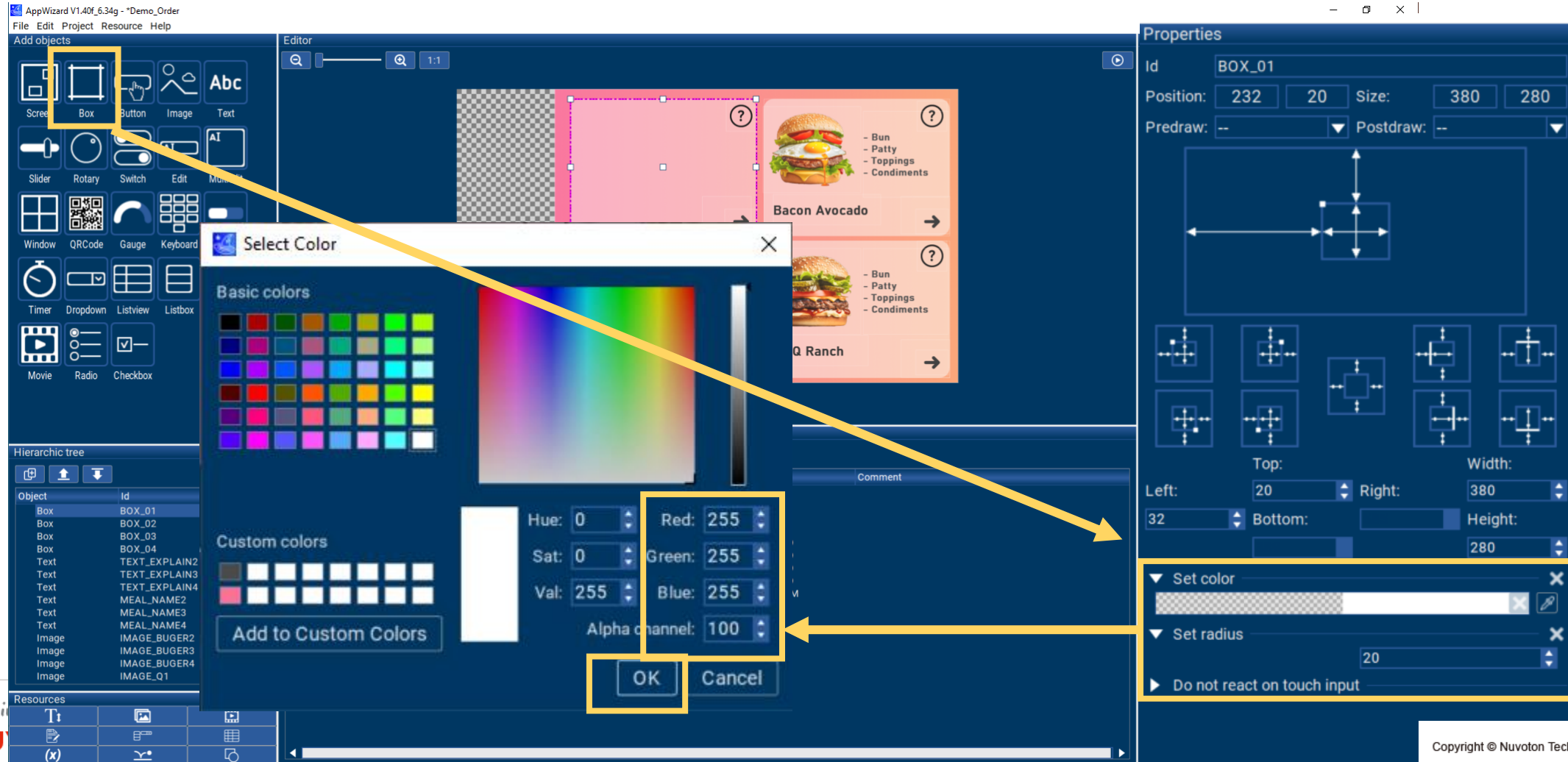


# Exercise 1 : Add Objects

- Add Box, Text , Button and Image



# Exercise 1 : Add Box Objects





# Exercise 1 : Add Text Objects

AppWizard V1.40f\_6.34g - \*Demo\_Order

File Edit Project Resource Help

Add objects

Screen Box Button Image **Text** Slider Rotary Switch Edit Multitext Window QRCode Gauge Keyboard Progbar Timer Dropdown Listview Listbox Wheel Movie Radio Checkbox

Hierarchic tree

Object

Object	Id
Box	BOX_01
Box	BOX_02
Box	BOX_03
Box	BOX_04
Text	TEXT_EXPLAIN1
Text	TEXT_EXPLAIN2
Text	TEXT_EXPLAIN3
Text	TEXT_EXPLAIN4
Text	MEAL_NAME1
Text	MEAL_NAME2
Text	MEAL_NAME3
Text	MEAL_NAME4
Image	IMAGE_BUGER2
Image	IMAGE_BUGER3

Resources

Editor

Choose/Edit Text

Id	Obj. Ref.	English	Chinese
MENU_FOOD_NAME1	1	BURGER	
MENU_FOOD_NAME2	1	FRIED	
MENU_FOOD_NAME3	1	SWEET	
MENU_FOOD_NAME4	1	DRINKS	
BURGER_NAME1	1	Classic Cheese	
BURGER_NAME2	1	Bacon Avocado	
BURGER_NAME3	1	Mushroom Sw...	
BURGER_NAME4	1	BBQ Ranch	
BURGER_TEXT	1	Bun'n Patty...	
DRINK_NAME1	1	Vanilla Milksh...	
DRINK_NAME2	1	Chocolate Mil...	
DRINK_NAME3	1	Strawberry M...	
DRINK_NAME4	1	Cookies and C...	
DRINK_TEXT	4	Milk'n-Ice C...	
FRIED_NAME1	1	Classic Chicken	
FRIED_NAME2	1	Spicy Chicken	
FRIED_NAME3	1	Honey Mustar...	
FRIED_NAME4	1	BBQ Chicken	

Interactions

+	-	Emmitter	Signal	Job	Receiver	Comment
X	/	+	RELEASED	SHOWSCREEN		
X	/	+	RELEASED	SHOWSCREEN		
X	/	+	RELEASED	SHOWSCREEN		
X	/	+	RELEASED	SHOWSCREEN		
X	/	+	RELEASED	SETVALUE	VAR_MEALINFO	
X	/	+	RELEASED	SETVALUE	VAR_MEALINFO	
X	/	+	RELEASED	SETVALUE	VAR_MEALINFO	
X	/	+	RELEASED	SETVALUE	VAR_MEALINFO	
X	/	+	FIXED	SETVALUE	VAR_ORDERNUM	

Id: MEAL\_NAME1

Position: 247 215 Size: 219 62

Predraw: -- Postdraw: --

Left: 215 Right: 219

Top: 47 Bottom: 62

Width: 62 Height: 62

Set text color

Set background color

Set framed font color

Set text

BURGER\_NAME1

Set text alignment

Offset x: 0 Offset y: 0 Alignment:

Set font

Bahnschrift\_32\_Bold\_EXT\_AA4.xbf

Enable text wrapping

Enable text rotation

Do not react on touch input



# Exercise 1 : Add Image Objects

AppWizard V1.40f\_6.34g - Demo\_Order

File Edit Project Resource Help

Add objects

Screen Box Button Image Text

Slider Rotary Switch Edit Multitouch

Window QRCode Gauge Keyboard Progbar

Timer Dropdown Listview Listbox Wheel

Movie Radio Checkbox

Hierarchic tree

Object

Image BK

Box BOX\_01

Box BOX\_02

Box BOX\_03

Box BOX\_04

Text TEXT\_EXPLAIN1

Text TEXT\_EXPLAIN2

Text TEXT\_EXPLAIN3

Text TEXT\_EXPLAIN4

Text MEAL\_NAME1

Text MEAL\_NAME2

Text MEAL\_NAME3

Text MEAL\_NAME4

Image IMAGE\_BUGER1

Resources

Ti

(x)

Editor

1:1

Classic Cheese

Bun  
Patty  
Toppings  
Condiments

Bacon Avocado

Bun  
Patty  
Toppings  
Condiments

Bun  
Patty  
Toppings  
Condiments

Bun  
Patty  
Toppings  
Condiments

Select image for mode <>

Image	Name	Width	Height	Stock	Proj.	Ref.	Format	Ext
	Burger1.png	300	335	-	•	3	True color with alpha, RB s...	
	Burger2.png	300	337	-	•	3	True color with alpha, RB s...	
	Burger3.png	300	334	-	•	3	True color with alpha, RB s...	
	Burger4.png	300	342	-	•	3	True color with alpha, RB s...	
	DARK_Button_Down_100x30...	100	30	-	•	0	Auto	
	DARK_Button_Up_100x30....	100	30	-	•	0	Auto	
	DARK_Image_DiagLinesGr...	40	40	-	•	0	Auto	

Import to project

Cleanup

Show stock images

Show images in project

Select

Cancel

Properties

Id IMAGE\_BUGER1

Position: 238 35 Size: 201 176

Predraw: -- Postdraw: --

Top: 35 Bottom: 389 Left: 35 Right: 38 Width: Height:

Set bitmap

Set to opaque

Set color

Set background color

Set bitmap alignment

Offset x: 0 Offset y: 0 Alignment:

Set angle

Set scale

Scale: 600

Set alpha

Enable fast mode (lower quality)

Do not react on touch input

## Exercise 1 : Add Button Objects

[illegible]

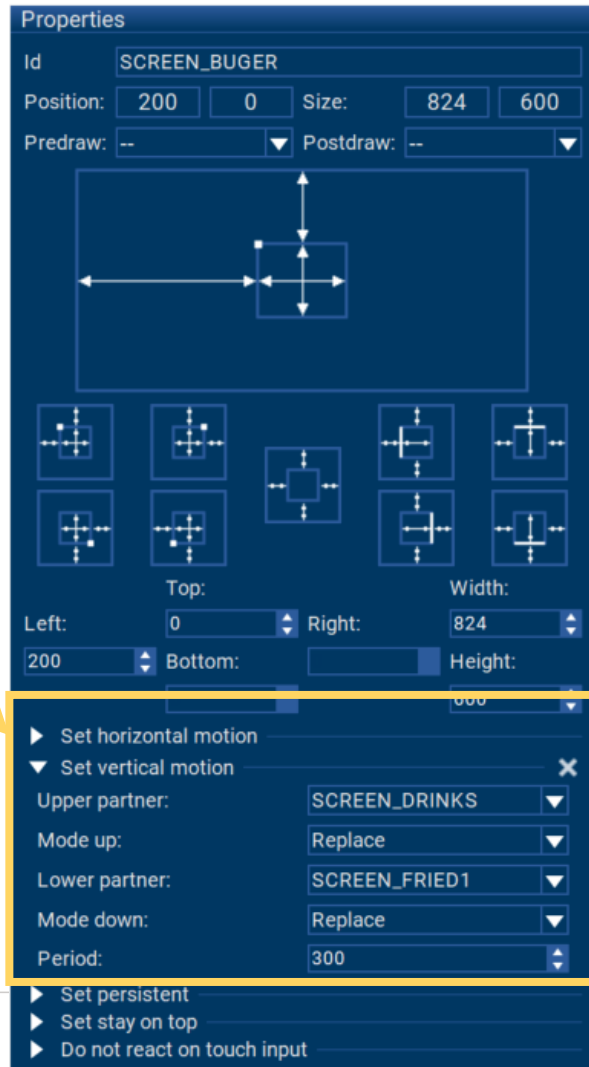
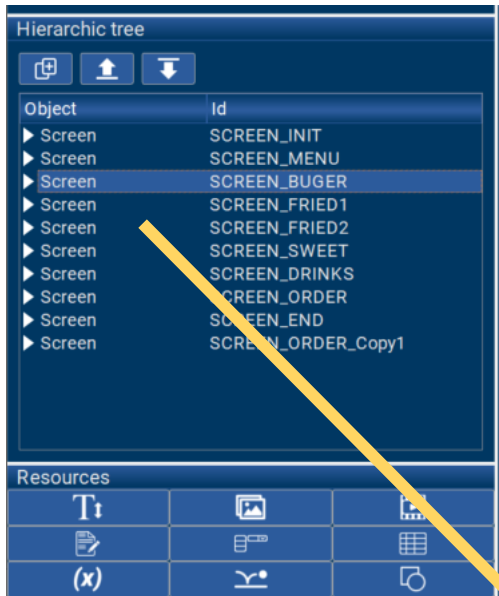
# Project **Exercise 2**

## Objects Interactions



# Exercise 2: Swipe Function

- Screen



- Vertical motion property

Property	Description
Upper partner	Screen/window that should be located above the screen/window.
Mode up	Mode that should be applied to the upper partner. Either 'disclose' or 'replace'.
Lower partner	Screen/window that should be located below the screen/window
Mode down	Mode that should be applied to the lower partner. Either 'disclose' or 'replace'.
Period	Period to be used until motion stops.

# Exercise 2 Object Interactions

While **Emitter A** do **Signal**, the **Receiver B** do **Job**.



+/-			Emitter	Signal	Job	Receiver
X	/	+	BUTTON_HOME	CLICKED	SHOWSCREEN	
X	/	+	BUTTON_LEFT	CLICKED	SHIFTSCREEN	
X	/	+	BUTTON_RIGHT	CLICKED	SHIFTSCREEN	
X	/	+	SCREEN_CENTER	INITDIALOG	ANIMCREATE	ID_PROGBAR_00
X	/	+	BUTTON_UP	CLICKED	SHIFTSCREEN	

Property	Description
SHIFTSCREEN	Shifts into the given screen with an animation that the user defines
SHOWSCREEN	This job makes the given screen instantly visible. There are no animation options for this job.
SWAP	Swaps the screen to the given screen without an animation

# Exercise 2 Object Interactions

- Set Interaction



Interactions

+/-			[	Emitter	Signal	Job	Receiver	Comment
X		+		BUTTON_NEXT1	RELEASED	SHOWSCREEN		
X		+		BUTTON_NEXT2	RELEASED	SHOWSCREEN		
X		+		BUTTON_NEXT3	RELEASED	SHOWSCREEN		
X		+		BUTTON_NEXT4	RELEASED	SHOWSCREEN		

Set interaction parameters

Set screen id:

Slot: EN\_BUGER\_BUTTON\_NEXT1\_WM\_NOTIFICATION\_RELEASED

Code:

Ok Cancel

While **Emitter A** do **Signal**, the **Receiver B** do **Job**.

# Project **Exercise 3**

## Cross compiler





# Exercise 3: Cross compiler

**1. Click "Export & Save"**

**2. Update "Resource" & "Source"**

File Edit Project Resource Help

- New project...
- Open... Ctrl+O
- Save
- Save As... Ctrl+Shift+S
- Export & Save Ctrl+Shift+E**
- Rename...
- Close project
- Open example...
- Import BSP...
- Exit
- Recent files...

Properties

Id: ID\_SCREEN\_START

Position: 0 0 Size: 480 272

Predraw: -- Postdraw: --

This PC > Windows (C:) > AppWizard > Project01 > ebike > ebike\_Tutorial

Name		Type
Resource	2023/4/26 下午 05:02	File folder
Simulation	2023/4/25 下午 06:09	File folder
Source	2023/5/2 下午 04:00	File folder
ebike_Tutorial.AppWizard	2023/5/2 下午 04:00	APPWIZARD PROJECT
FileList.txt	2023/5/2 下午 04:00	Text Document

Object Id

- Screen ID\_SCREEN\_STA...
- Screen ID\_SCREEN\_SPE...
- Screen ID\_SCREEN\_TIER...

Interactions





Text Fonts Images Lists

Anim. Variables Drawings Tables



# Exercise 3: Cross compiler

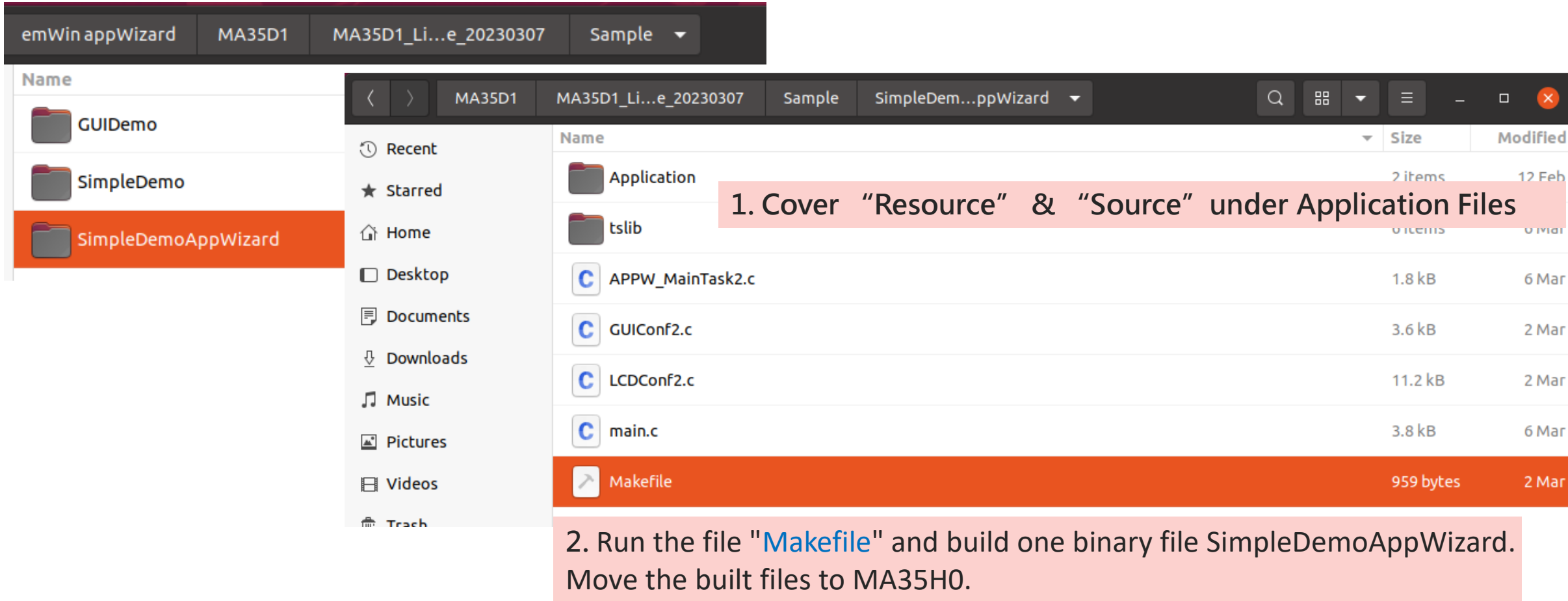
- Download Link: [emWin\\_MA35Family](#)

Name	Date modified	Type	Size
 AppWizard V134a_630a_Install.exe	2022/12/15 下午 0...	Application	65,652 KB
 MA35D1_Linux_emWin_Package_20230327.tar.gz	2023/3/27 下午 04...	GZ File	18,784 KB
 MA35D1_RTThread_emWin_Package.zip	2023/4/7 下午 02:16	Compressed (zipp...	3,405 KB
 README	2023/4/7 下午 02:54	File	3 KB

- Copy MA35D1\_Linux\_emWin\_Package\_20230327.tar.gz to VMware
- Decompress MA35D1\_Linux\_emWin\_Package\_20230327.tar.gz and change the permissions

```
user@aa3c667d7ce6: ~/shared/emWin_MA35d1
user@aa3c667d7ce6:~/shared/emWin_MA35d1$ tar xzf MA35D1_Linux_emWin_Package_20230327.tar.gz
user@aa3c667d7ce6:~/shared/emWin_MA35d1$ ls
MA35D1_Linux_emWin_Package_20230327  README
MA35D1_Linux_emWin_Package_20230327.tar.gz
user@aa3c667d7ce6:~/shared/emWin_MA35d1$ chmod 777 MA35D1_Linux_emWin_Package_20230327
user@aa3c667d7ce6:~/shared/emWin_MA35d1$
```

# Exercise 3: Cross compiler



The screenshot shows the emWin IDE interface. The top bar displays the project path: `emWin appWizard` / `MA35D1` / `MA35D1_Li...e_20230307` / `Sample`. The left sidebar shows a file explorer with folders `GUIDemo`, `SimpleDemo`, and `SimpleDemoAppWizard` (selected). The main workspace shows the contents of `SimpleDemoAppWizard`, including a folder `Application` and files `tslib`, `APPW_MainTask2.c`, `GUIConf2.c`, `LCDConf2.c`, `main.c`, and `Makefile` (selected). A red box highlights the `Application` folder and its contents, with the text "1. Cover 'Resource' & 'Source' under Application Files". Another red box highlights the `Makefile` file, with the text "2. Run the file 'Makefile' and build one binary file SimpleDemoAppWizard. Move the built files to MA35H0."

1. Cover "Resource" & "Source" under Application Files

2. Run the file "Makefile" and build one binary file SimpleDemoAppWizard. Move the built files to MA35H0.

# Exercise 3: Cross compiler

- Start to compile

```
$ make
```

```
arm-linux-gnueabi-gcc -MD -O2 -std=gnu99 -I. -I../Config -I../Include -Itslib -c GUIConf2.c -o GUIConf2.o
arm-linux-gnueabi-gcc -MD -O2 -std=gnu99 -I. -I../Config -I../Include -Itslib -c LCDConf2.c -o LCDConf2.o
arm-linux-gnueabi-gcc -MD -O2 -std=gnu99 -I. -I../Config -I../Include -c ../Config/GUI_X.c -o ../Config/GUI_X.o
arm-linux-gnueabi-gcc ../Application/Resource/Image/DARK_Rotary_Marker_Blue_16x5.o ../Application/Resource/Image/DARK_Rotary_BG_Gray_80x80.o ../Application/Resource/Image/DARK_Button_Up_100x30.o ../Application/Resource/Image/DARK_Button_Down_100x30.o ../Application/Resource/Text/APPW_Language_0.o ../Application/Source/Generated/APPWConf.o ../Application/Source/Generated/ID_SCREEN_00.o ../Application/Source/Generated/Resource.o ../Application/Source/APPW_MainTask.o ../Application/Source/CustomCode/ID_SCREEN_00_Slots.o ../Application/Source/CustomCode/Application.o ../APPW_MainTask2.o ../main.o ../tslib/MA35D1TouchPanel.o ../GUIConf2.o ../LCDConf2.o ../Config/GUI_X.o -L../Lib -lNUemWin -lm -L./tslib -lts -ldl -pthread -static -o SimpleDemoAppWizard
arm-linux-gnueabi-strip SimpleDemoAppWizard
user@aa3c667d7ce6:~/shared/emWin_MA35d1/MA35D1_Linux_emWin_Package_20230327/Sample/SimpleDemoAppWizard$ ls
Application      APPW_MainTask2.d  GUIConf2.c        GUIConf2.o        LCDConf2.d        main.c            main.o            SimpleDemoAppWizard
APPW_MainTask2.c  APPW_MainTask2.o  GUIConf2.d        LCDConf2.c        LCDConf2.o        main.d            Makefile          tslib
```

- Copy “SimpleDemoAppWizard” to evaluation board

# Question & Answer



# Q: Embedded System Development Skills

- To reduce CPU usage and avoid additional calculations during touch control, images are first cropped to the expected size before loading. This prevents the CPU from having to perform scaling operations during loading picture. In this project, the Color format is GUICC\_M8888I, and images are pre-selected as **“True color with alpha, RB swap, alpha inverted”**.

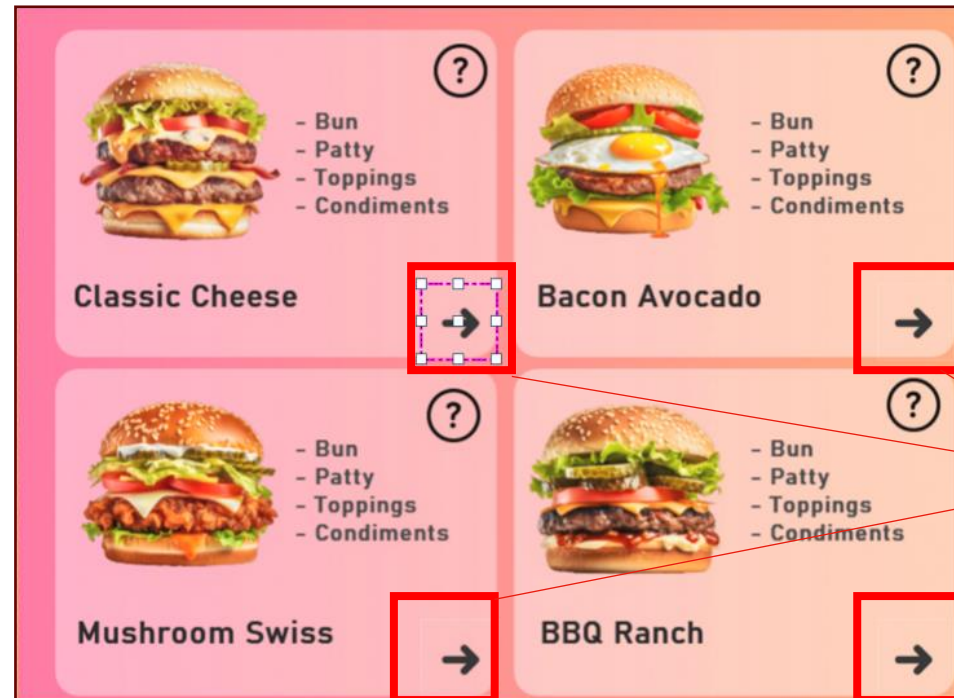
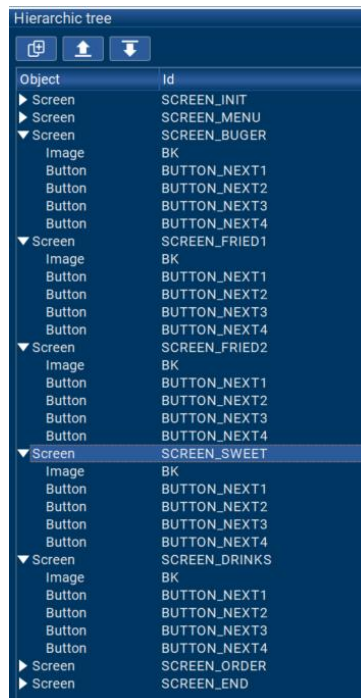
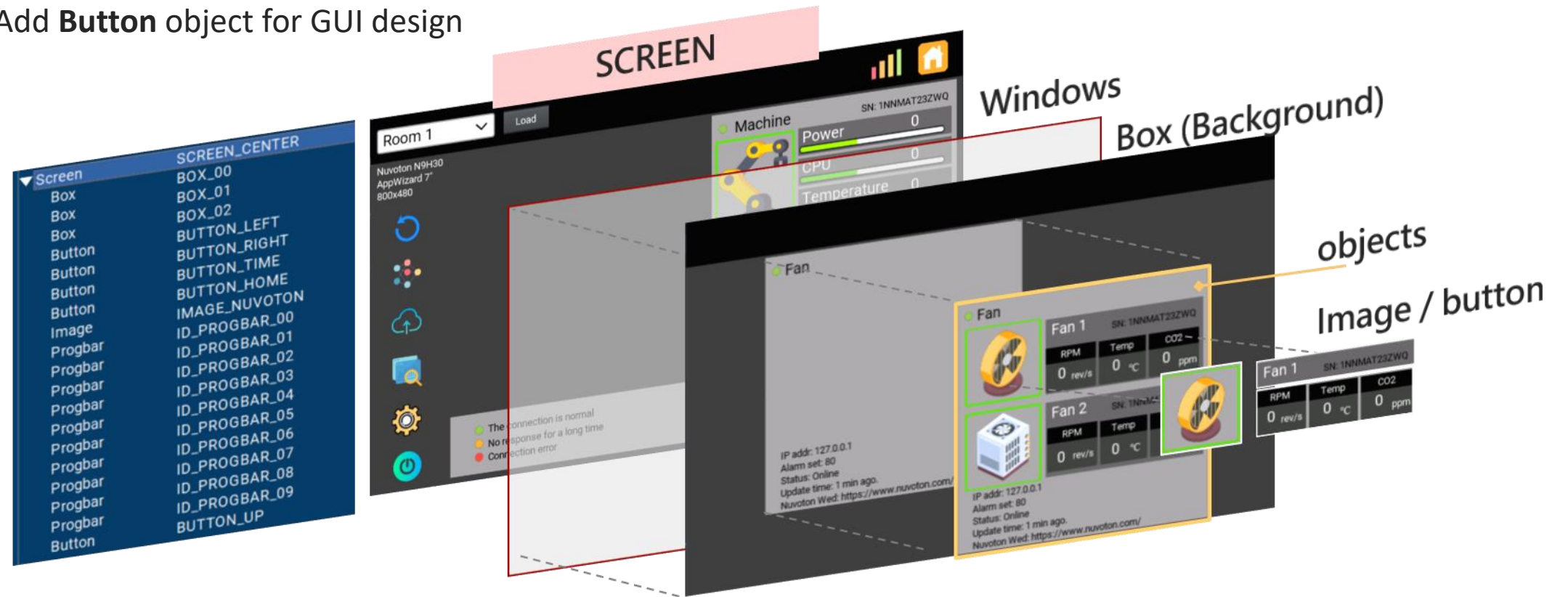


Image Object

Button Object

# Q: Layer concept

- Click **Screen** object on the upper left side
- Click **Box** object for background color
- Add **Button** object for GUI design





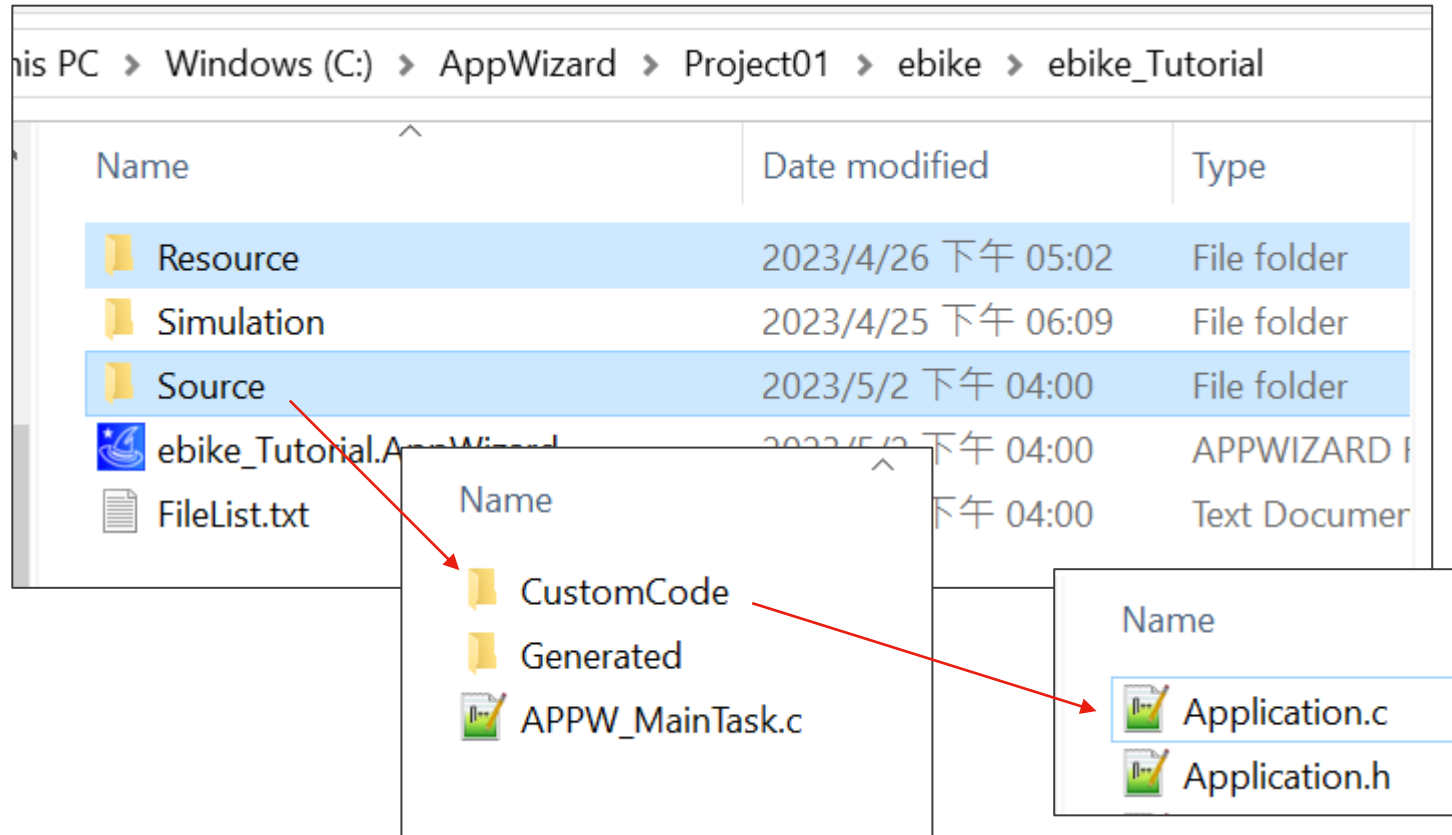
# | Q: How to Update the GUI info?

- General AppWizard API

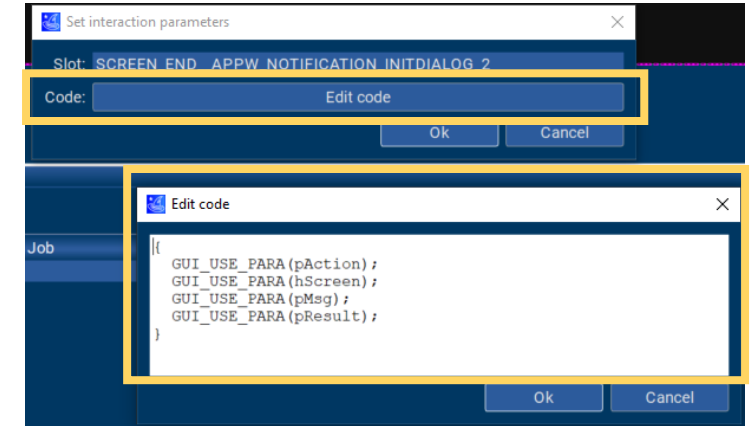
Routine	Description
APPW_GetText()	This function stores the text of an object in the given buffer.
APPW_SetCustCallback()	Sets a function pointer for a function which is executed at the end of APPW_Exec().
APPW_GetValue()	This function returns the value of an object.
APPW_SetText()	This function sets a text to an object.
APPW_SetValue()	This function sets the value of an object.
APPW_GetFont()	Fills a font structure using the addressed setup structure.
APPW_GetVarData()	Returns the value of a variable
APPW_SetVarData()	Sets the value of a variable.

# Q: How to Add User's Code ?

Path : ~\AppWizard\_Project\Source\CustomCode\Application.c

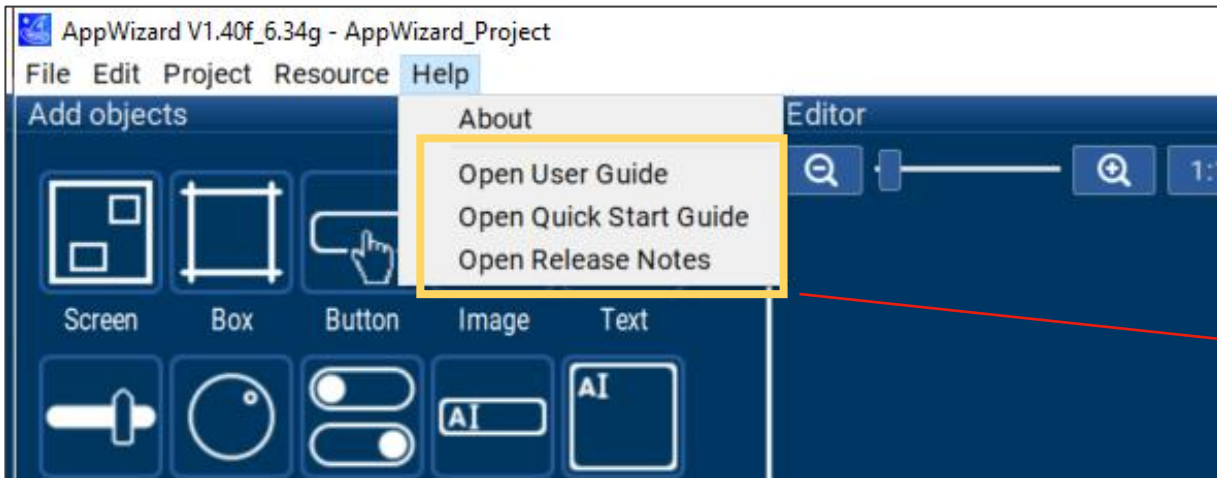


AppWizard :  
User can Call Function





# Q: Where is the user Guide



## AppWizard

Wizard for creating ready-to-use emWin applications

User Guide & Reference Manual

Document: UM03003  
Software Version: 1.40  
Revision: 1  
Date: October 30, 2023

# Resources

- emWin User Manual
  - emWin package/emWin/Doc
- AppWizard User Manual
  - [https://www.segger.com/downloads/emwin/UM03003\\_AppWizard.pdf](https://www.segger.com/downloads/emwin/UM03003_AppWizard.pdf)
- AppWizard official training video
  - <https://youtube.com/playlist?list=PLDqLs4CjhqjHF2AoSCNG2amFyMJY9w0eJ>
- SEGGER forum (emWin related)
  - [emWin related - SEGGER - Forum](#)
- Nuvoton emWin Quick Start Video
  - [學會使用 emWin AppWizard 快速建立 GUI 於新唐 HMI 平台 - YouTube](#)
- Nuvoton emWin forum
  - [Nuvoton HMI/GUI - NuForum](#)

*Joy of innovation*  
**nuvoTon**

Thank You

Danke

Merci

ありがとう

Gracias

Kiitos

감사합니다

धन्यवाद

كل ارکش

הודות