

DIView

Object

Ruby

2020/02/27



Outline

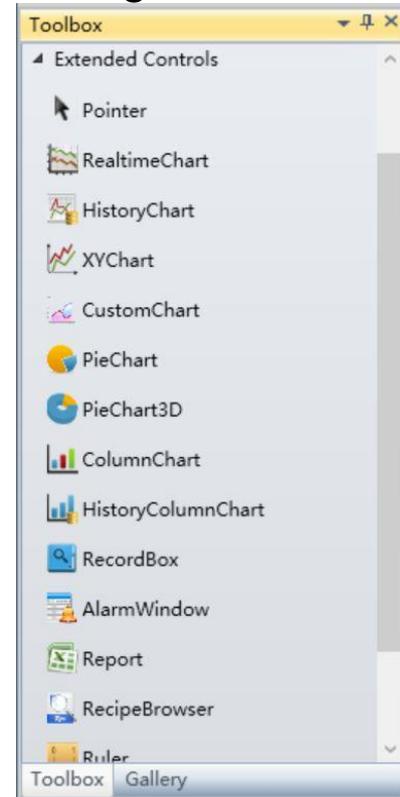
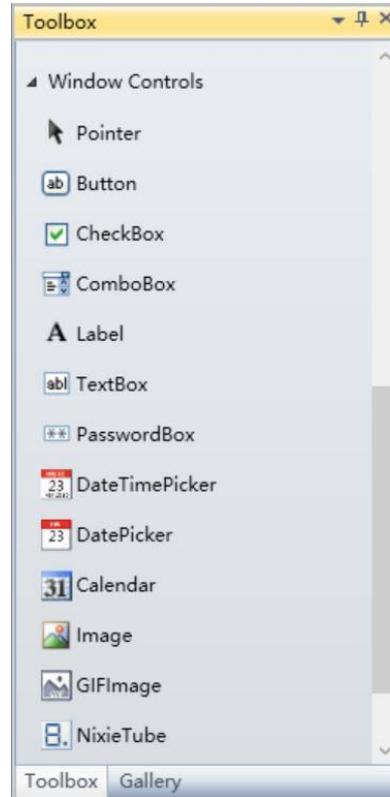
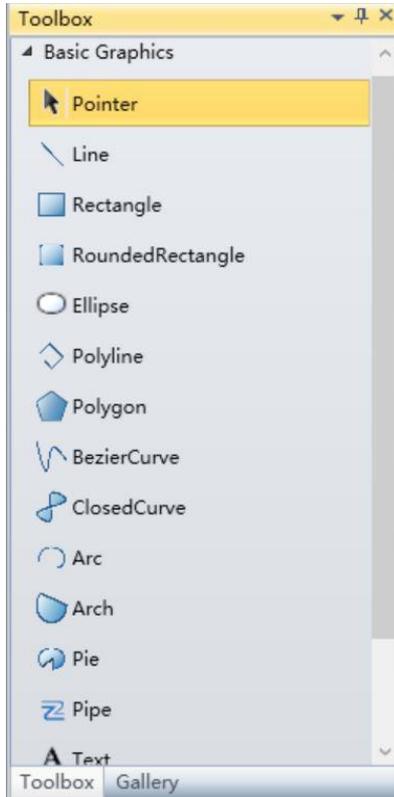
- The concepts of Toolbox
- How to draw Basic Graphics
- How to draw Window Controls
- How to draw Extend Controls

In this chapter, you will learn

- ... more about the Basic Graphics
- ... more about the Window Controls
- ... more about the Extend Controls

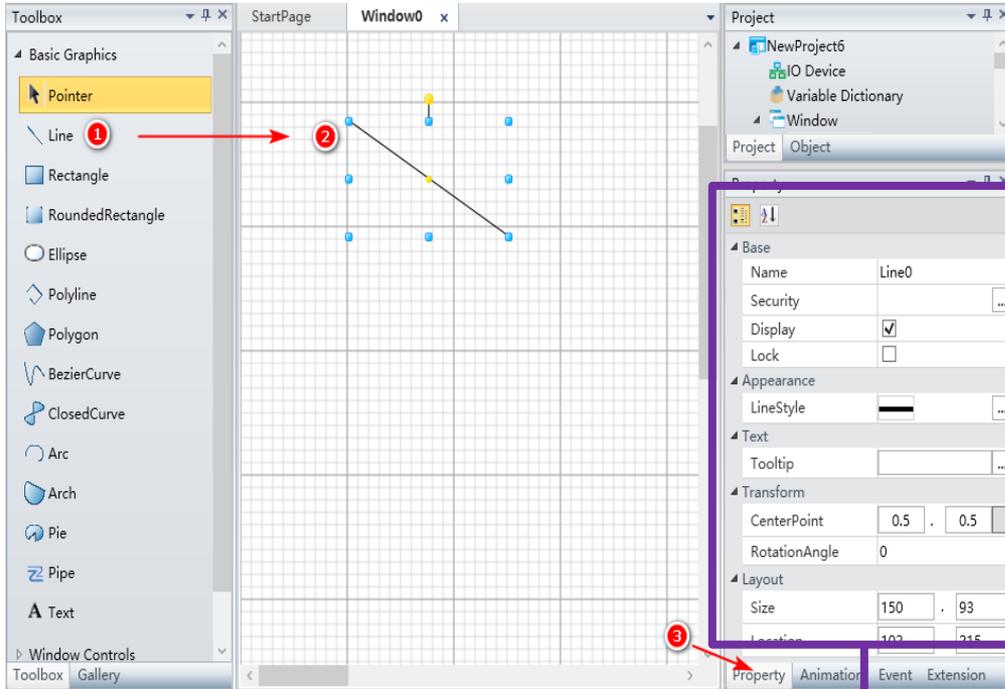
- The concepts of Toolbox
- How to draw Basic Graphics
- How to draw Window Controls
- How to draw Extend Controls

- The Toolbox in the graphic development window contains basic graphics, window controls and extend controls. As shown in the figure below:



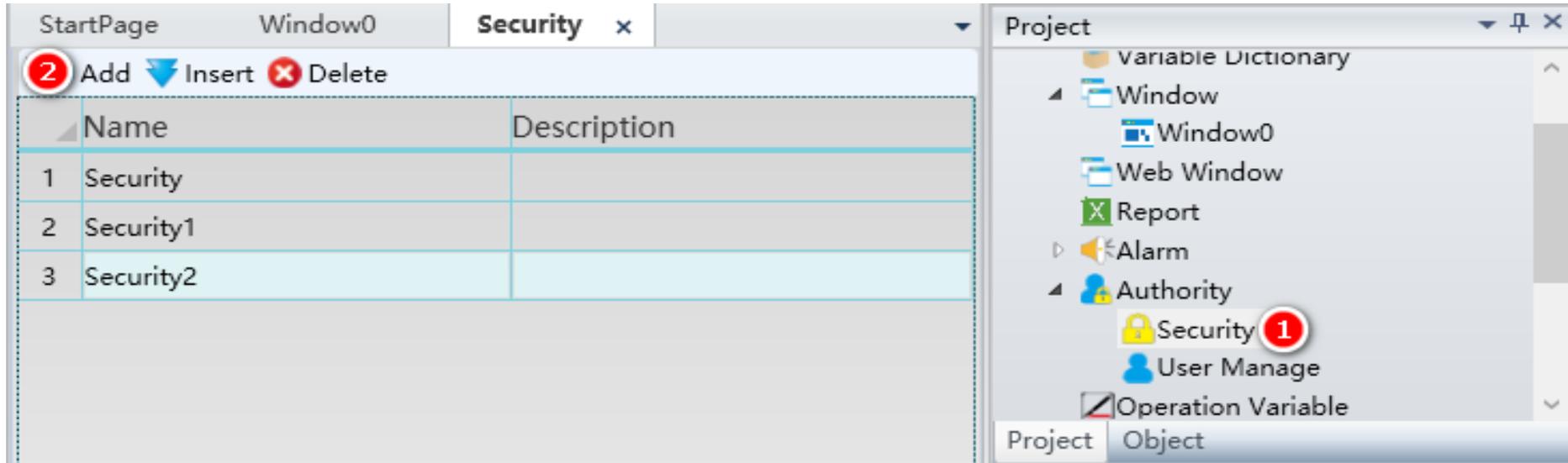
- The concepts of Toolbox
- How to draw Basic Graphics
- How to draw Window Controls
- How to draw Extend Controls

➤ Draw a Line0 , open its properties window



- **Name:** Name of the graphic in the window; the names of graphic objects in the same window cannot be same.
- **Security:** Set the operation authorities of the graphic, and make the graphic belong to one or more security zones for user authority management.
- **Display:** Whether to display the graphic during execution.
- **Lock:** Whether to lock the graphic; once locked, mouse operations will become invalid.
- **LineStyle:** Set line type, for example, style, thickness, color, etc.
- **Tootip:** Set the prompt content that the mouse stays on the drawing during execution
- **CenterPoint:** Set the location of the center point of the graphic
- **RotationAngle:** Set the rotation angle of the graphic.
- **Size:** Set size of the graphic.
- **Location:** The location of the graphic in the window.

- Security Zone example:
(1) Create security zone



The screenshot displays a software interface with two main panels. The left panel, titled 'Security', contains a table with the following data:

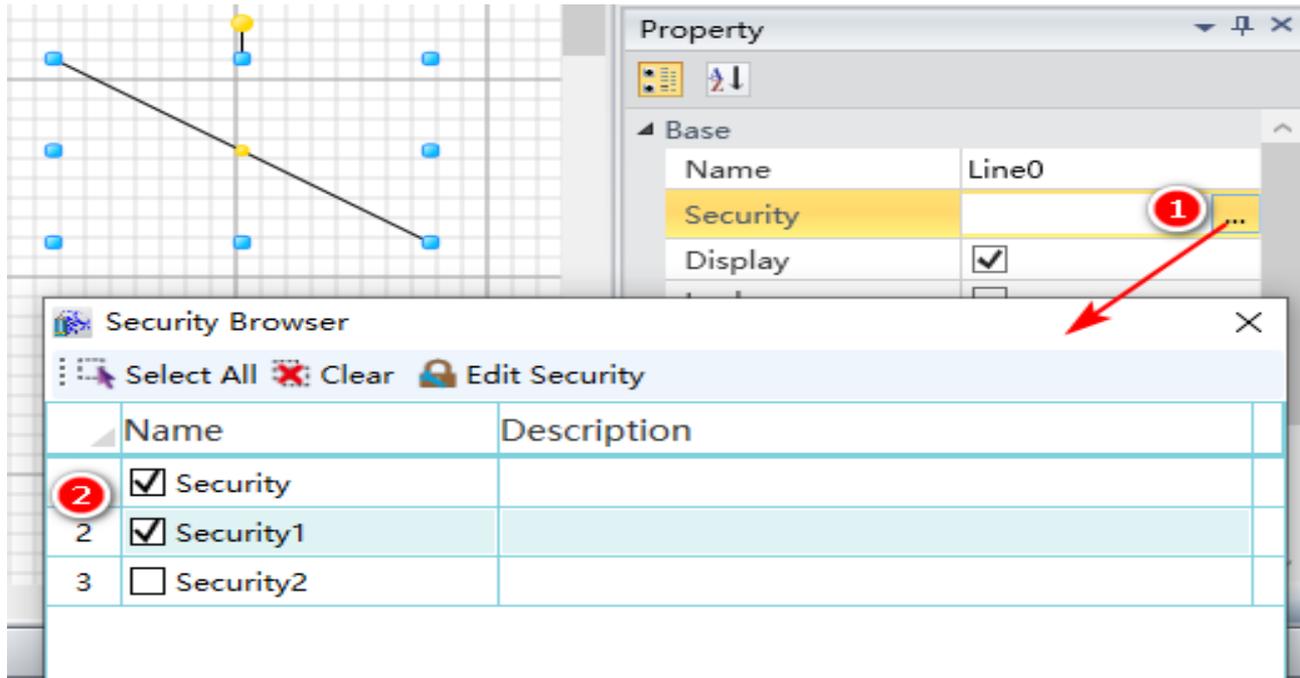
	Name	Description
1	Security	
2	Security1	
3	Security2	

The right panel, titled 'Project', shows a hierarchical tree structure:

- Variable Dictionary
 - Window
 - Window0
 - Web Window
 - Report
 - Alarm
 - Authority
 - Security (1)
 - User Manage
 - Operation Variable

At the bottom of the Project panel, there are two tabs: 'Project' and 'Object'.

(2)The graphic associated security zone



The screenshot displays a software interface for configuring security zones. On the left, a grid shows a line connecting two points, representing a security zone. On the right, a 'Property' window shows a table with the following data:

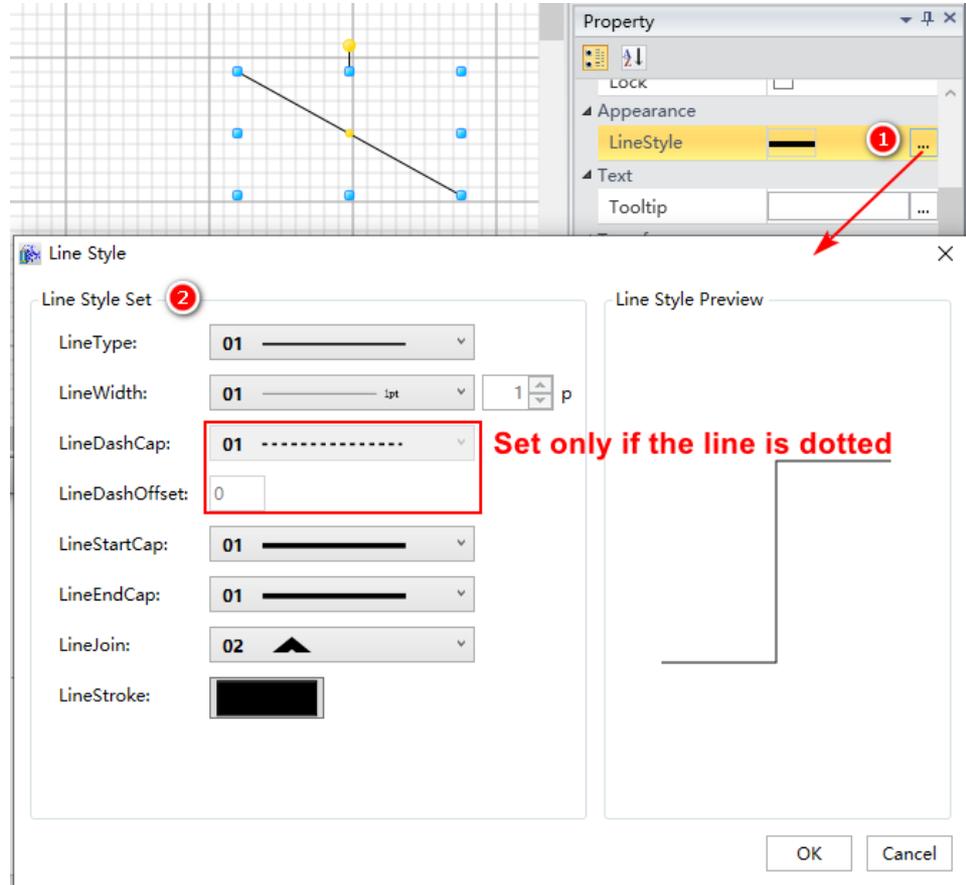
Name	Line0
Security	
Display	<input checked="" type="checkbox"/>

A red circle with the number '1' is placed over the 'Security' row, and a red arrow points from it to the 'Security Browser' window. The 'Security Browser' window shows a table with the following data:

Name	Description
<input checked="" type="checkbox"/> Security	
2 <input checked="" type="checkbox"/> Security1	
3 <input type="checkbox"/> Security2	

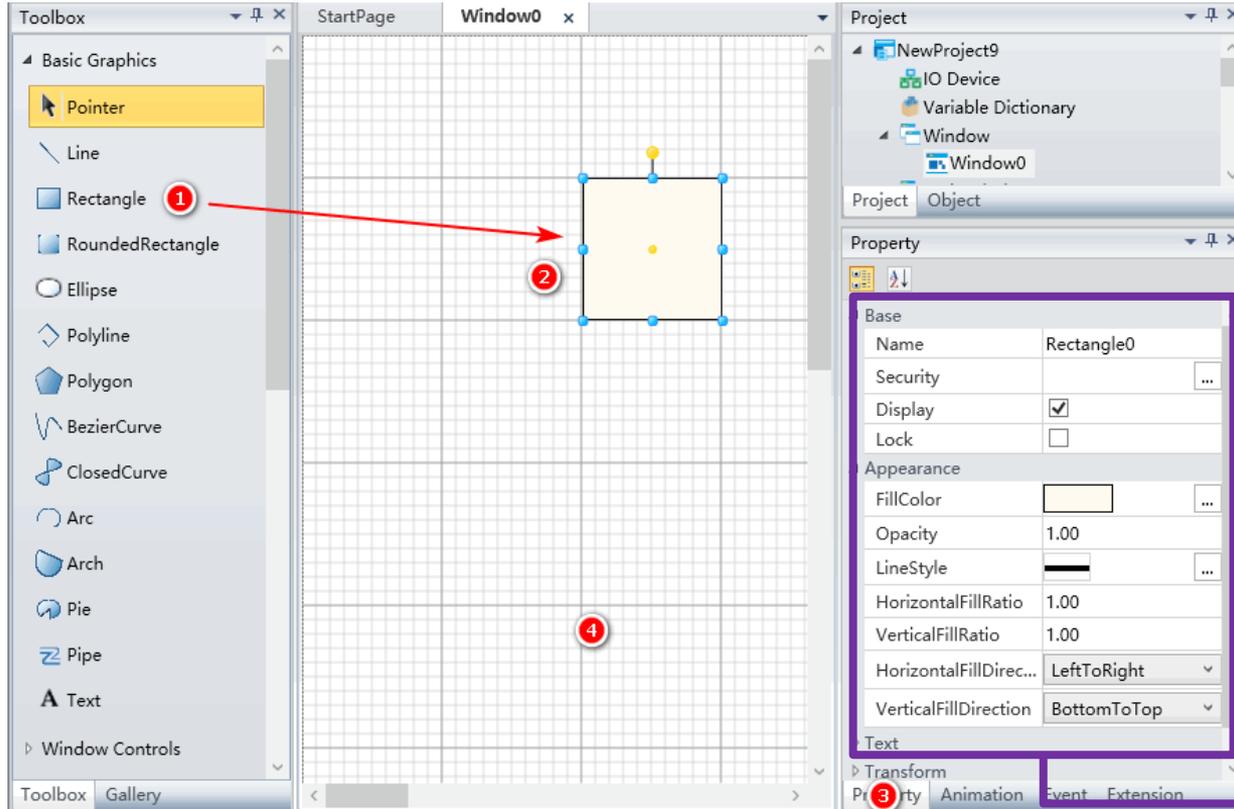
A red circle with the number '2' is placed over the first row of the 'Security Browser' table.

- Set line style of the graphic



The image shows a software interface for setting line styles. At the top, a grid contains a line connecting several points. To the right, a 'Property' panel shows the 'LineStyle' property highlighted with a red circle '1' and a red arrow pointing to it. Below this is a 'Line Style' dialog box. The 'Line Style Set' dropdown is circled with a red '2'. The 'LineDashCap' dropdown is highlighted with a red box and labeled 'Set only if the line is dotted'. The 'LineDashOffset' is set to 0. The 'Line Style Preview' shows a solid line. At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

➤ Draw a Rectangle0 , open its properties window

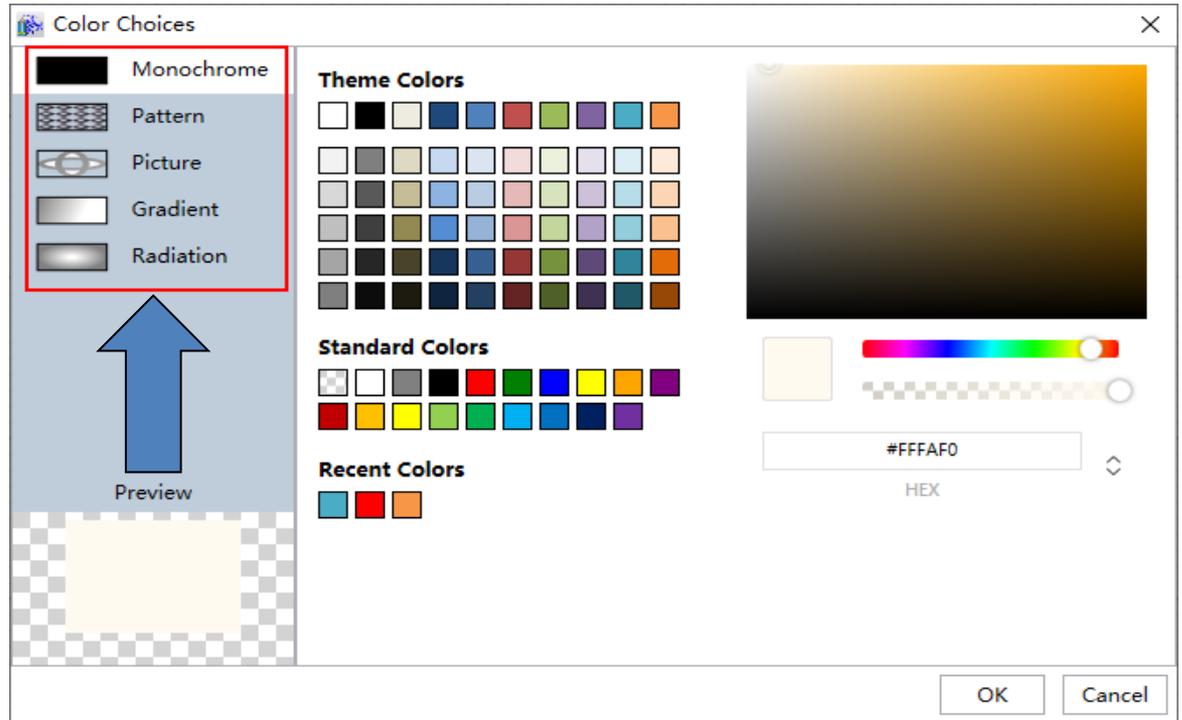


- **Fill color:** Set the fill color of rectangle
- **Opacity :** Set the transparency of the rectangle
- **LineStyle:** Set border line type, for example, style, thickness, color, etc
- **HorizontalFillRatio:** Set the horizontal fill ratio of rectangle(0~1)
- **HorizontalFillDirection:** Set the horizontal fill direction of rectangle
- **VerticalFillRatio:** Set the vertical fill ratio of rectangle(0~1)
- **VerticalFillDirection:** Set the vertical fill direction of rectangle

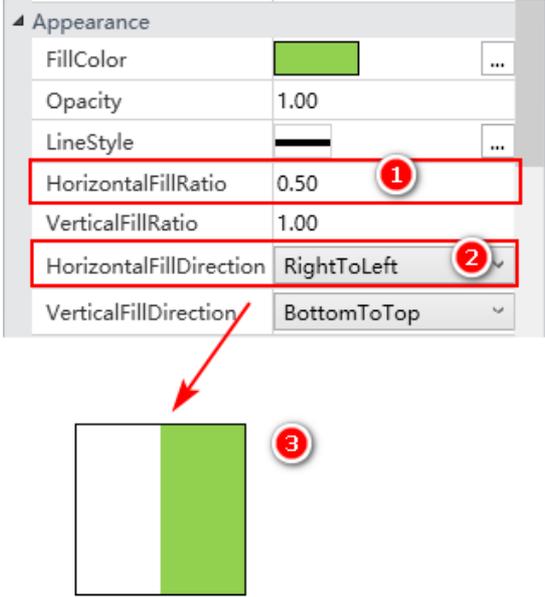
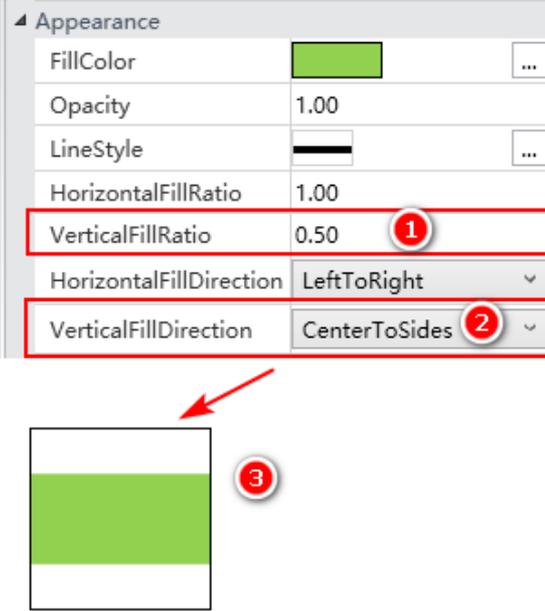
➤ There are five color fill modes in the color choices:

- ① Monochrome fill
- ② Pattern fill
- ③ Picture fill
- ④ Gradient fill
- ⑤ Radiation fill

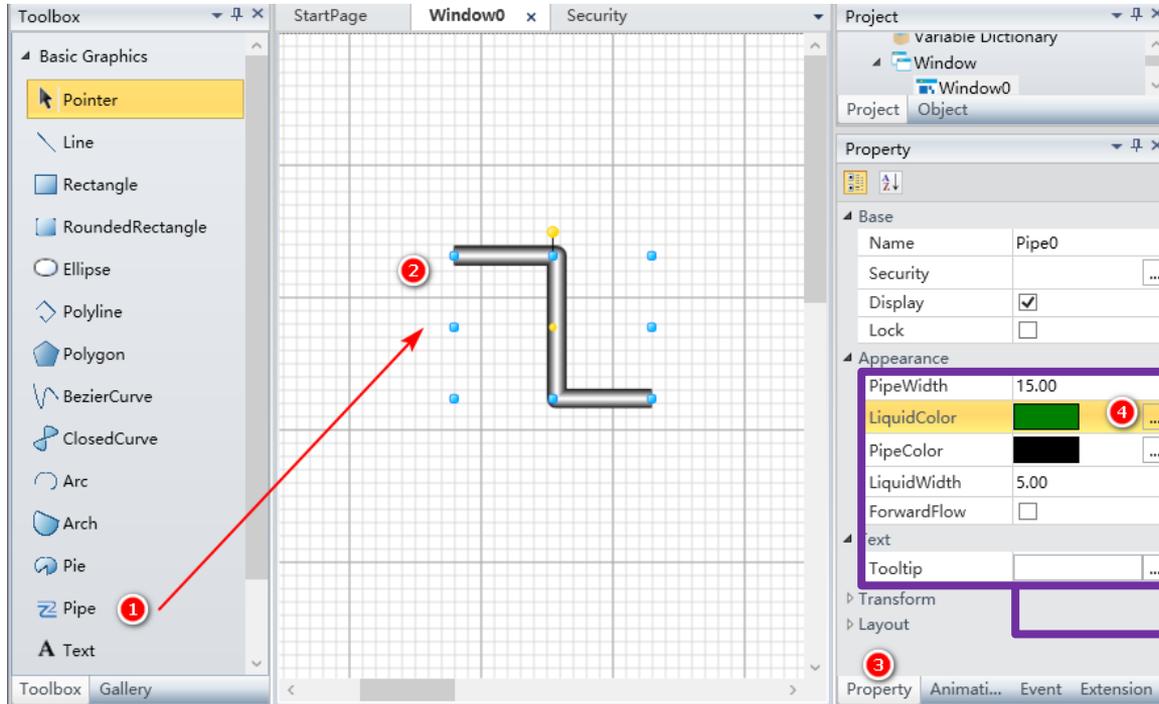
As shown in the figure below:



➤ Fill Ratio and Direction

 <p>Appearance</p> <table><tbody><tr><td>FillColor</td><td></td><td>...</td></tr><tr><td>Opacity</td><td>1.00</td><td></td></tr><tr><td>LineStyle</td><td></td><td>...</td></tr><tr><td>HorizontalFillRatio</td><td>0.50</td><td>1</td></tr><tr><td>VerticalFillRatio</td><td>1.00</td><td></td></tr><tr><td>HorizontalFillDirection</td><td>RightToLeft</td><td>2</td></tr><tr><td>VerticalFillDirection</td><td>BottomToTop</td><td></td></tr></tbody></table> <p>3</p>	FillColor		...	Opacity	1.00		LineStyle		...	HorizontalFillRatio	0.50	1	VerticalFillRatio	1.00		HorizontalFillDirection	RightToLeft	2	VerticalFillDirection	BottomToTop		 <p>Appearance</p> <table><tbody><tr><td>FillColor</td><td></td><td>...</td></tr><tr><td>Opacity</td><td>1.00</td><td></td></tr><tr><td>LineStyle</td><td></td><td>...</td></tr><tr><td>HorizontalFillRatio</td><td>1.00</td><td></td></tr><tr><td>VerticalFillRatio</td><td>0.50</td><td>1</td></tr><tr><td>HorizontalFillDirection</td><td>LeftToRight</td><td></td></tr><tr><td>VerticalFillDirection</td><td>CenterToSides</td><td>2</td></tr></tbody></table> <p>3</p>	FillColor		...	Opacity	1.00		LineStyle		...	HorizontalFillRatio	1.00		VerticalFillRatio	0.50	1	HorizontalFillDirection	LeftToRight		VerticalFillDirection	CenterToSides	2
FillColor		...																																									
Opacity	1.00																																										
LineStyle		...																																									
HorizontalFillRatio	0.50	1																																									
VerticalFillRatio	1.00																																										
HorizontalFillDirection	RightToLeft	2																																									
VerticalFillDirection	BottomToTop																																										
FillColor		...																																									
Opacity	1.00																																										
LineStyle		...																																									
HorizontalFillRatio	1.00																																										
VerticalFillRatio	0.50	1																																									
HorizontalFillDirection	LeftToRight																																										
VerticalFillDirection	CenterToSides	2																																									
<p>Horizontal fill ratio and direction</p>	<p>Vertical fill ratio and direction</p>																																										

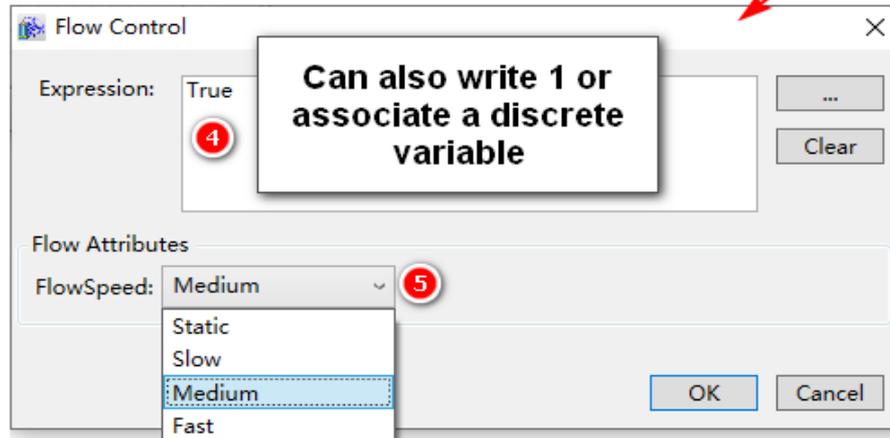
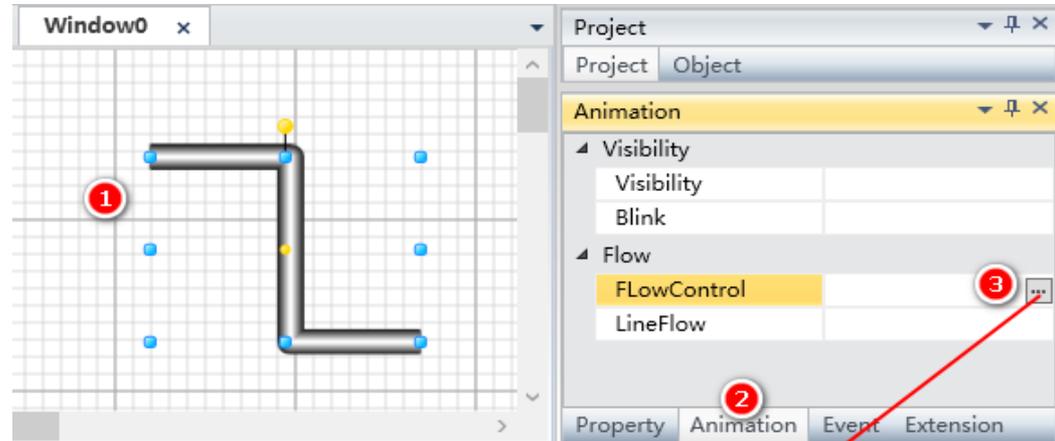
- Draw a Pipe0 , open its properties window



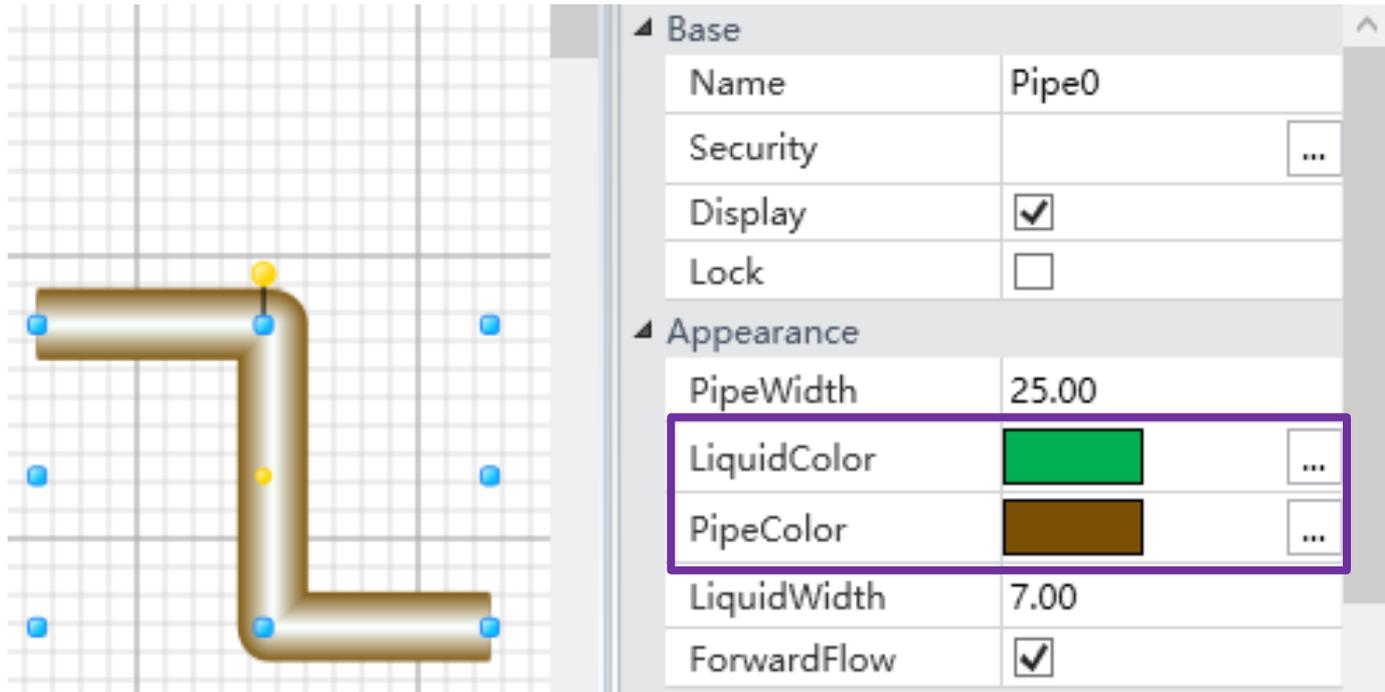
- **PipeWidth:** Set the width of the pipe.
- **LiquidColor:** Set the color of the liquid in the pipe.
- **PipeColor:** Set the color of the pipe
- **LiquidWidth:** Set the width of the liquid in the pipe
- **ForwardFlow:** Set the flow direction of the liquid in the pipe.

➤ Flowing Pipe example:

(1) Configure the flow control animation of the pipe.



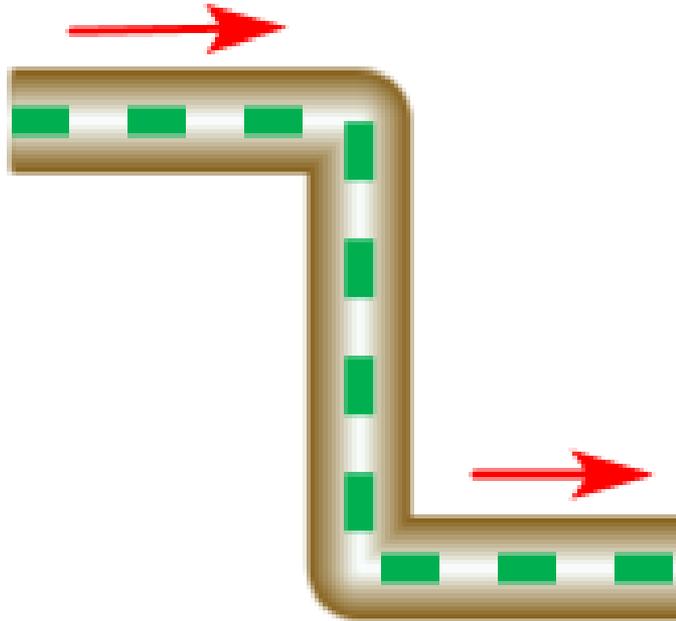
(2) Set properties of the pipe



The image shows a 3D L-shaped pipe on a grid. The pipe is brown with a metallic sheen and a green liquid inside. A yellow dot is at the top of the vertical section, and blue dots are at the ends of the horizontal sections. To the right is a properties panel with the following settings:

Base	
Name	Pipe0
Security	...
Display	<input checked="" type="checkbox"/>
Lock	<input type="checkbox"/>
Appearance	
PipeWidth	25.00
LiquidColor	 ...
PipeColor	 ...
LiquidWidth	7.00
ForwardFlow	<input checked="" type="checkbox"/>

(3) Run the project.

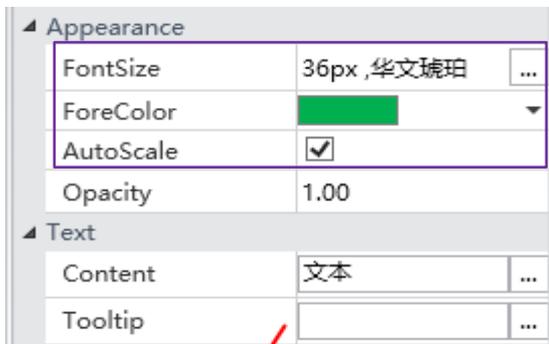


➤ Draw a Text0 , open its properties window

The screenshot shows the software interface with the following elements:

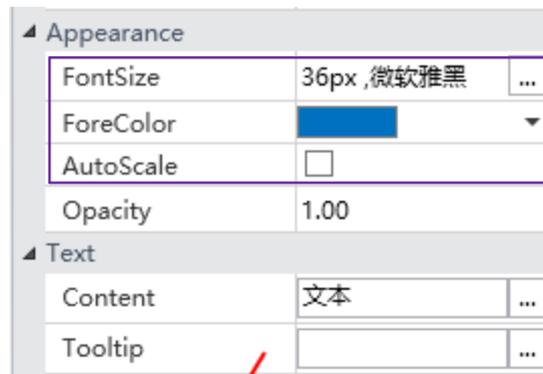
- Toolbox:** Contains various drawing tools. The 'Text' tool is highlighted with a red circle '1' and a red arrow pointing to the canvas.
- Canvas:** Shows a grid with a text object 'Text0' (represented by a grid of lines) and a red circle '2' next to it.
- Project Tree:** Shows the hierarchy of objects, including 'Window' and 'Object'.
- Property Window:** Shows the properties of the selected text object. It is highlighted with a purple box. The 'Appearance' section is expanded, showing 'FontSize' (24px), 'ForeColor' (black), 'AutoScale' (checked), and 'Opacity' (1.00). The 'Text' section shows 'Content' (###) and 'Tooltip'.
- Font Editor:** A dialog box for editing the font. It is highlighted with a purple box. The 'Font' dropdown is set to 'Times New Roman', 'FontWeight' is 'Normal', and 'FontSize' is '24'. A red arrow points from the 'Font' dropdown in the Property window to the 'Font' dropdown in the Font Editor.
- Instructions:** A purple box contains the following list:
 - **FontSize:** Set the font style of the text.
 - **ForeColor:** set the color of the text.
 - **AutoScale:** Set whether the text content is scaled with the control.

➤ Set properties of text



文本

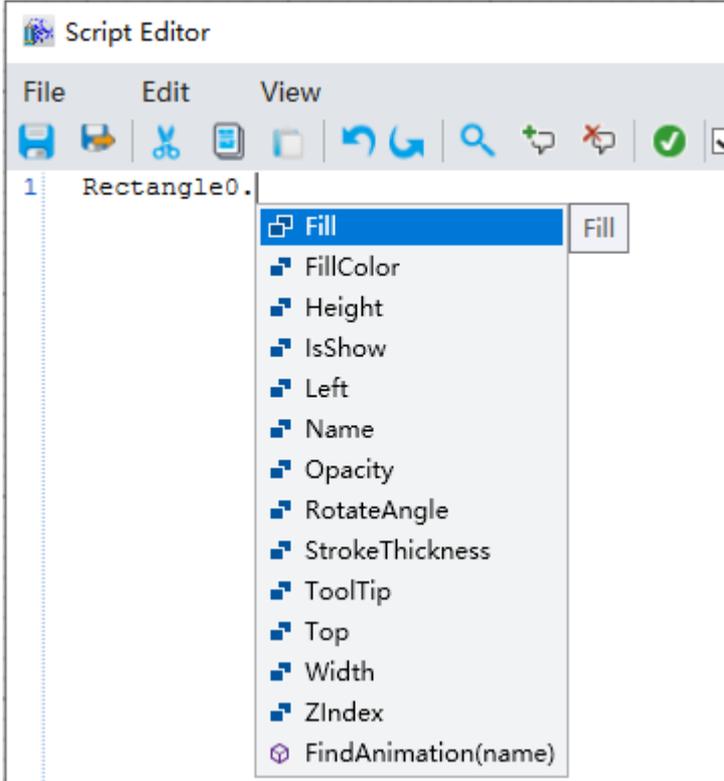
Size、color and Scale



文本

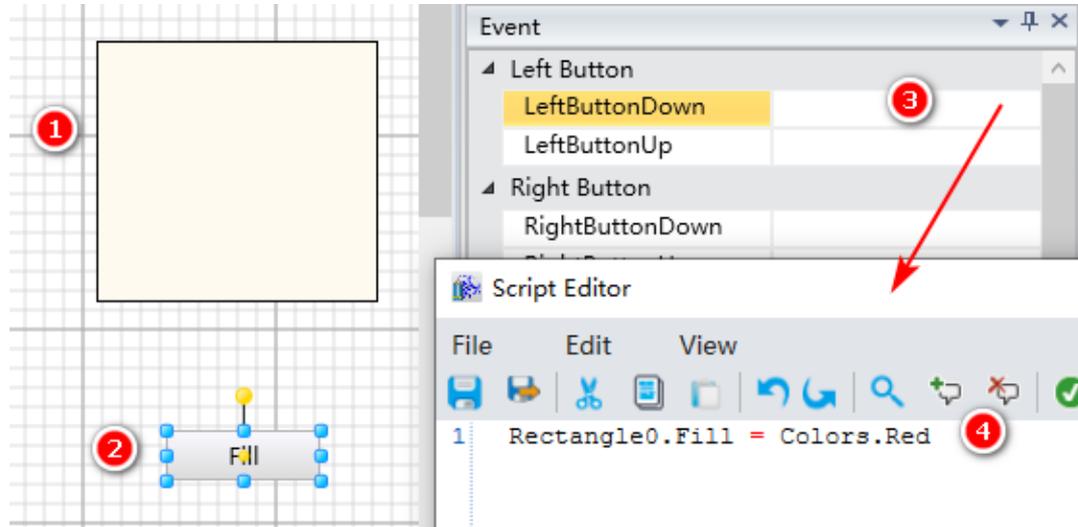
Size、color and Scale

- The script can be used to set the control properties



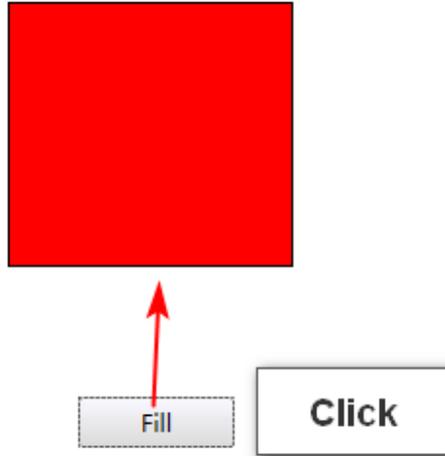
➤ Fill script example:

(1) Create Rectangle0 and Button0 in the Window0, configure the LeftButtonDown event of the button0

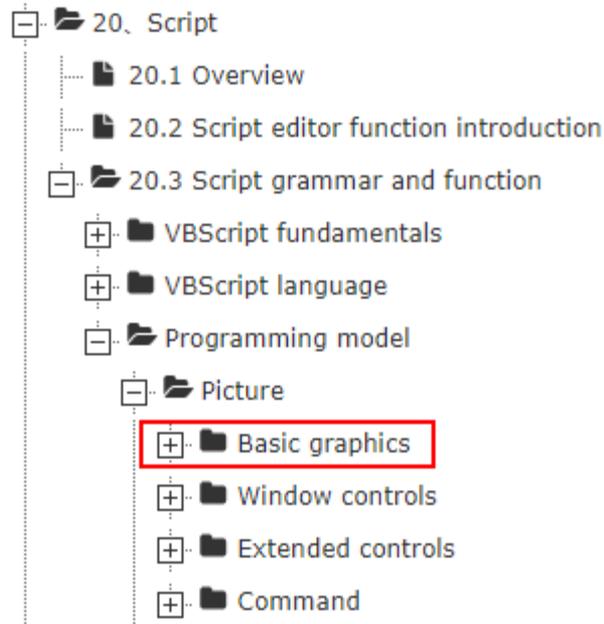


The Script of Basic Graphics

(2) Run the project

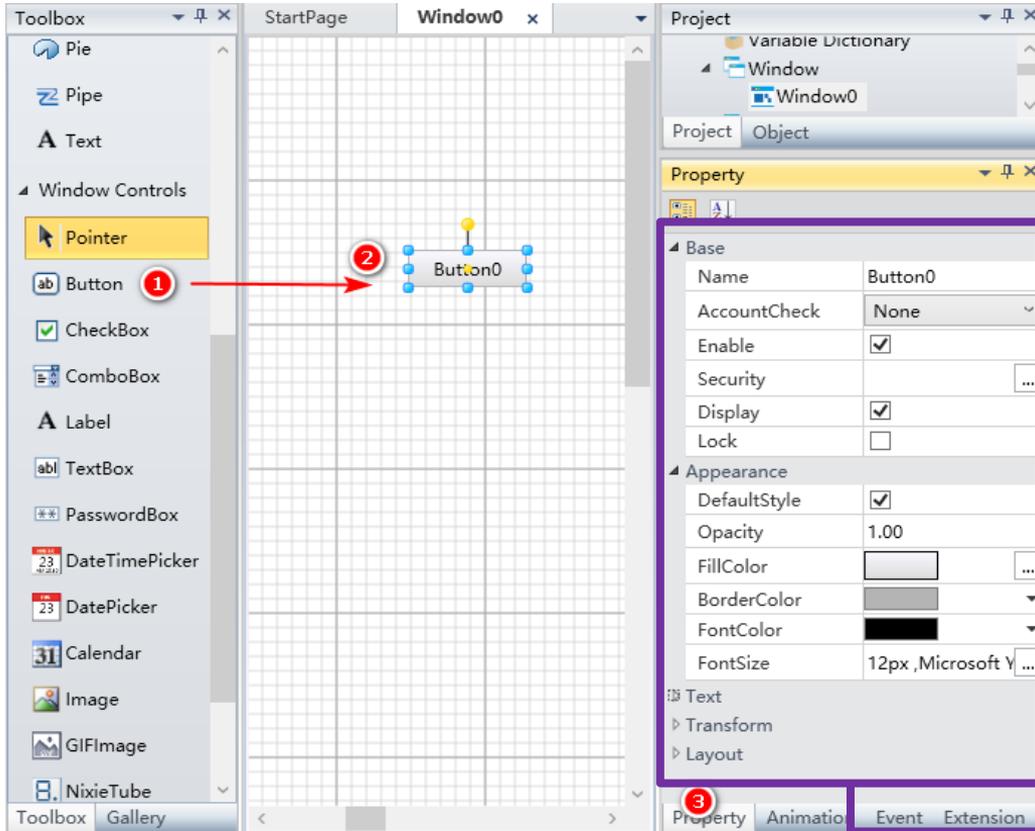


The scripts usage of basic graphics, please refer to the section “20.3 Script grammar and function” in the user manual. As shown in the figure below:



- The concepts of Toolbox
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➤ Draw a Button0 , open its properties window



- **AccountCheck:** Sets the runtime account confirmation properties;
 - (1) None: User account password confirmation is not required;
 - (2) GeneralCheck: An account password confirmation is required to operate the control in the running environment
 - (3) DoubleCheck: In the running environment, each time you operate this control, you need to confirm the account and password
- **Enable:** Sets the availability of the button. Unchecked means the button operation is not available.
- **DefaultStyle:** Set whether to use the default style of button



The AccountCheck Property of Button

➤ AccountCheck property example:

(1) Create user

The screenshot displays the 'User Manage' window with a table of users and a project tree on the right. The table has columns for Name, Password, Security, Auto Log off Time (min), and User Type. The 'User' row is highlighted, and its password field is marked with a red circle containing the number 3. The project tree on the right shows a hierarchy of objects, with 'User Manage' selected and marked with a red circle containing the number 1. The 'Add' button in the table toolbar is marked with a red circle containing the number 2.

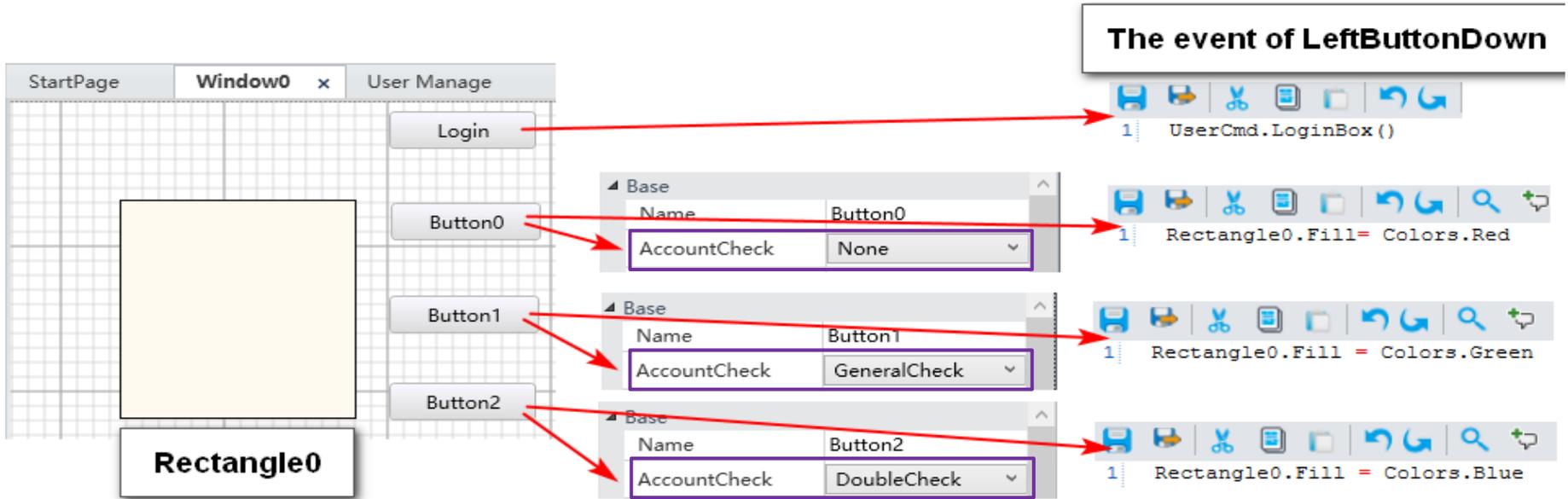
	Name	Password	Security	Auto Log off Time (min)	User Ty
1	SystemAdmin	*****		0	System a
2	User	*****		0	Admin

Project Tree:

- Web Window
- Report
- Alarm
- Authority
- Security
- User Manage (1)
- Operation Variable

The AccountCheck Property of Button

(2) Create four buttons in the Window0 , configure the AccountCheck property and the LeftButtonDown event of the four buttons

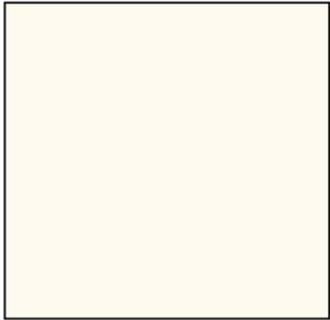


The event of LeftButtonDown

- 1: UserCmd.LoginBox ()
- 1: Rectangle0.Fill= Colors.Red
- 1: Rectangle0.Fill = Colors.Green
- 1: Rectangle0.Fill = Colors.Blue



(3) Run the project



Button0

Button1

Button2

Button3

The AccountCheck Property of Button

The AccountCheck Property of Button

(4) AccountCheck : None

① Click "Button0", the rectangle0 turn red

(5) AccountCheck : GeneralCheck

① Click "Button1", Pop-up Prompt: Please login first!

As shown in Figure 1,

② SystemAdmin or User login, then Click "Button1", the rectangle0 turn green

(6) AccountCheck : DoubleCheck

① Click "Button2", Pop-up Prompt: please login first!

As shown in Figure 1,

② SystemAdmin or User login, then Click "Button2", Pop-up Prompt: Please conform the password again.

As shown in Figure 2,

③ Enter the password again and click OK, then the rectangle0 turn blue



Figure 1

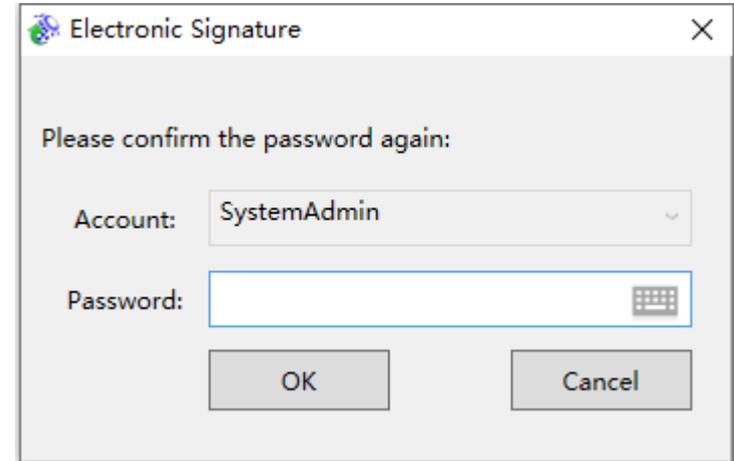
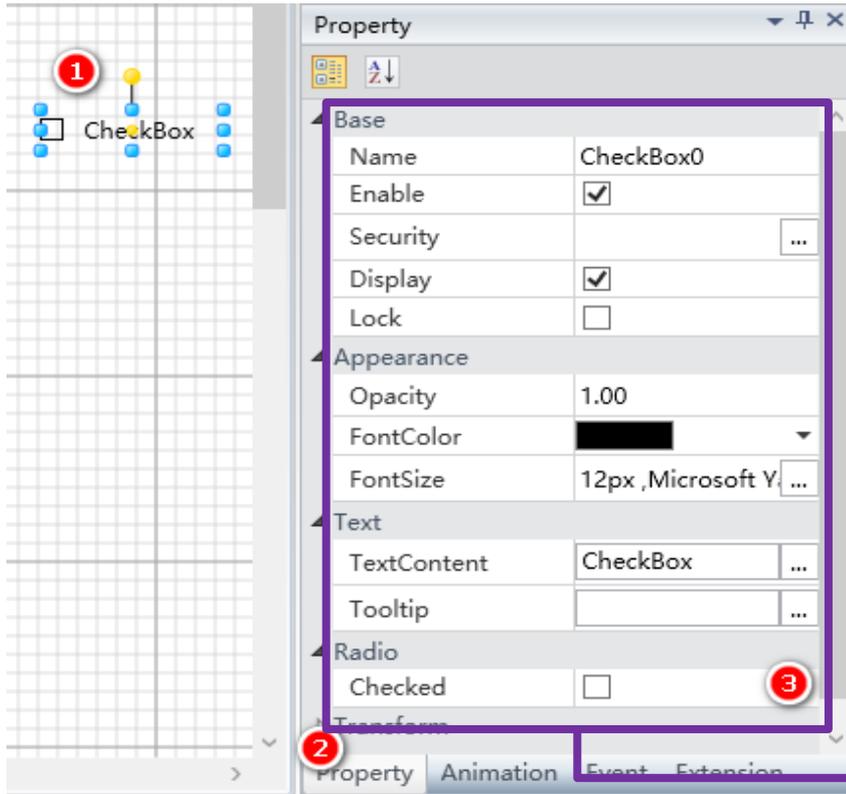


Figure 2

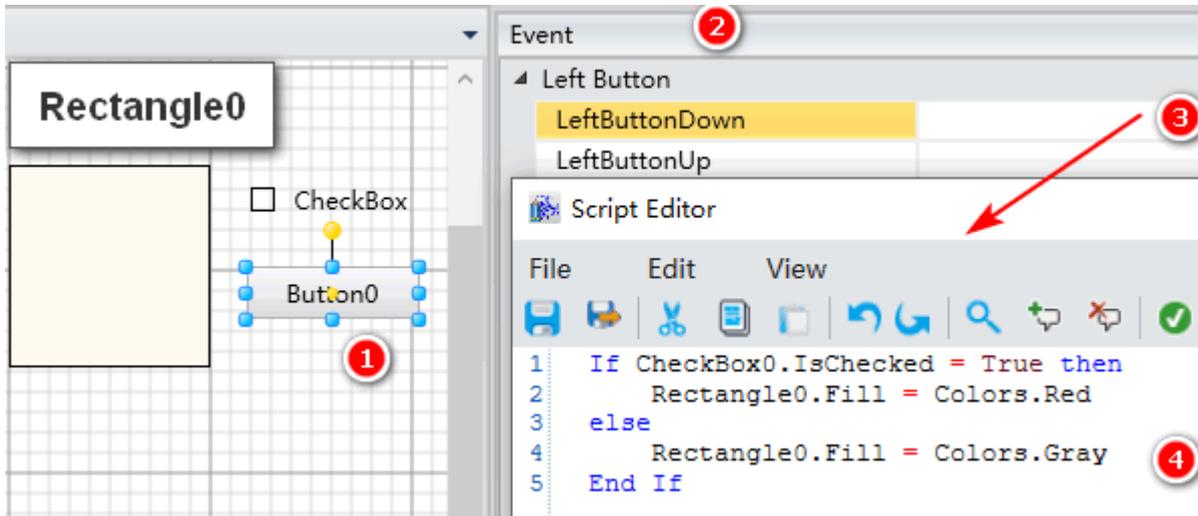
- Draw a CheckBox0, open its properties window



- **FontSize:** Set the font style of the text.
- **ForeColor:** set the color of the text.
- **Checked:** Set whether the check box is checked

➤ Checked property example

(1) Create a CheckBox0 , Rectangle0 , Button0 in the Window0 , configure the LeftButtonDown event of the Button0

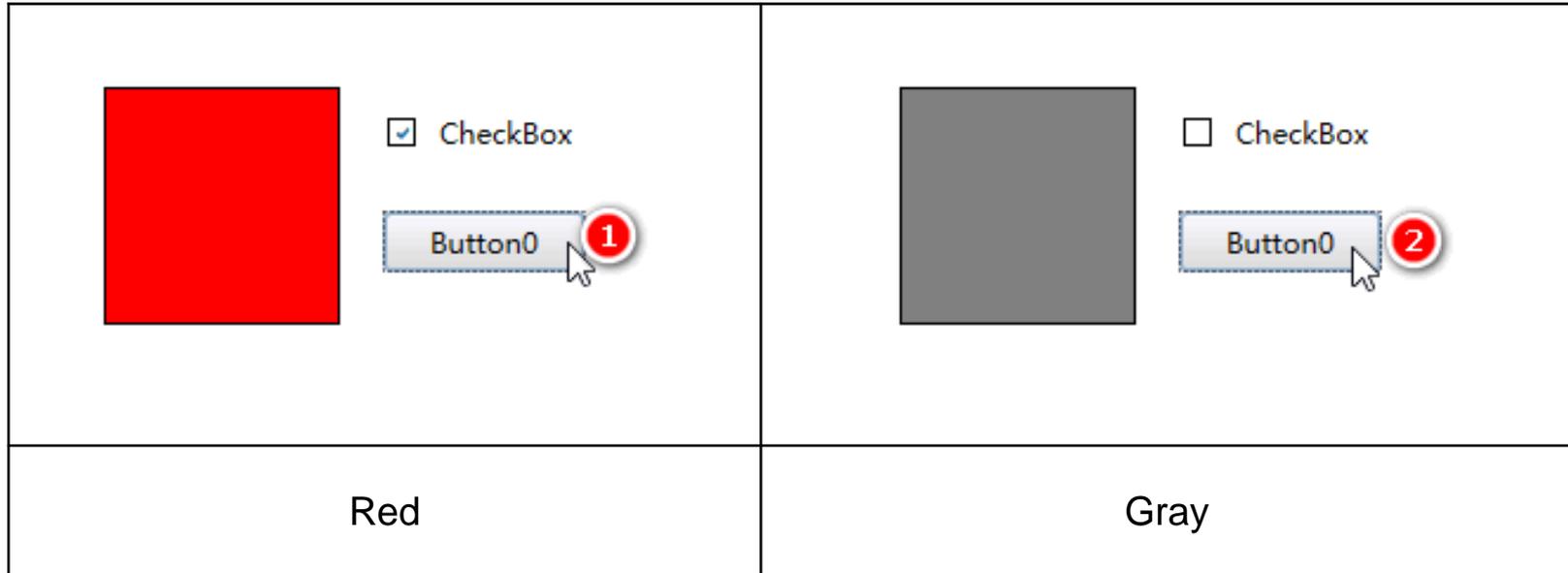


The screenshot displays a software development environment with a grid-based workspace. On the left, a window contains a yellow rectangle labeled "Rectangle0", a checkbox labeled "CheckBox", and a button labeled "Button0". A red circle with the number "1" is positioned near the button. On the right, the "Event" window shows a list of events for the "Left Button", with "LeftButtonDown" selected and highlighted in yellow. A red circle with the number "2" is above the "Event" window, and a red circle with the number "3" is next to the "LeftButtonDown" event. Below the event window is the "Script Editor" window, which contains the following code:

```
1 If CheckBox0.IsChecked = True then
2     Rectangle0.Fill = Colors.Red
3 else
4     Rectangle0.Fill = Colors.Gray
5 End If
```

A red circle with the number "4" is next to the "End If" line. A red arrow points from the "LeftButtonDown" event in the Event window to the "Script Editor" window.

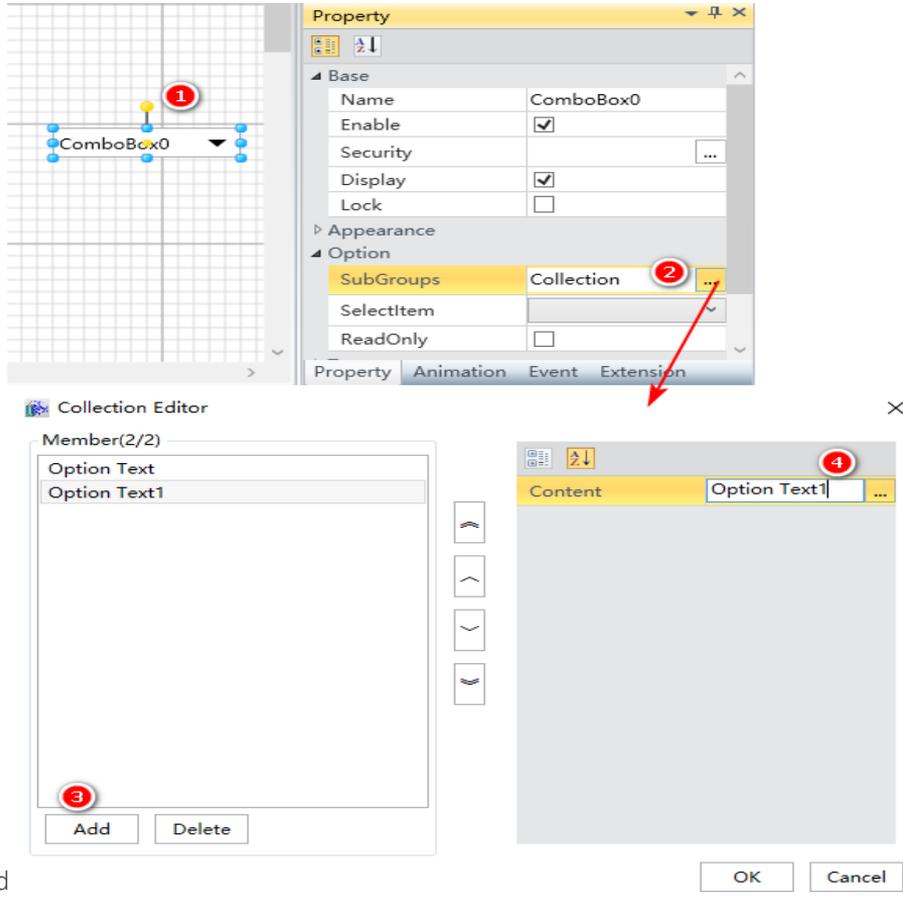
(2)Run the project



①When the Checkbox0 is checked, the Rectangle0 turns red

②When the Checkbox0 is unchecked, the rectangle0 turns gray

- Using SubGroups property to add or delete options of the ComboBox



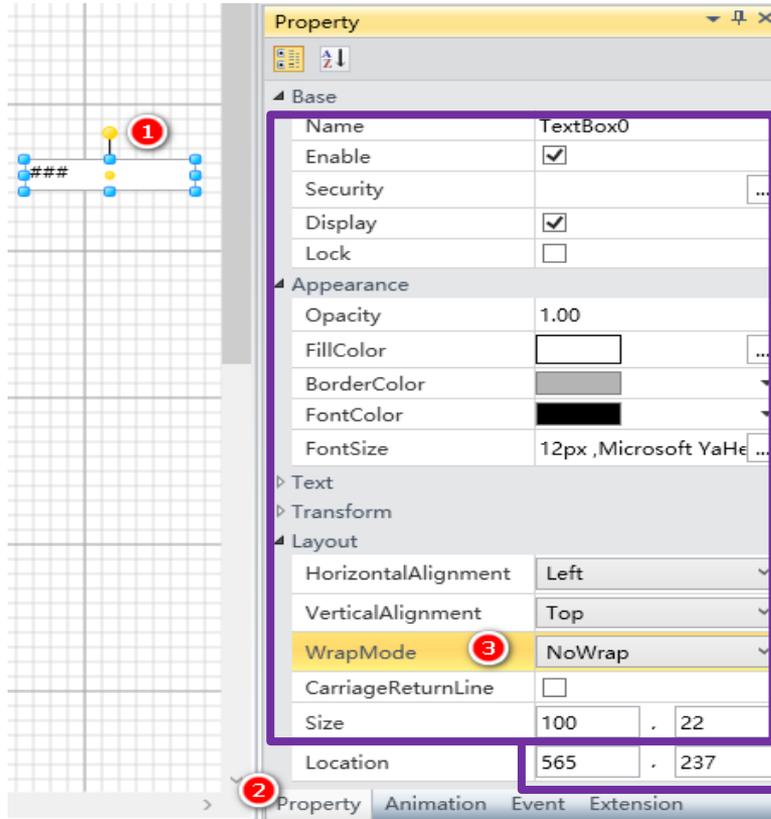
The screenshot illustrates the process of editing a ComboBox's options. It is divided into two main parts:

- Property Window:** Shows the configuration for a control named "ComboBox0". The "SubGroups" property is set to "Collection". A red circle with the number "2" highlights the ellipsis button next to this property, with a red arrow pointing to the "Collection Editor" dialog.
- Collection Editor Dialog:** A window titled "Collection Editor" with a close button (X) in the top right. It contains a list of members under the heading "Member(2/2)". The list includes "Option Text" and "Option Text1". Below the list are "Add" and "Delete" buttons, with a red circle and the number "3" highlighting the "Add" button. To the right of the list are four navigation buttons: a right-pointing arrow, an up arrow, a down arrow, and a left-pointing arrow. The "Content" area on the right shows "Option Text1" selected, with a red circle and the number "4" highlighting the ellipsis button next to it. At the bottom of the dialog are "OK" and "Cancel" buttons.

- Using scripts to add or delete options of the ComboBox

```
ComboBox0.AddItem("AA")  
//Add option AA  
  
ComboBox0.AddItems("BB,CC,DD")  
//Add 3 options: BB, CC, DD  
  
ComboBox0.ClearItems()  
//Clears all options  
  
ComboBox0.RemoveAtItem(1)  
//Remove option with index 1  
  
ComboBox0.RemoveItem("AA")  
//Remove option AA
```

- Draw a TextBox0, open its properties window

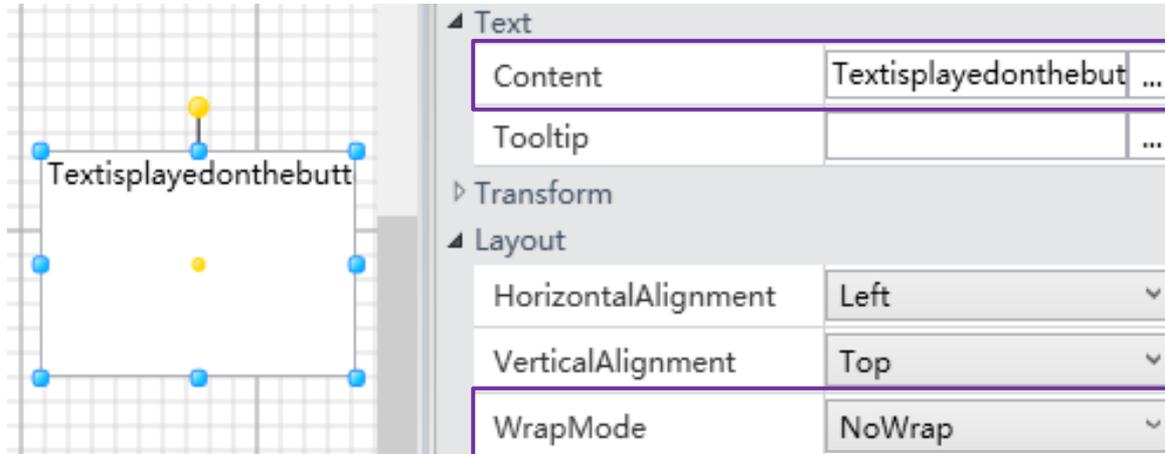


- **CarriageReturnLine**: Press enter key to a new line
- **HorizontalAlignment**: Left, Center, Right
- **VerticalAlignment**: Top, Center, Bottom
- **WrapMode**: NoWrap, WrapWithOverflow, Wrap

➤ WrapMode example1 :

Input letters in the Textbox0 : Textisplayedonthebutton support multilanguage

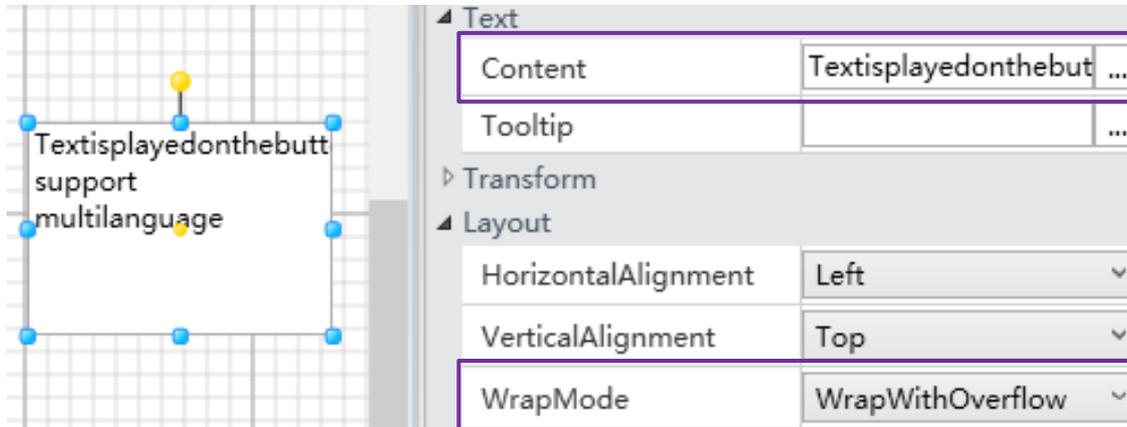
① The WrapMode property : NoWrap



➤ WrapMode example2 :

Input letters in the Textbox0 : Textisplayedonthebutton support multilanguage

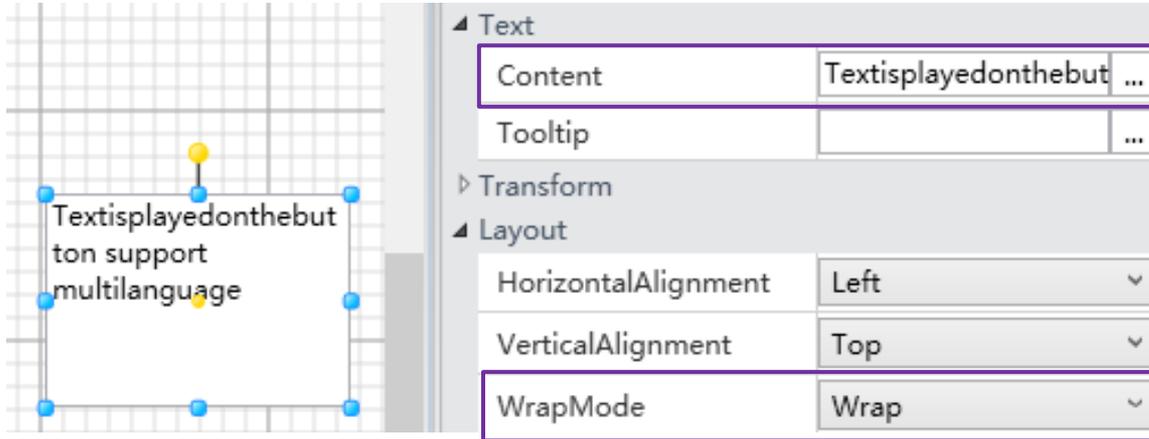
② The WrapMode property : WrapWithOverflow



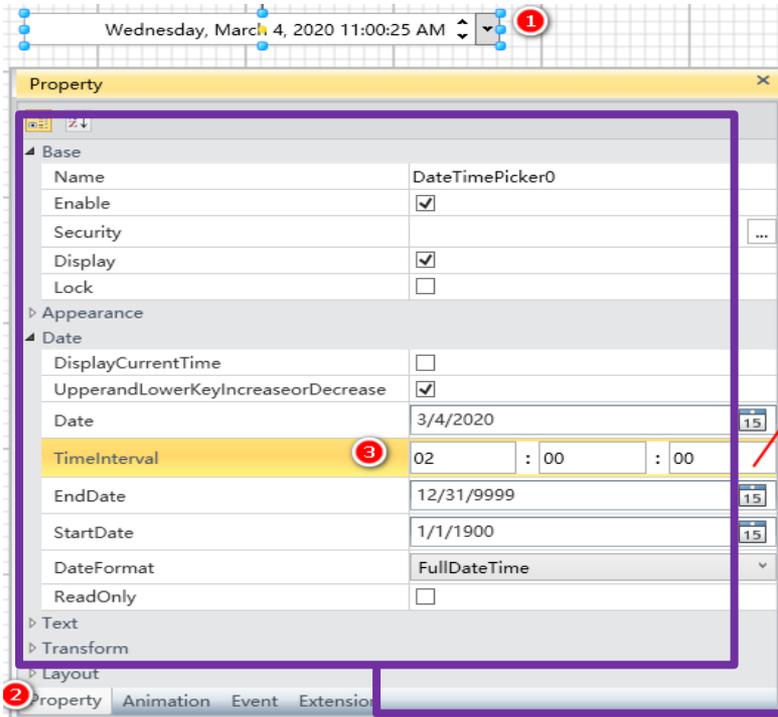
➤ WrapMode example3 :

Input letters in the Textbox0 : Textisplayedonthebutton support multilanguage

③ The WrapMode property : Wrap



➤ Draw a DateTimePicker0, open its properties window



Property

Wednesday, March 4, 2020 11:00:25 AM

Base

- Name: DateTimePicker0
- Enable:
- Security: ...
- Display:
- Lock:

Appearance

Date

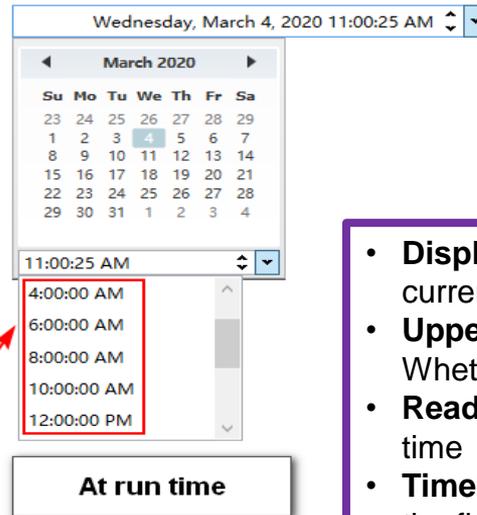
- DisplayCurrentTime:
- UpperandLowerKeyIncreaseorDecrease:
- Date: 3/4/2020
- TimeInterval: 02 : 00 : 00**
- EndDate: 12/31/9999
- StartDate: 1/1/1900
- DateFormat: FullDateTime
- ReadOnly:

Text

Transform

Layout

Property Animation Event Extension



Wednesday, March 4, 2020 11:00:25 AM

March 2020

Su	Mo	Tu	We	Th	Fr	Sa
23	24	25	26	27	28	29
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

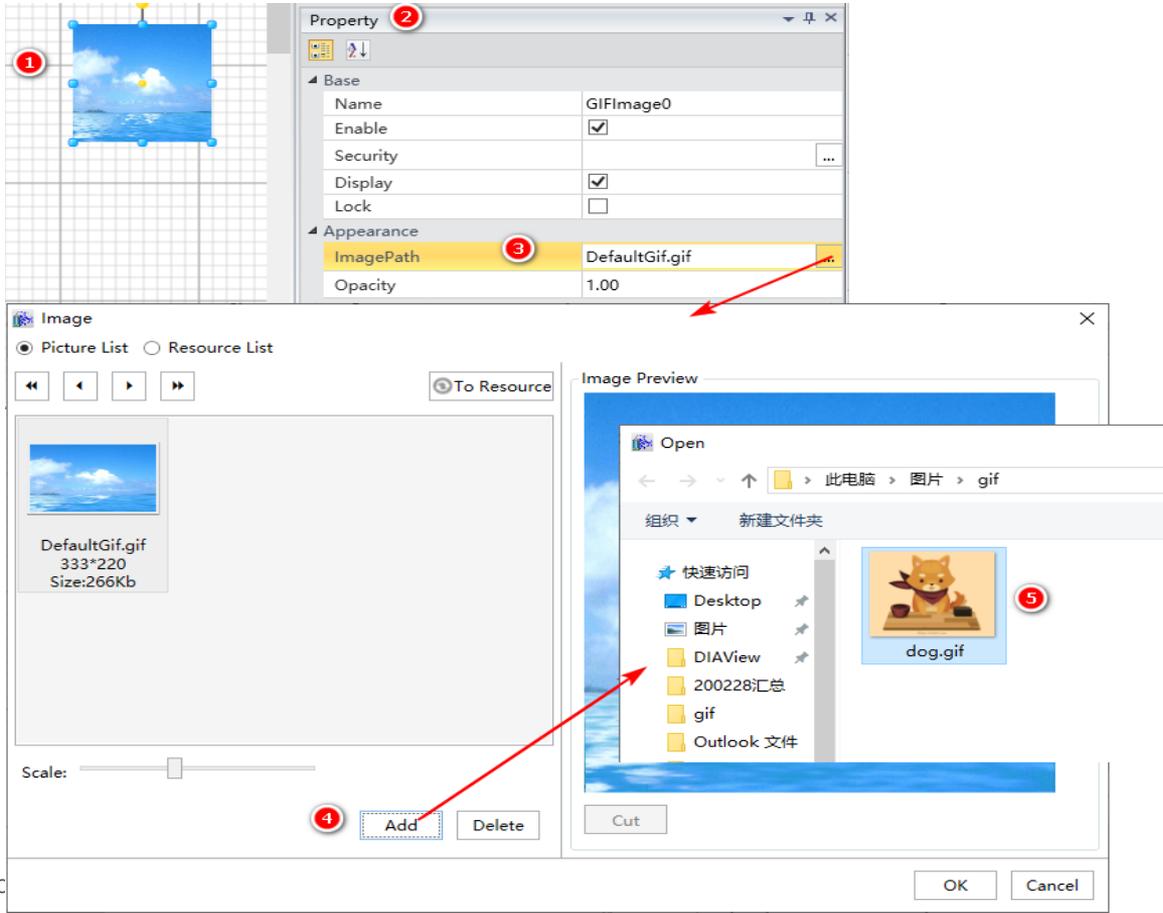
11:00:25 AM

- 4:00:00 AM
- 6:00:00 AM
- 8:00:00 AM
- 10:00:00 AM
- 12:00:00 PM

At run time

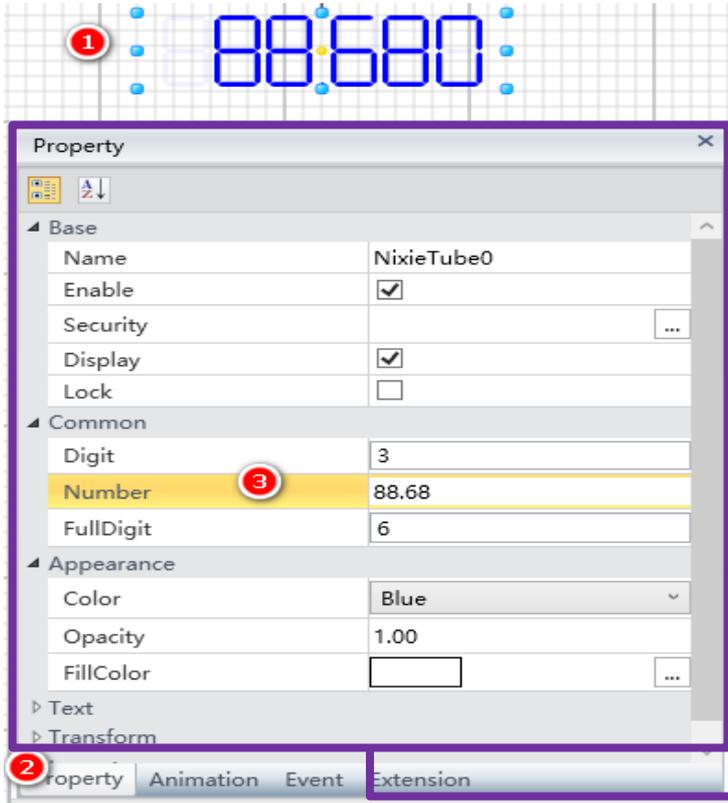
- **DisplayCurrentTime:** Whether to display current time
- **UpperandLowerKeyIncreaseorDecrease:** Whether the up and low key are available
- **ReadOnly:** The value can only be read at run time
- **TimeInterval:** Set time interval ,as shown on the figure.

➤ Draw a GIFImage0, open its properties window



※ For more details, please refer to the section "7.6.11 GIFImage" in user manual.

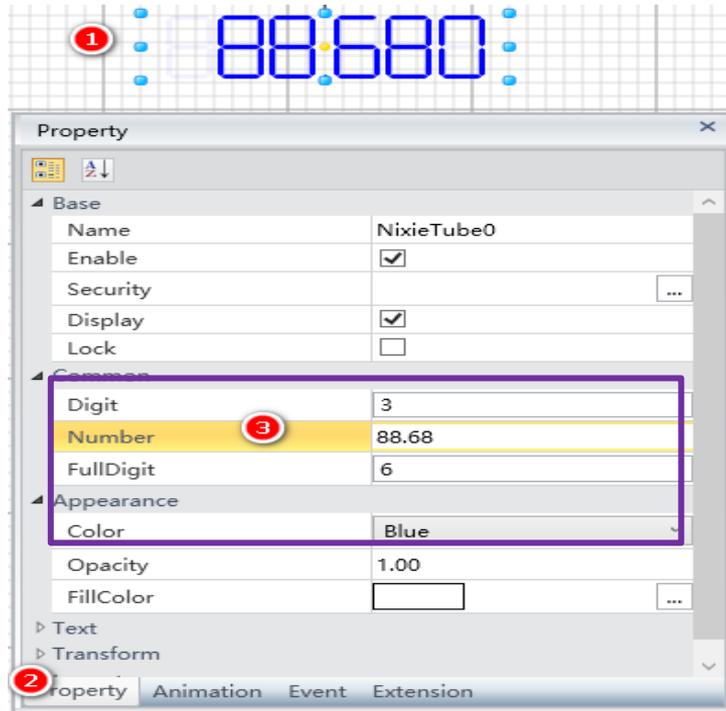
- Draw a NixieTube0, open its properties window



- **Digit:** Number of digits in the integer part
- **FullDigit:** Total number of digit in the NixieTube
- **Number:** The number to display
- **Color:** Set the font color of NixieTube
- **FillColor:** Set the background color of NixieTube

➤ NixieTube display value

(1) Create a NixieTube0 in the Window0, set its properties



The image shows a NixieTube control on a grid background, displaying the value '88.680'. A red circle with the number '1' is next to the control. Below it is a 'Property' window for 'NixieTube0'. The 'Common' section is highlighted with a purple box, and the 'Number' property is highlighted with a yellow background and a red circle with the number '3'. A red circle with the number '2' is at the bottom left of the property window.

Property	Value
Name	NixieTube0
Enable	<input checked="" type="checkbox"/>
Security	...
Display	<input checked="" type="checkbox"/>
Lock	<input type="checkbox"/>
Digit	3
Number	88.68
FullDigit	6
Color	Blue
Opacity	1.00
FillColor	...



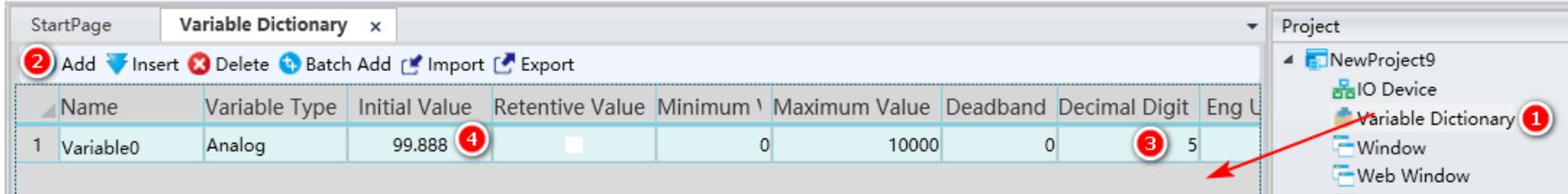
Window Controls-NixieTube

(2)Run the project

88.680

➤ NixieTube display variable

(1) Create a Variable0, set its initial value to 99.888



StartPage Variable Dictionary x

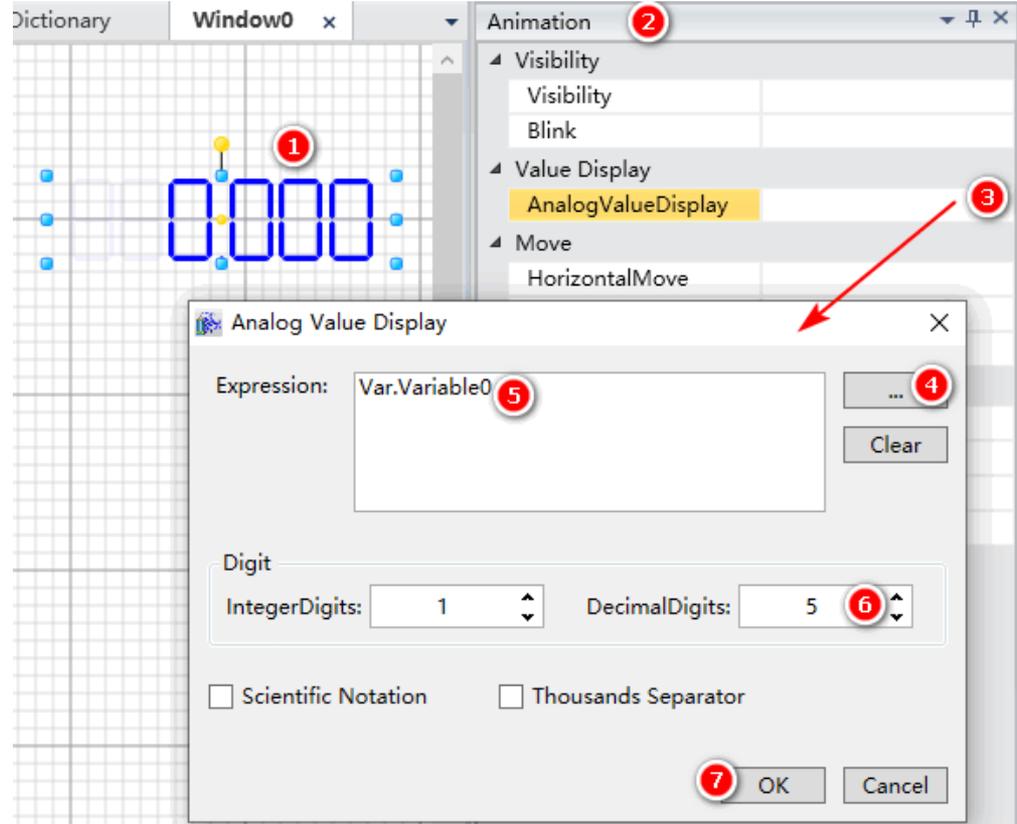
2 Add Insert Delete Batch Add Import Export

Name	Variable Type	Initial Value	Retentive Value	Minimum	Maximum Value	Deadband	Decimal Digit	Eng U
1 Variable0	Analog	99.888	<input type="checkbox"/>	0	10000	0	3 5	

Project

- NewProject9
 - IO Device
 - Variable Dictionary 1
 - Window
 - Web Window

(2) Create a NixieTube0 in the Window0, the analog value display animation associated Variable0



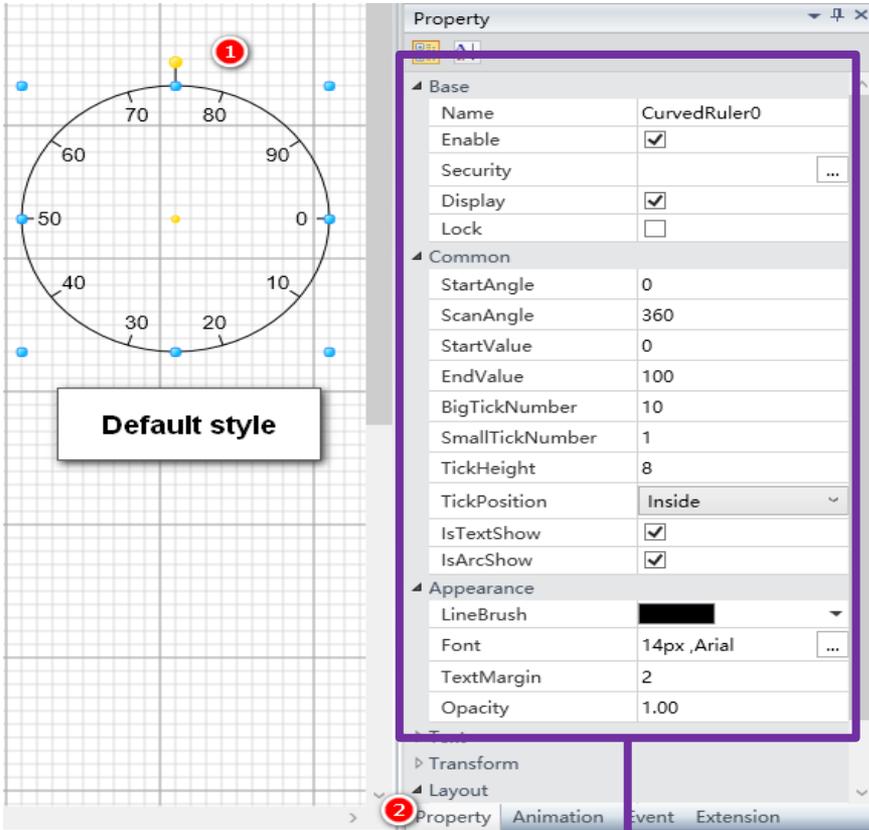


Window Controls-NixieTube

(3)Run the project

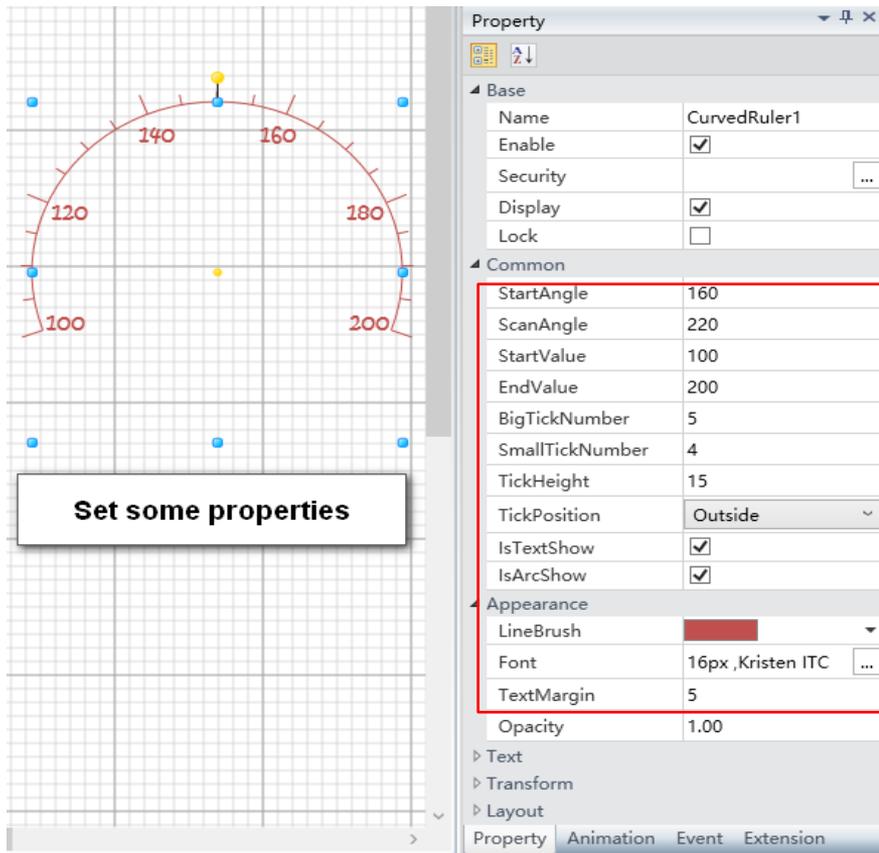
A digital display rendered in a blue, seven-segment font, showing the number '99.888'. The first two digits are '99', followed by a decimal point, and then three '8's. The display has a slight glow effect.

➤ Draw a CurvedRuler0, open its properties window



- **StartAngle:** Set the starting angle of the CurvedRuler (unit: degrees).
- **ScanAngle:** Set the scanning angle of the CurvedRuler (unit: degrees).
- **StartValue:** Set the starting value of the CurvedRuler.
- **EndValue:** Set the ending value of the CurvedRuler.
- **BigTickNumber:** Set the number of big tick of the CurvedRuler.
- **SmallTickNumber:** Set the number of small tick of the CurvedRuler.
- **TickHeight:** Set the tick height of the CurvedRuler.
- **TickPosition:** Set the tick position of the CurvedRuler.
- **IsTextShow:** Set whether the text of CurvedRuler is displayed
- **IsArcShow:** Set whether the border line of CurvedRuler is displayed
- **LineBrush:** Set the current color of CurvedRuler.
- **Font:** Set the font format of the text displayed on the CurvedRuler.
- **TextMargin:** Set the distance between text and border lines

- Draw a CurvedRuler0, set its properties



The image shows a software interface with a grid background. On the left, a curved ruler is drawn in red, spanning from 100 to 200. The ruler has major ticks every 20 units (100, 120, 140, 160, 180, 200) and minor ticks every 5 units. A yellow dot is positioned at the 160 mark. A white box with a black border and the text "Set some properties" is overlaid on the grid. On the right, a "Property" window is open, displaying the properties for "CurvedRuler1". The "Common" section is highlighted with a red border, showing the following properties:

Property	Value
StartAngle	160
ScanAngle	220
StartValue	100
EndValue	200
BigTickNumber	5
SmallTickNumber	4
TickHeight	15
TickPosition	Outside
IsTextShow	<input checked="" type="checkbox"/>
IsArcShow	<input checked="" type="checkbox"/>

Below the "Common" section, the "Appearance" section is visible, showing:

LineBrush	[Red Brush]
Font	16px ,Kristen ITC
TextMargin	5
Opacity	1.00

The "Property" window also shows sections for "Base", "Text", "Transform", and "Layout". The "Base" section includes Name (CurvedRuler1), Enable (checked), Security (...), Display (checked), and Lock (unchecked). The "Text", "Transform", and "Layout" sections are currently collapsed.

➤ Draw a Table0, open its properties window

1

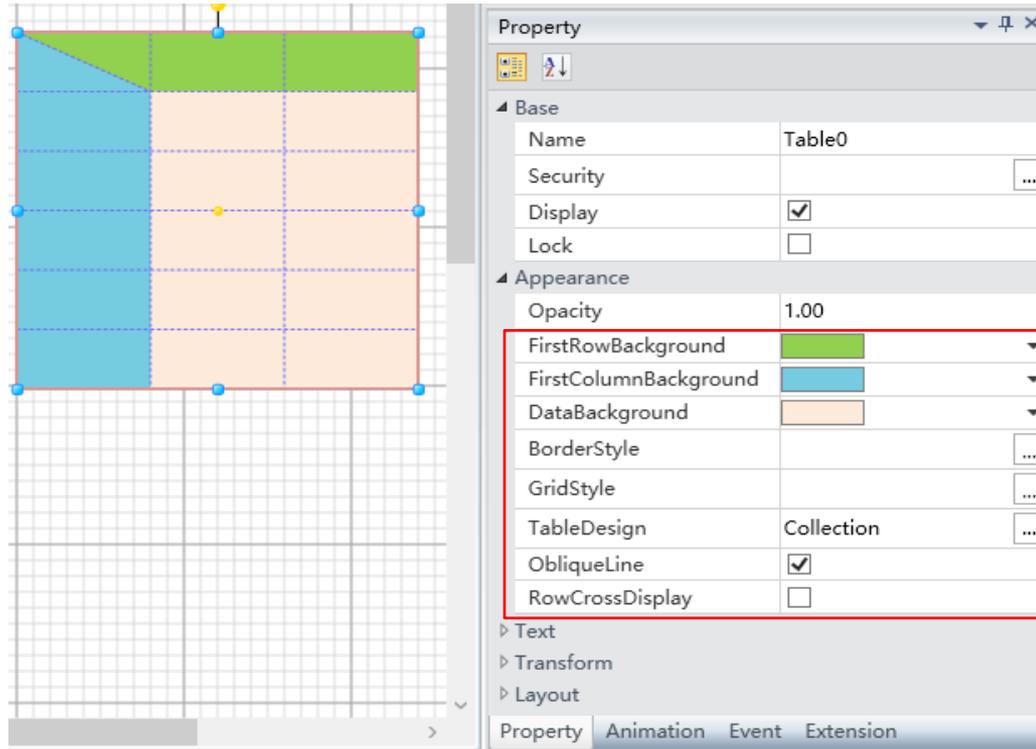
2

Column	Row	Index	Width
	1	1	80.00
	2	2	80.00
	3	3	80.00
	4	4	80.00

- **FirstRowBackground:** Set background of the first row.
- **FirstColumnBackground:** Set background of the first column, It only works if the **ObliqueLine** property is checked.
- **DataBackground:** Set background of data area, It only works if the **RowCrossDisplay** property is unchecked.
- **TableDesign:** Set the rows and columns of the Table.
- **ObliqueLine:** Set whether to display the oblique line in the upper left corner.
- **RowCrossDisplay:** Set whether to enable row cross display.

➤ Create a table with 6 rows and 3 columns

(1) Create a Table0 in the Window0, and set its some properties



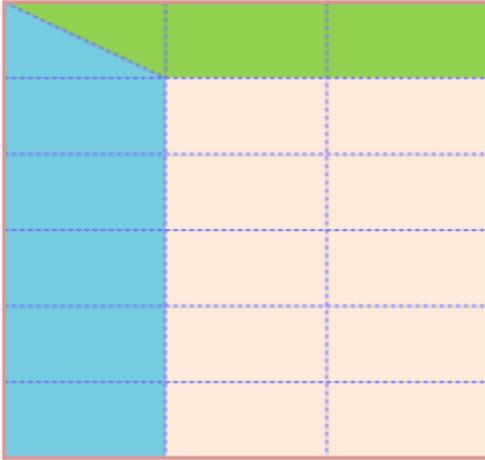
The screenshot displays a software interface with a table and a property window. The table has 6 rows and 3 columns. The first row is green, the first column is blue, and the remaining cells are orange. The Property window is open, showing the configuration for Table0.

Property	
Base	
Name	Table0
Security	...
Display	<input checked="" type="checkbox"/>
Lock	<input type="checkbox"/>
Appearance	
Opacity	1.00
FirstRowBackground	
FirstColumnBackground	
DataBackground	
BorderStyle	...
GridStyle	...
TableDesign	Collection
ObliqueLine	<input checked="" type="checkbox"/>
RowCrossDisplay	<input type="checkbox"/>
Text	
Transform	
Layout	
Property Animation Event Extension	



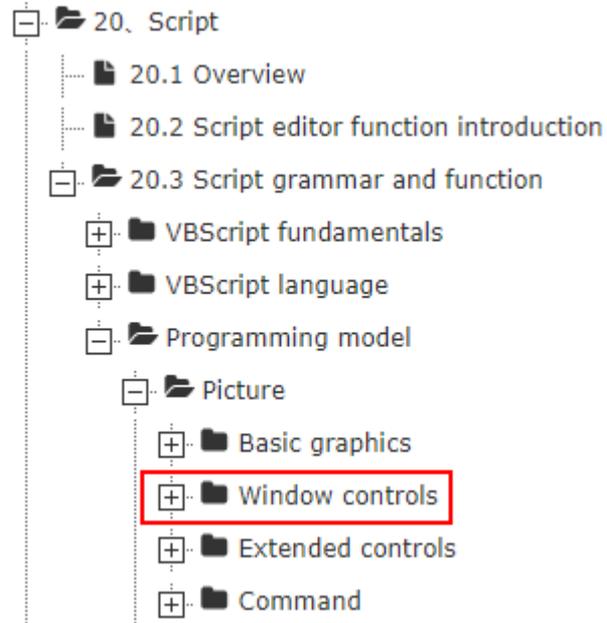
Window Controls-Table

(2)Run the project



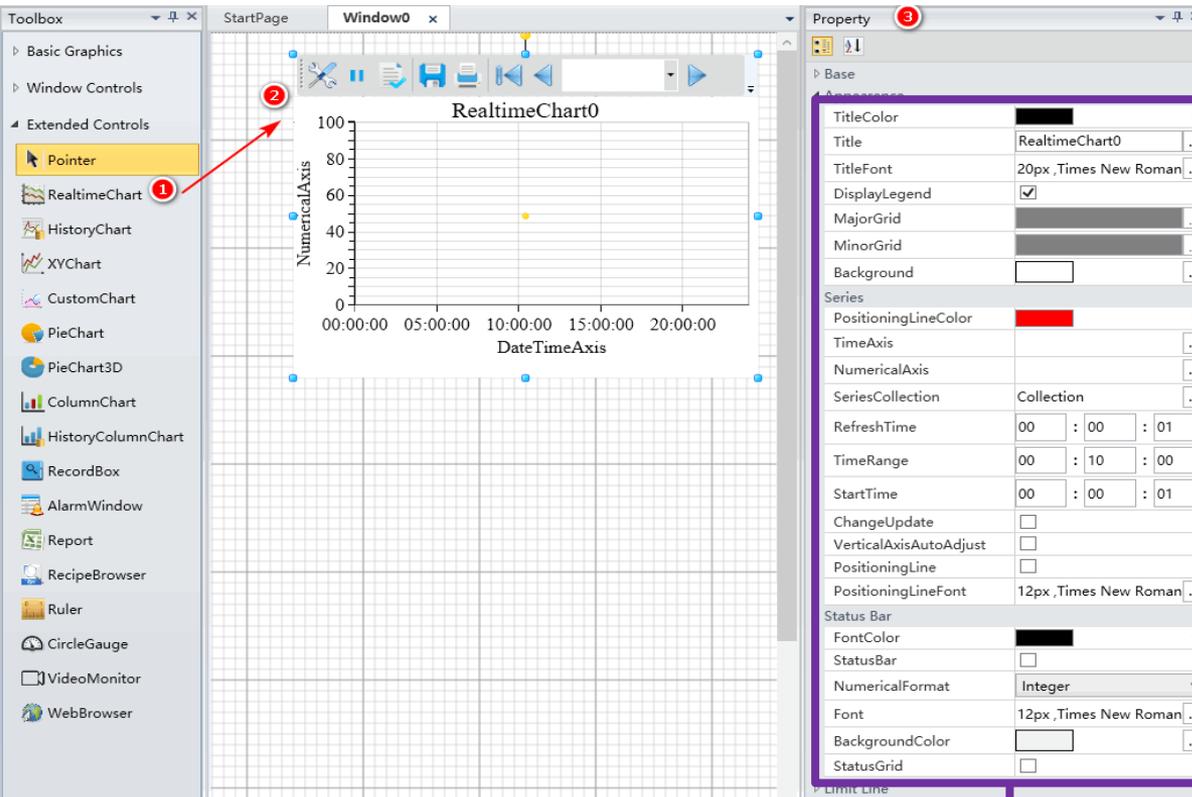
The Scripts of Window Controls

The scripts usage of window controls, please refer to the section “20.3 Script grammar and function” in the user manual. As shown in the figure below:



- The concepts of Toolbox
- How to draw Basic Graphics
- How to draw Window Controls
- How to draw Extend Controls

➤ Create a RealTimeChart0, open its properties window

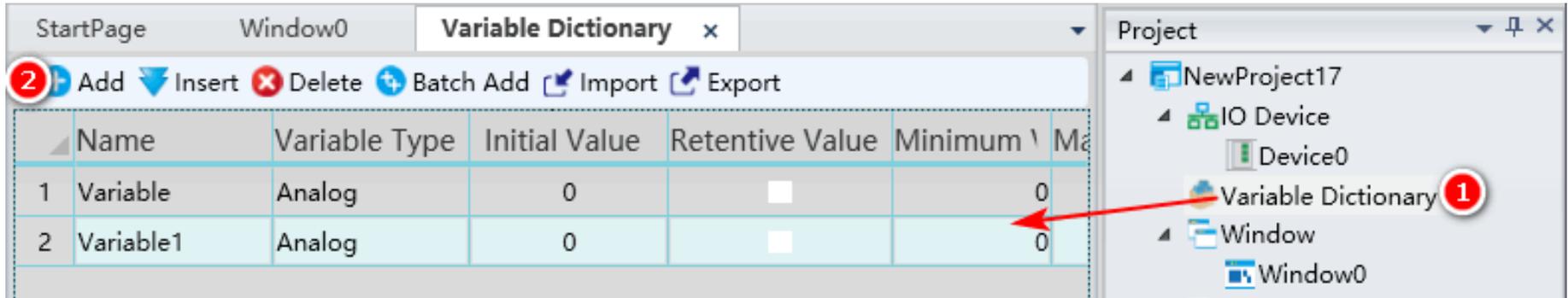


- **TimesAxis:** Set properties of TimeAxis
- **NumericalAxis:** Set properties of NumericalAxis
- **SeriesCollection:** Add or delete series, set properties of series
- **ChangeUpdate:** Set whether to update data only when the value changes
- **VerticalAxisAutoChange:** Set whether to automatically adjust the maximum value of the vertical axis.
- **PositionLine:** Whether to display position line
- **PositionLineColor:** Set the color of position line
- **PositionLineFont:** Set the font format of the data on the position line
- **DisplayLegend:** Whether display legend of a chart.
- **MajorGrid:** Set major grid style
- **MinorGrid:** Set minor grid style

※ For more details, please refer to the section "7.7.1 RealTimeChart" in the user manual
 The properties of HistoryChart · XYChart · CustomChart · ColumnChart · HistoryColumnChart are similar to RealTimeChart, so no explanation is given

- Create a RealTimeChart0 that refreshes the real-time data:

(1) Create 2 Variables: Variable , Variable1



StartPage Window0 Variable Dictionary x

2 Add Insert Delete Batch Add Import Export

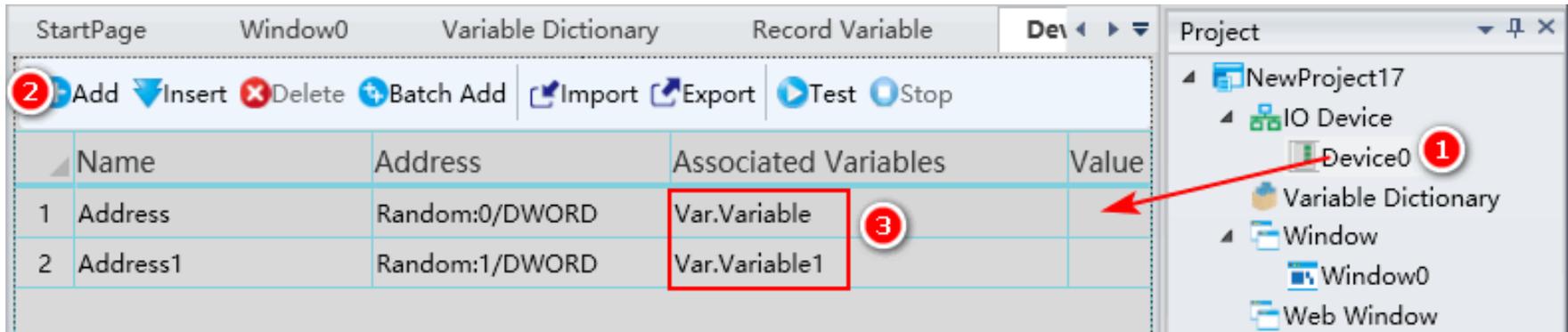
	Name	Variable Type	Initial Value	Retentive Value	Minimum \	Ma
1	Variable	Analog	0	<input type="checkbox"/>	0	
2	Variable1	Analog	0	<input type="checkbox"/>	0	

Project

- NewProject17
 - IO Device
 - Device0
 - Variable Dictionary 1
 - Window
 - Window0

✘Refer to the section "6.3 Variables" in user manual.

(2) Create a simulation device-Device0, add two address in Device0 that associated Variable, Variable1 respectively



The screenshot shows the software interface with the 'Variable Dictionary' window active. The table below lists the variables associated with the device. A red box highlights the 'Associated Variables' column for the two entries. A red arrow points from the 'Device0' entry in the Project tree to the 'Associated Variables' column of the table.

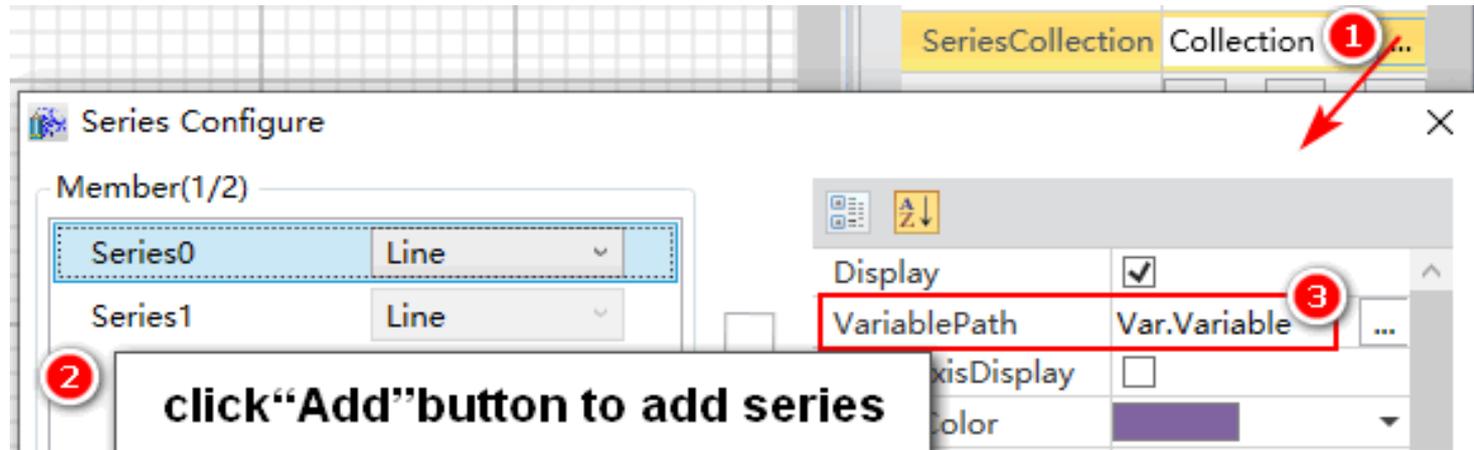
	Name	Address	Associated Variables	Value
1	Address	Random:0/DWORD	Var.Variable	
2	Address1	Random:1/DWORD	Var.Variable1	

The Project tree on the right shows the following structure:

- NewProject17
 - IO Device
 - Device0
 - Variable Dictionary
 - Window
 - Window0
 - Web Window

※ The method of creating a simulation device, refer to section “5.10.1 Simulator” in the user manual

(3) Create a RealtimeChart0 in the Window0, add two curves(Series0,Series1) in RealtimeChart0 that associated Variable and Variable1 respectively



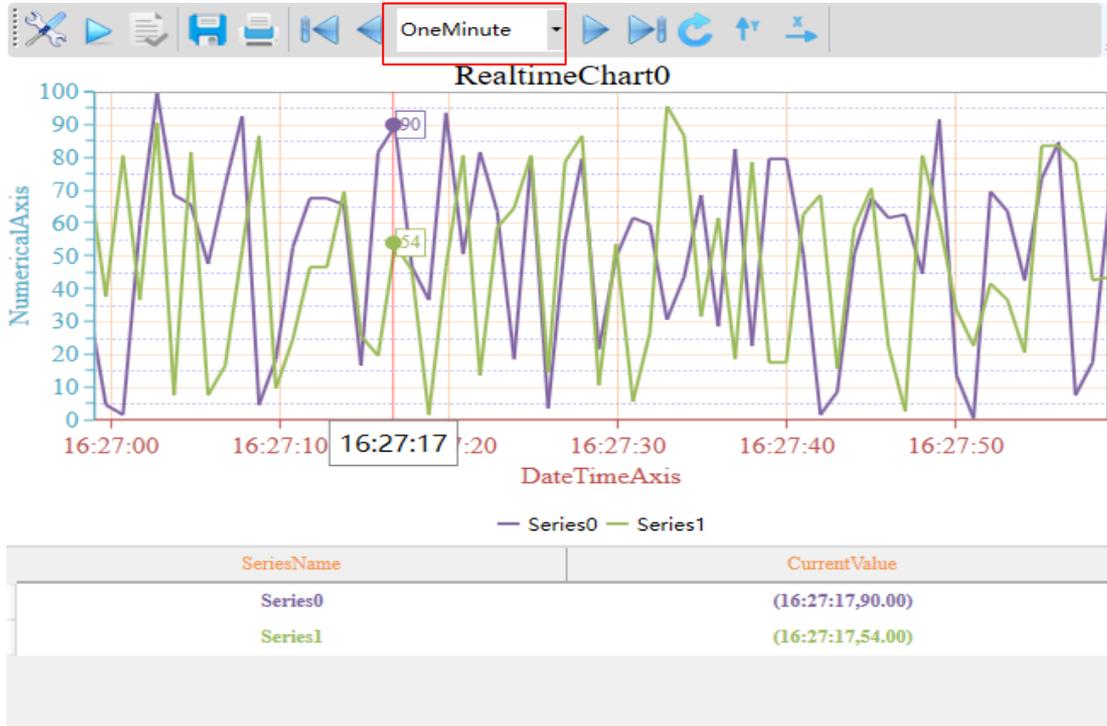
(4) Set some properties of the RealtimeChart0

Appearance	
TitleColor	 ▾
Title	RealtimeChart0 ...
TitleFont	20px , Times New Roman ...
DisplayLegend	<input checked="" type="checkbox"/>
MajorGrid	 ...
MinorGrid	 ...
Background	 ...
Series	
PositioningLineColor	 ▾
TimeAxis	...
NumericalAxis	...
SeriesCollection	Collection ...
RefreshTime	00 : 00 : 01
TimeRange	00 : 10 : 00
StartTime	00 : 00 : 01
ChangeUpdate	<input type="checkbox"/>
VerticalAxisAutoAdjust	<input type="checkbox"/>
PositioningLine	<input checked="" type="checkbox"/>
PositioningLineFont	12px , Times New Roman ...
Status Bar	
FontColor	 ▾
StatusBar	<input checked="" type="checkbox"/>
NumericalFormat	Double2 ▾
Font	12px , Times New Roman ...
BackgroundColor	 ...
StatusGrid	<input type="checkbox"/>

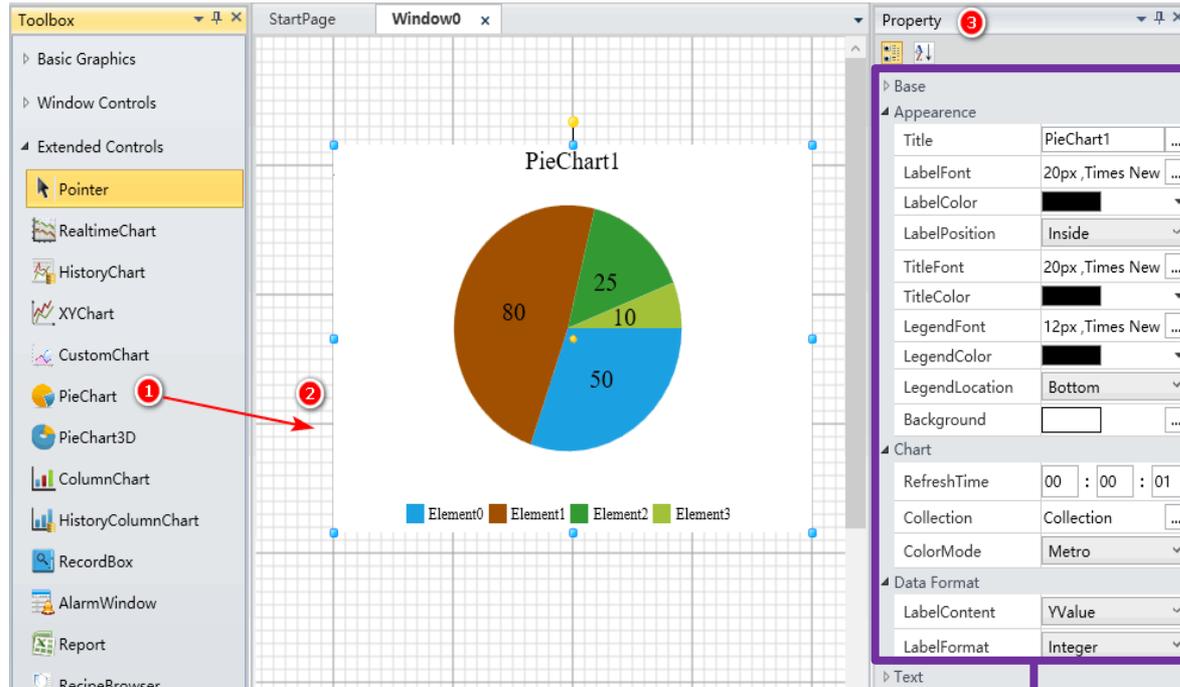


Extend Controls-RealTimeChart

(5)Run the project



➤ Create a PieChart0, open its properties window

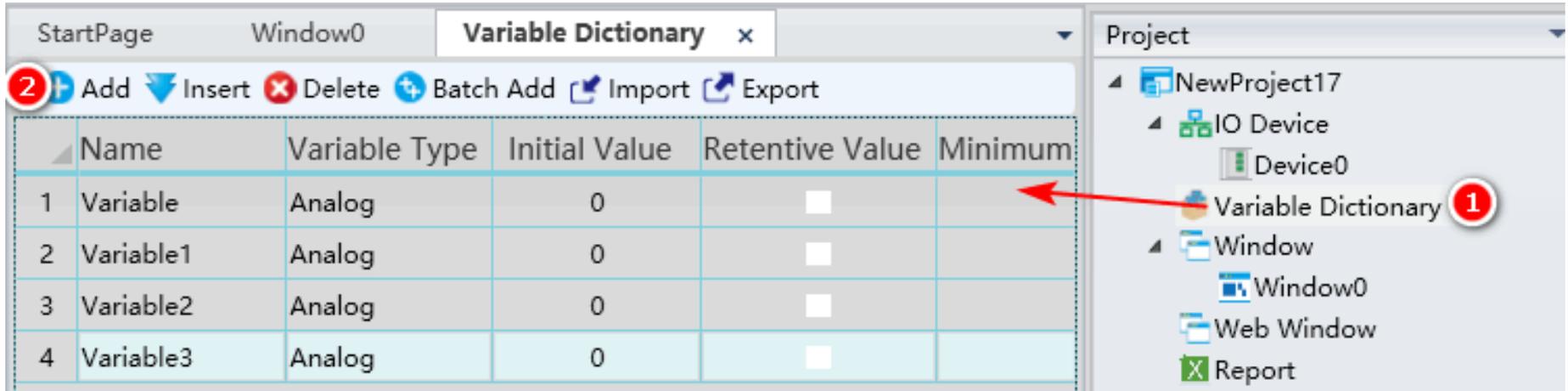


- **Title:** Set the title
- **TitleFont:** Set the title font style
- **TitleColor:** Set the title color
- **LabelFont:** Set label font style
- **LabelColor:** Set label color
- **LabelPosition:** Set label position (inside, Outside, OutsideExtended)
- **LegendFont:** Set legend font
- **LegendColor:** Set legend color
- **LegendLocation:** Set legend position
- **RefreshTime:** Set the refresh time
- **ColorMode:** Set the color mode (Metro, Custom)
- **LabelContent:** Set the label content (YValue, XValue, Percentage)
- **LabelFormat:** Set the label format (Int, Double1, Double2, Scientific, Percent)
- **Collection:** Configures the elements and associated with variables of the pie chart

※ For more details, please refer to the section "7.7.5 PieChart" in the user manual
The properties of Pie3DChart are similar to PieChart, so no explanation is given

➤ Create a Pie that refreshes the real-time data:

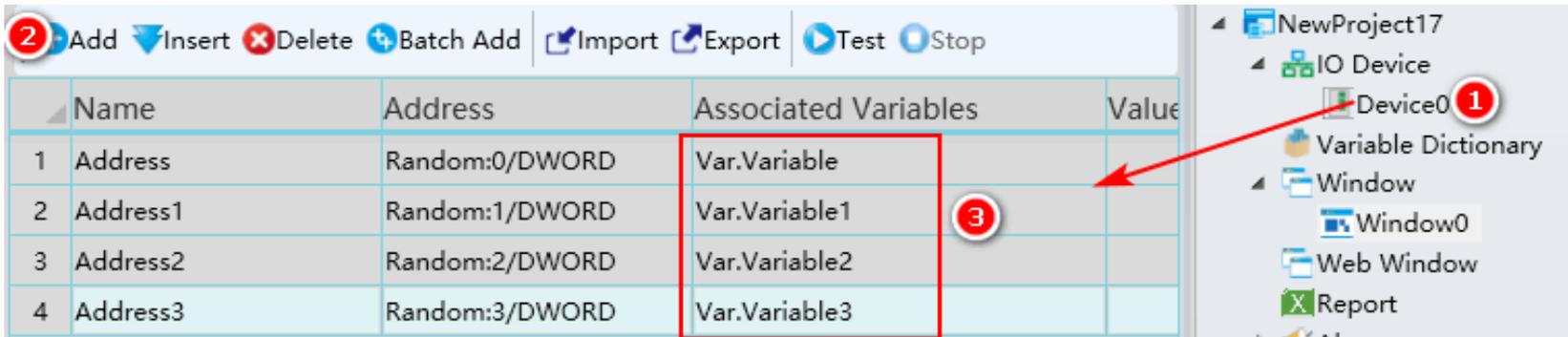
(1) Create four variables: Variable, Variable1, Variable2, Variable3



	Name	Variable Type	Initial Value	Retentive Value	Minimum
1	Variable	Analog	0	<input type="checkbox"/>	
2	Variable1	Analog	0	<input type="checkbox"/>	
3	Variable2	Analog	0	<input type="checkbox"/>	
4	Variable3	Analog	0	<input type="checkbox"/>	

※Refer to the section "6.3 Variables" in user manual.

(2) Create a simulation device-Device0, add four address in Device0 that associated Variable, Variable1, Variable2, Variable3 respectively

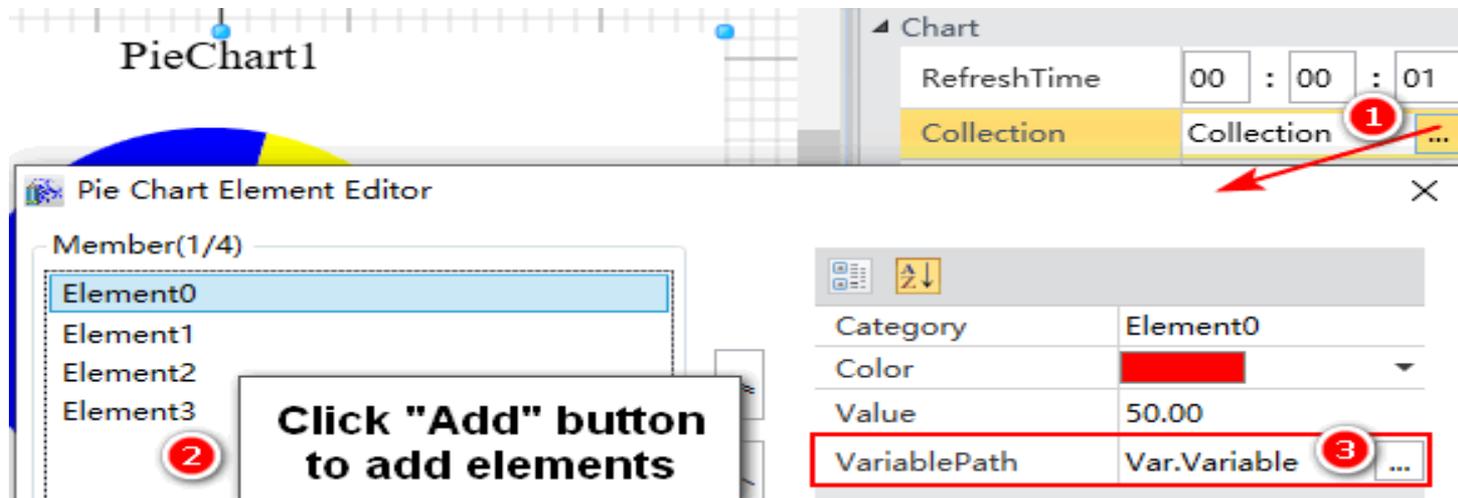


	Name	Address	Associated Variables	Value
1	Address	Random:0/DWORD	Var.Variable	
2	Address1	Random:1/DWORD	Var.Variable1	
3	Address2	Random:2/DWORD	Var.Variable2	
4	Address3	Random:3/DWORD	Var.Variable3	

The screenshot shows a software interface with a table and a tree view. The table has columns: Name, Address, Associated Variables, and Value. The tree view on the right shows a hierarchy: NewProject17 > IO Device > Device0 (circled in red with a '1'). A red arrow points from Device0 to the table. The table rows are: 1 Address (Random:0/DWORD, Var.Variable), 2 Address1 (Random:1/DWORD, Var.Variable1), 3 Address2 (Random:2/DWORD, Var.Variable2), 4 Address3 (Random:3/DWORD, Var.Variable3). A red box highlights the 'Associated Variables' column, and a red circle with '3' is next to the first row's cell.

※ The method of creating a simulation device, refer to section “5.10.1 Simulator” in the user manual

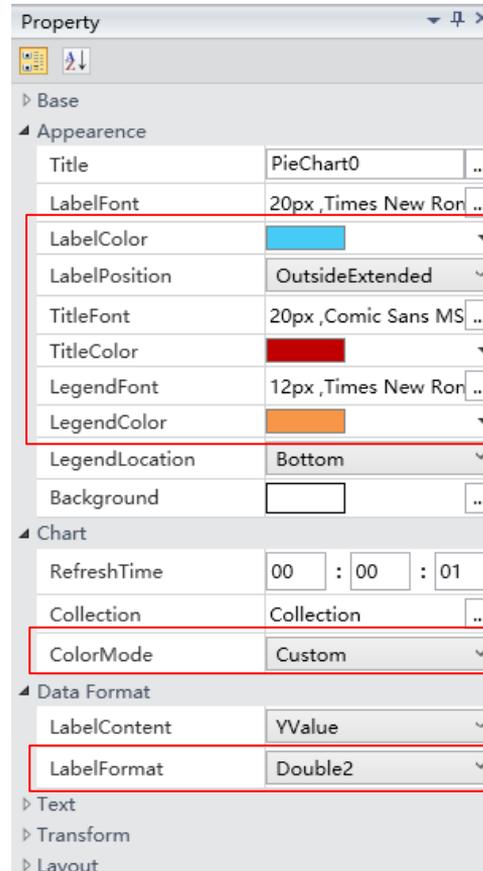
(3) Create a PieChart0 in the Window0, add four elements(Element0 , Element1, Element2 , Element3) in PieChart0 that associated Variable, Variable1, Variable2, Variable3 respectively



The screenshot shows a software interface with a pie chart and two configuration panels. The pie chart is labeled "PieChart1" and has a blue and yellow segment. The "Chart" panel shows a "RefreshTime" of 00:00:01 and a "Collection" dropdown set to "Collection". A red circle with the number "1" is around the "Collection" dropdown, with a red arrow pointing to it. The "Pie Chart Element Editor" panel shows a list of elements: "Element0", "Element1", "Element2", and "Element3". A red circle with the number "2" is around the "Element0" list item. A callout box with a black border and white background contains the text "Click 'Add' button to add elements". The "VariablePath" field in the "Pie Chart Element Editor" is highlighted with a red box and a red circle with the number "3".

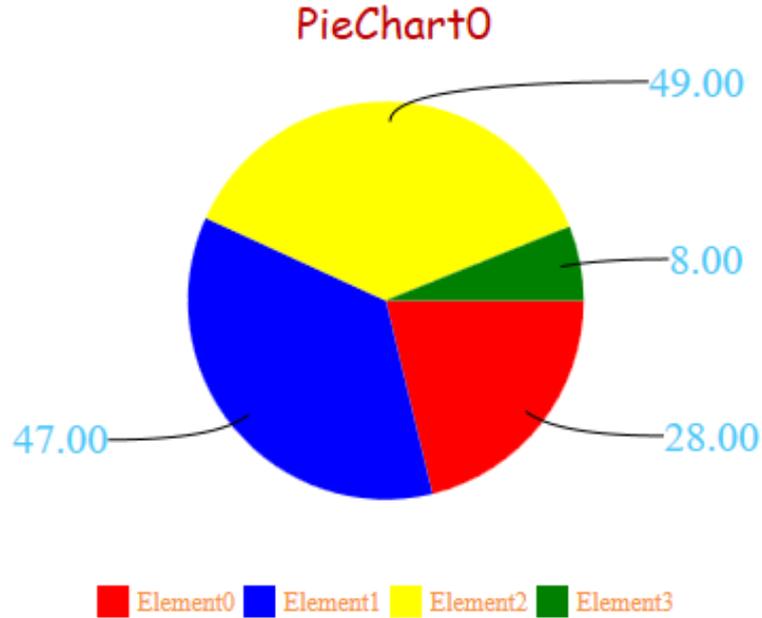
Category	Element0
Color	
Value	50.00
VariablePath	Var.Variable 3 ...

(4)Set some properties

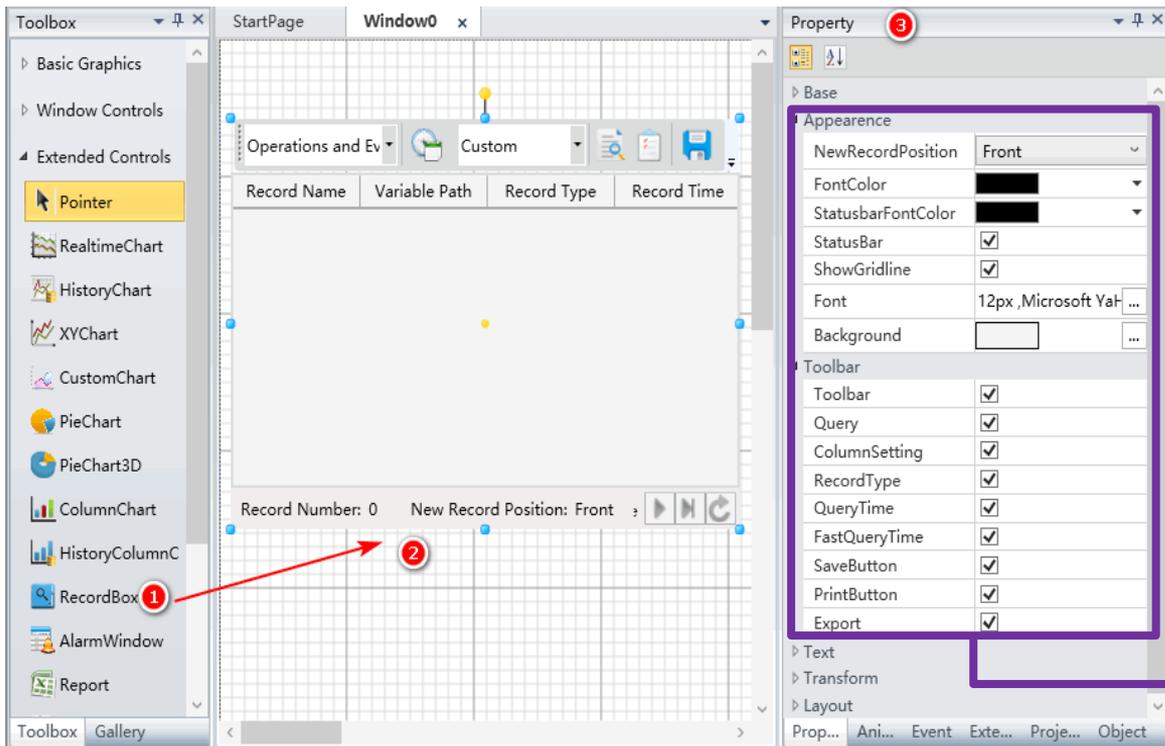


Property	Value
Title	PieChart0
LabelFont	20px, Times New Roman
LabelColor	Blue
LabelPosition	OutsideExtended
TitleFont	20px, Comic Sans MS
TitleColor	Red
LegendFont	12px, Times New Roman
LegendColor	Orange
LegendLocation	Bottom
Background	White
RefreshTime	00 : 00 : 01
Collection	Collection
ColorMode	Custom
LabelContent	YValue
LabelFormat	Double2

(5)Run the project



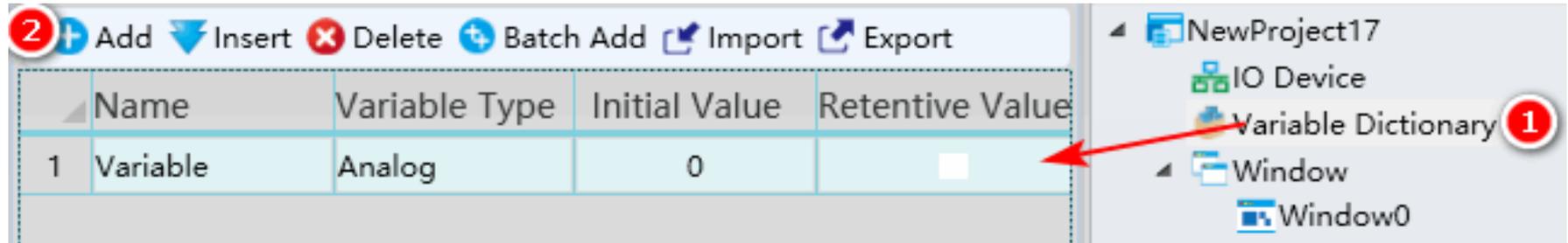
- Create a RecordBox0, open its properties window



- **Font:** Set font style
- **FontColor:** Set font color
- **StatusBar:** Set whether to display the status bar.
- **StatusbarFontColor:** Set the color of the status bar font.
- **ShowGridline:** Set whether to display grid.
- **NewRecordPosition:** Set the location of the latest record.
- **Background:** Set control background
- **Toolbar:** Set whether to display the toolbar

➤ RecordBox record operation variables:

(1) Create a Variable: Variable



The screenshot shows the RecordBox interface. On the left, a table lists variables. On the right, a project tree shows the hierarchy of the project.

	Name	Variable Type	Initial Value	Retentive Value
1	Variable	Analog	0	<input type="checkbox"/>

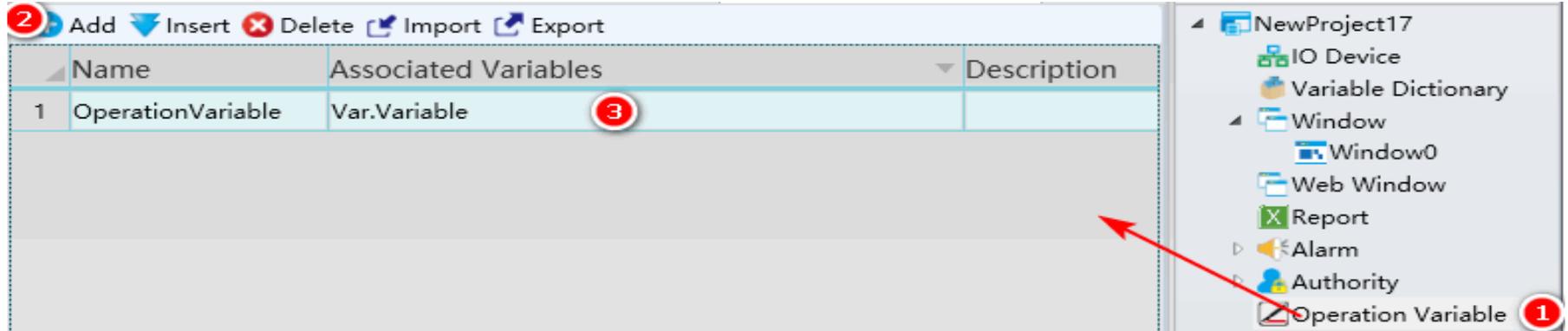
Project Tree:

- NewProject17
 - IO Device
 - Variable Dictionary **1**
 - Window
 - Window0

A red arrow points from the 'Variable Dictionary' node in the tree to the 'Retentive Value' column in the table. A red circle with the number '1' is next to the 'Variable Dictionary' node. A red circle with the number '2' is next to the 'Add' button in the table's toolbar.

※Refer to the section "6.3 Variables" in user manual.

(2) Create a OperationVariable that associated Variable



The screenshot shows a software interface with a table and a tree view. The table has the following data:

	Name	Associated Variables	Description
1	OperationVariable	Var.Variable	

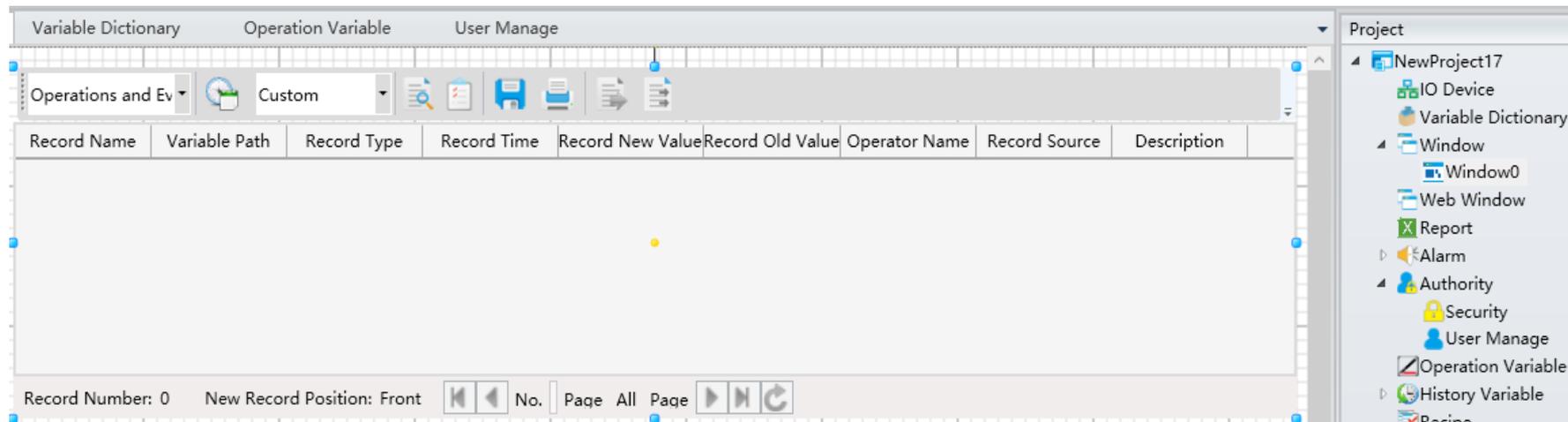
The tree view on the right contains the following items:

- NewProject17
 - IO Device
 - Variable Dictionary
 - Window
 - Window0
 - Web Window
 - Report
 - Alarm
 - Authority
 - Operation Variable

A red arrow points from the 'Operation Variable' item in the tree view to the 'Associated Variables' column of the table. Red circles with numbers 1, 2, and 3 are placed over the 'Operation Variable' item, the 'Add' button, and the 'Associated Variables' cell respectively.

※Refer to the section "13 Operation variable" in user manual.

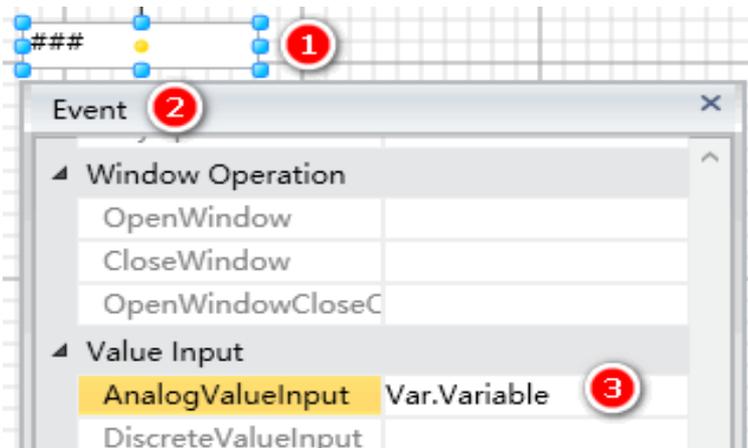
(3) Create a RecordBox0 in the Window0



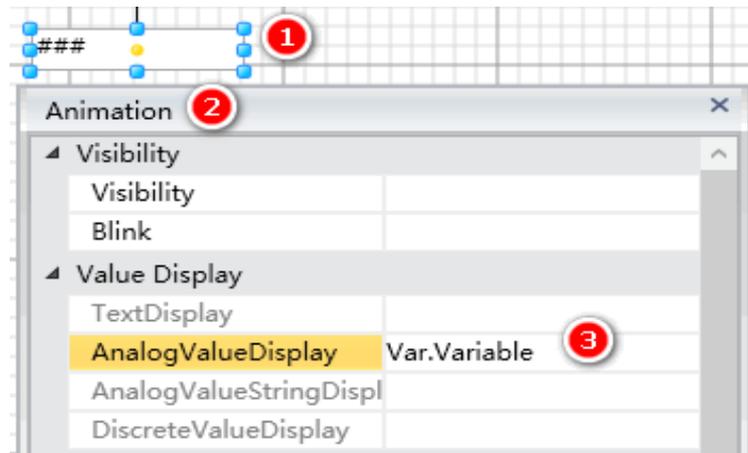
The screenshot displays the Delta SCADA software interface. At the top, there are tabs for "Variable Dictionary", "Operation Variable", and "User Manage". Below these is a toolbar with icons for "Operations and Ev", "Custom", and other functions. The main area is a table with the following columns: Record Name, Variable Path, Record Type, Record Time, Record New Value, Record Old Value, Operator Name, Record Source, and Description. The table is currently empty. At the bottom, there is a navigation bar with "Record Number: 0", "New Record Position: Front", and navigation buttons (back, forward, refresh).

Record Name	Variable Path	Record Type	Record Time	Record New Value	Record Old Value	Operator Name	Record Source	Description
-------------	---------------	-------------	-------------	------------------	------------------	---------------	---------------	-------------

(4) Create a Textbox0 in Window0, the analog value input event and analog value display animation of TextBox0 are associated with Variable

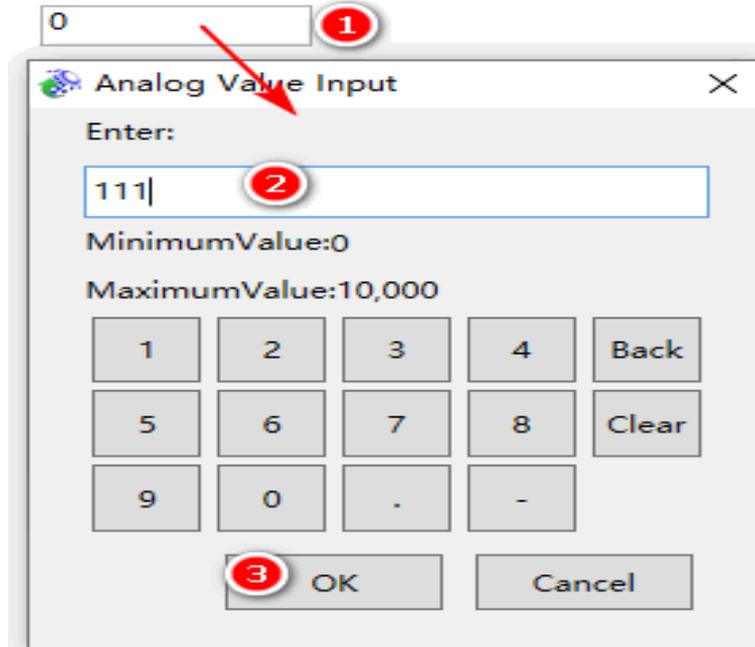


Analog Value Input

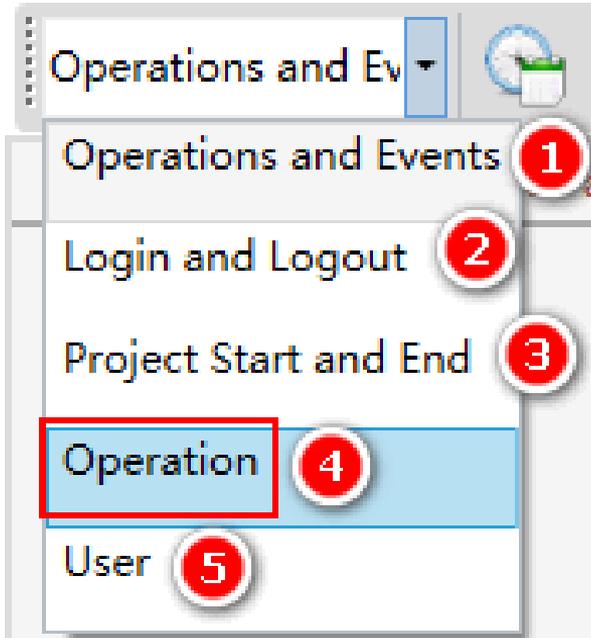


Analog Value Display

(5) Run the project. In Textbox0, input 111, then input 222



(6) Set query type: select the Operation

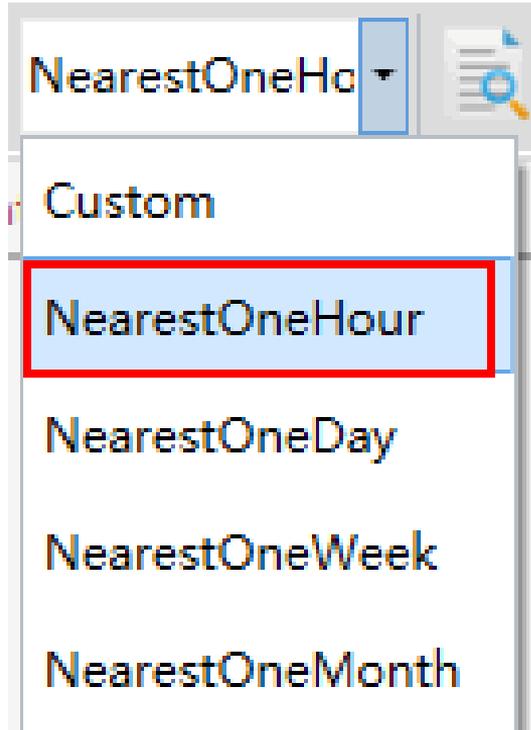


- ① Record all operations and events
- ② Only user login and logout
- ③ Only project start and project end
- ④ Only operations
- ⑤ Only user parameters modification

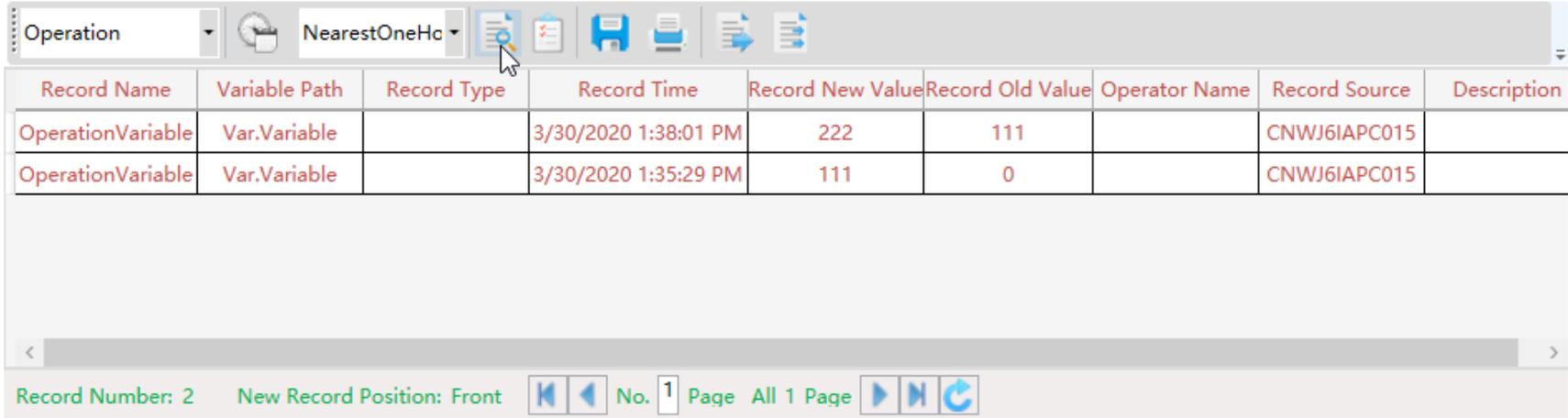


Extend Controls-RecordBox

(7)Set Query time: select NearestOnehour



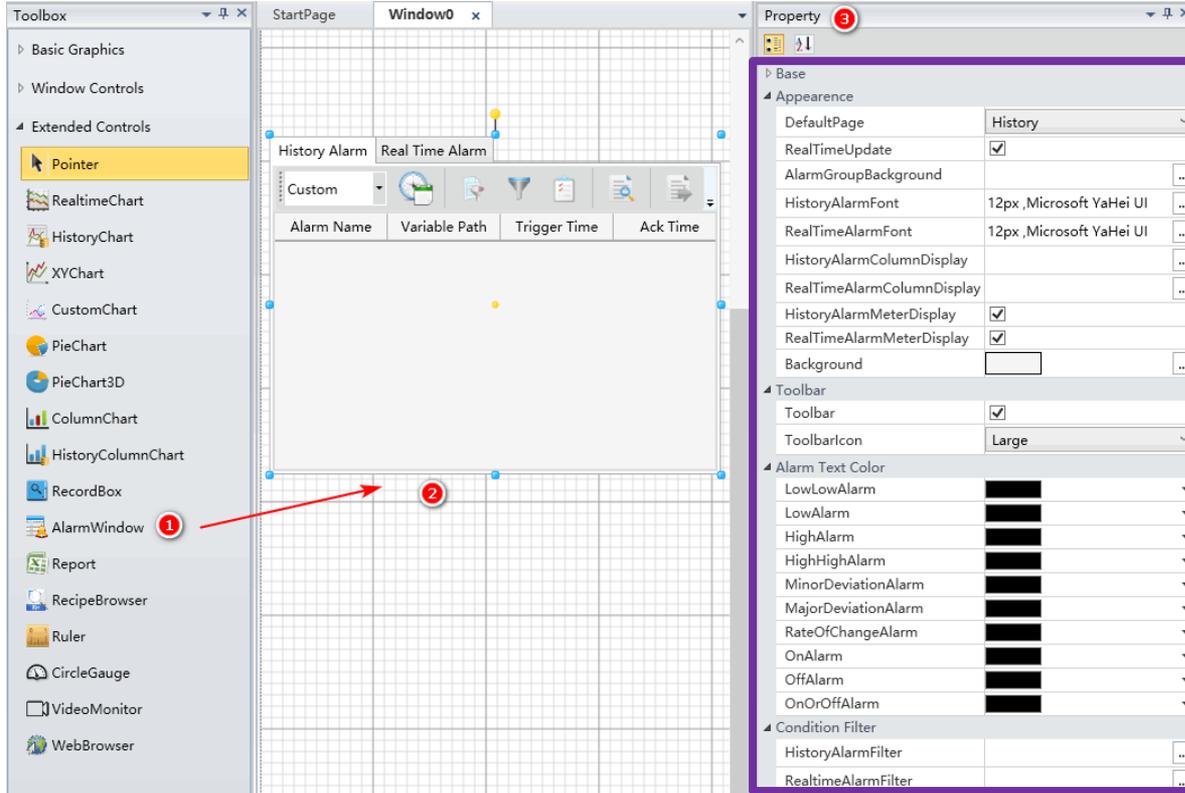
(8) Click the query button to query the records of operation variables



Record Name	Variable Path	Record Type	Record Time	Record New Value	Record Old Value	Operator Name	Record Source	Description
OperationVariable	Var.Variable		3/30/2020 1:38:01 PM	222	111		CNWJ6IAPC015	
OperationVariable	Var.Variable		3/30/2020 1:35:29 PM	111	0		CNWJ6IAPC015	

Record Number: 2 New Record Position: Front No. 1 Page All 1 Page

➤ Create a AlarmWindow0, open its properties

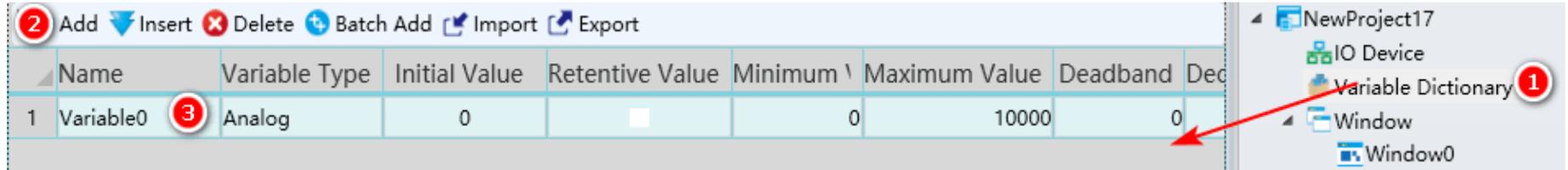


The screenshot shows the Delta software interface. On the left, the 'Extended Controls' section of the toolbox is expanded, and 'AlarmWindow' is highlighted with a red circle and arrow labeled '1'. In the center, a 'Window0' is displayed on a grid, containing an 'AlarmWindow' control with a red circle and arrow labeled '2'. On the right, the 'Property' window is open, showing the configuration for the selected 'AlarmWindow' control. The 'Alarm Text Color' section is expanded, showing various alarm types and their corresponding colors.

- **DefaultPage:** Set default page.
- **RealTimeUpdate:** Real time alarm window refresh data automatically
- **AlarmGroupBackground:** Set the background color for the alarm group.
- **HistoryAlarmColumnDisplay:** Set history alarm window column display.
- **RealTimeAlarmColumnDisplay:** Set real-time alarm window column display.
- **HistoryAlarmMeterDisplay:** Set whether to display the history alarm header.
- **RealTimeAlarmMeterDisplay:** Set whether to display the real-time alarm header.
- **Toolbar:** Set whether to display toolbar
- **ToolbarIcon:** Set the size of button in toolbar
- **Alarm Text Color:** Set alarm text color
- **HistoryAlarmFilter:** Set the filter conditions of historical alarm window
- **RealtimeAlarmFilter:** Set the filter conditions of real-time alarm window

➤ AlarmWindow show real-time alarms and query history alarms

(1) Create a variable : Variable0



The screenshot displays the software interface for creating a variable. On the left, a table lists the variable configuration:

	Name	Variable Type	Initial Value	Retentive Value	Minimum \	Maximum Value	Deadband	Dec
1	Variable0	Analog	0	<input type="checkbox"/>	0	10000	0	

On the right, a project tree shows the hierarchy: NewProject17 > IO Device > Variable Dictionary (1) > Window > Window0. A red arrow points from the 'Variable Dictionary' node to the 'Variable0' row in the table. A red circle with the number '1' is placed over the 'Variable Dictionary' node.

※Refer to the section "6.3 Variables" in user manual.

(2) Create a AlarmVariable0 that associated with the Variable0, set some parameters of AlarmVariable0(HighHigh alarm)

Name	Associated Variables	Alarm Level	Alarm Configuration	Description
1 AlarmVariable0	Var.Variable0	Heavier		

Alarm Configuration

Common Alarm

Limit Value Alarm

	Alarm Value	Alarm Text
<input type="checkbox"/> LowLow	10	LowLow
<input type="checkbox"/> Low	30	Low
<input type="checkbox"/> High	70	High
<input checked="" type="checkbox"/> HighHigh	90	HighHigh
<input type="checkbox"/> Deadband	0	

Deviation Alarm

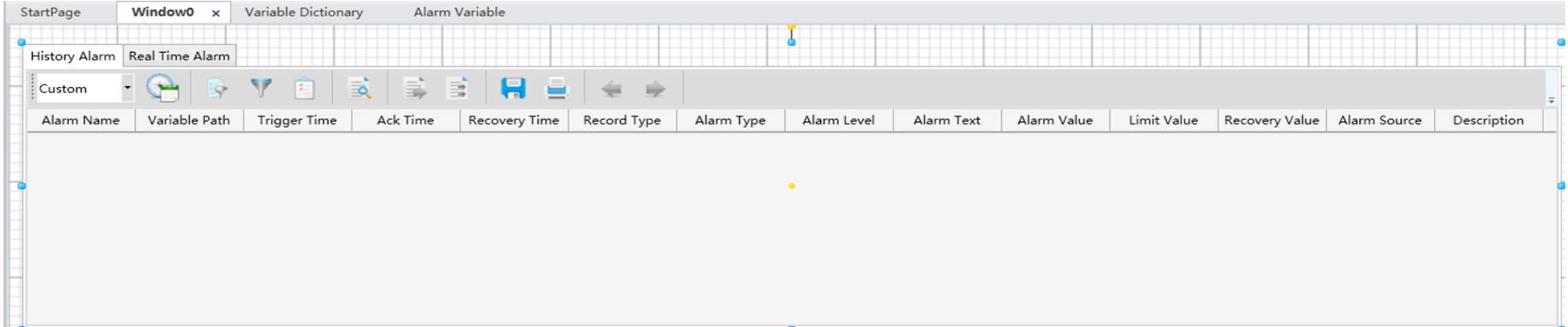
	Alarm Value	Alarm Text
<input type="checkbox"/> Major	80	Major
<input type="checkbox"/> Minor	20	Minor
TargetValue	0	
<input type="checkbox"/> Deadband	0	

Project Tree:

- NewProject17
 - IO Device
 - Variable Dictionary
 - Window
 - Window0
 - Web Window
 - Report
 - Alarm
 - Alarm Variable (1)
 - Alarm Configuration
 - Authority
 - Security
 - User Manage
 - Operation Variable
 - History Variable
 - Recipe
 - Script
 - Database Access
 - Global

✘Refer to the section "11.3 Alarm variable" in user manual.

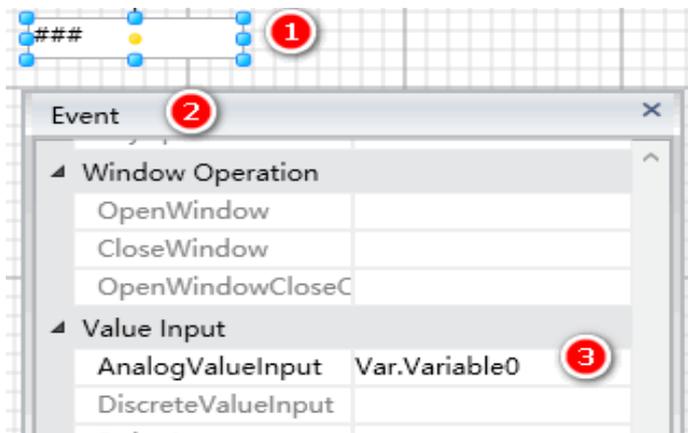
(3) Create a AlarmWindow0 in Window0



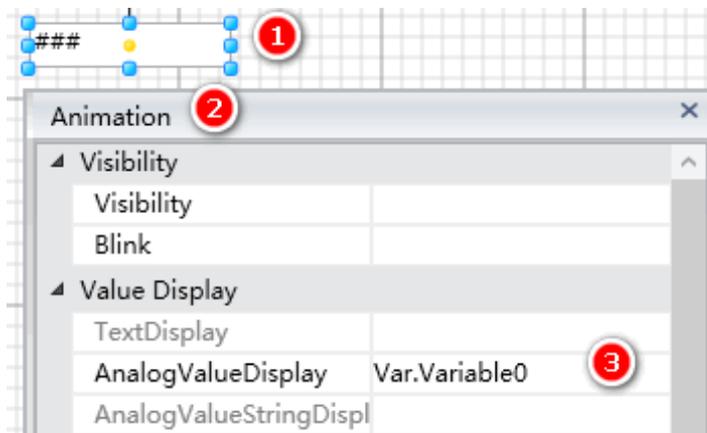
The screenshot shows the 'Alarm Variable' configuration window in the Delta software. The window title bar includes 'StartPage', 'Window0 x', 'Variable Dictionary', and 'Alarm Variable'. Below the title bar, there are tabs for 'History Alarm' and 'Real Time Alarm', with 'Real Time Alarm' selected. A toolbar contains various icons for file operations and navigation. Below the toolbar is a table with the following columns: Alarm Name, Variable Path, Trigger Time, Ack Time, Recovery Time, Record Type, Alarm Type, Alarm Level, Alarm Text, Alarm Value, Limit Value, Recovery Value, Alarm Source, and Description. The table is currently empty.

Alarm Name	Variable Path	Trigger Time	Ack Time	Recovery Time	Record Type	Alarm Type	Alarm Level	Alarm Text	Alarm Value	Limit Value	Recovery Value	Alarm Source	Description
------------	---------------	--------------	----------	---------------	-------------	------------	-------------	------------	-------------	-------------	----------------	--------------	-------------

(4) Create a Textbox0 in Window0, the analog value input event and analog value display animation of TextBox0 are associated with Variable

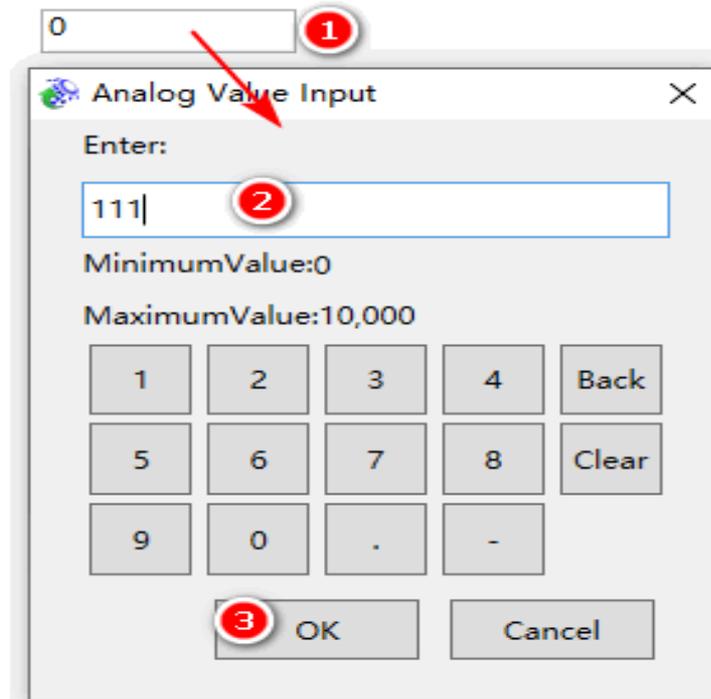


Analog Value Input

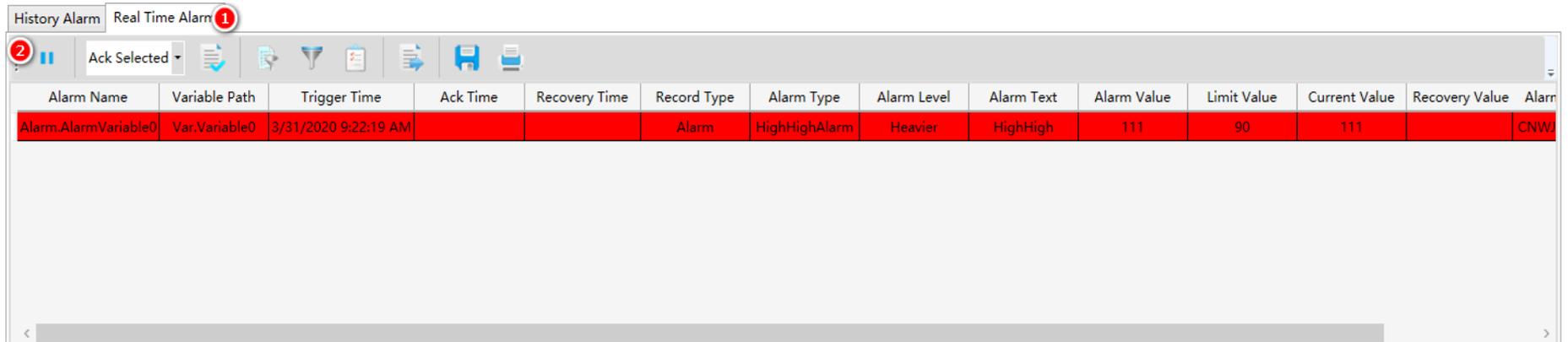


Analog Value Display

(5) Run the project. In Textbox0, input 111 (Greater than the limit value of HighHigh alarm—90)

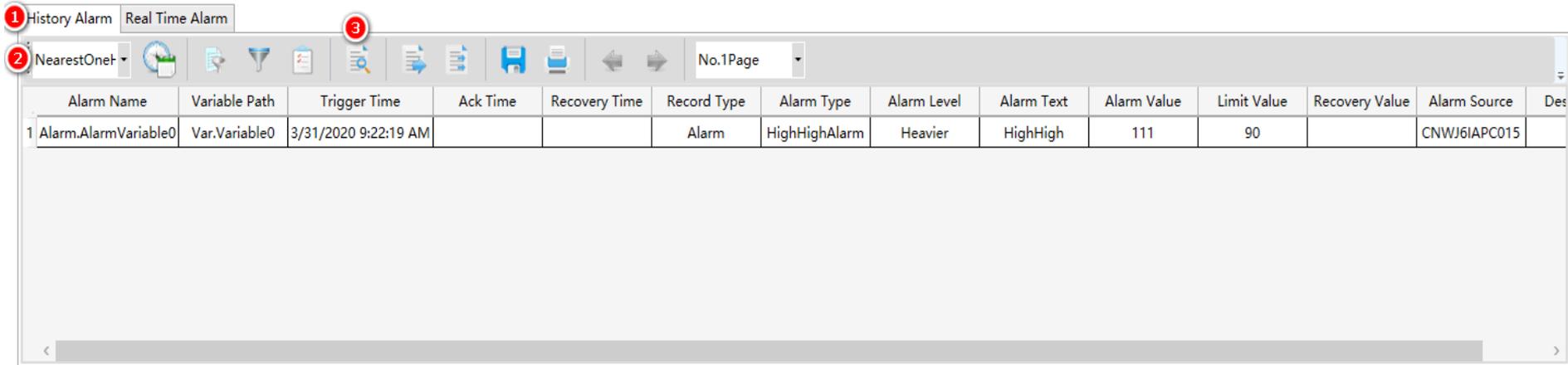


(6) The Real Time Alarm window refresh realtime alarm at run time



Alarm Name	Variable Path	Trigger Time	Ack Time	Recovery Time	Record Type	Alarm Type	Alarm Level	Alarm Text	Alarm Value	Limit Value	Current Value	Recovery Value	Alarm
Alarm.AlarmVariable0	Var.Variable0	3/31/2020 9:22:19 AM			Alarm	HighHighAlarm	Heavier	HighHigh	111	90	111		CNW

(7)The History Alarm window query history alarm at run time



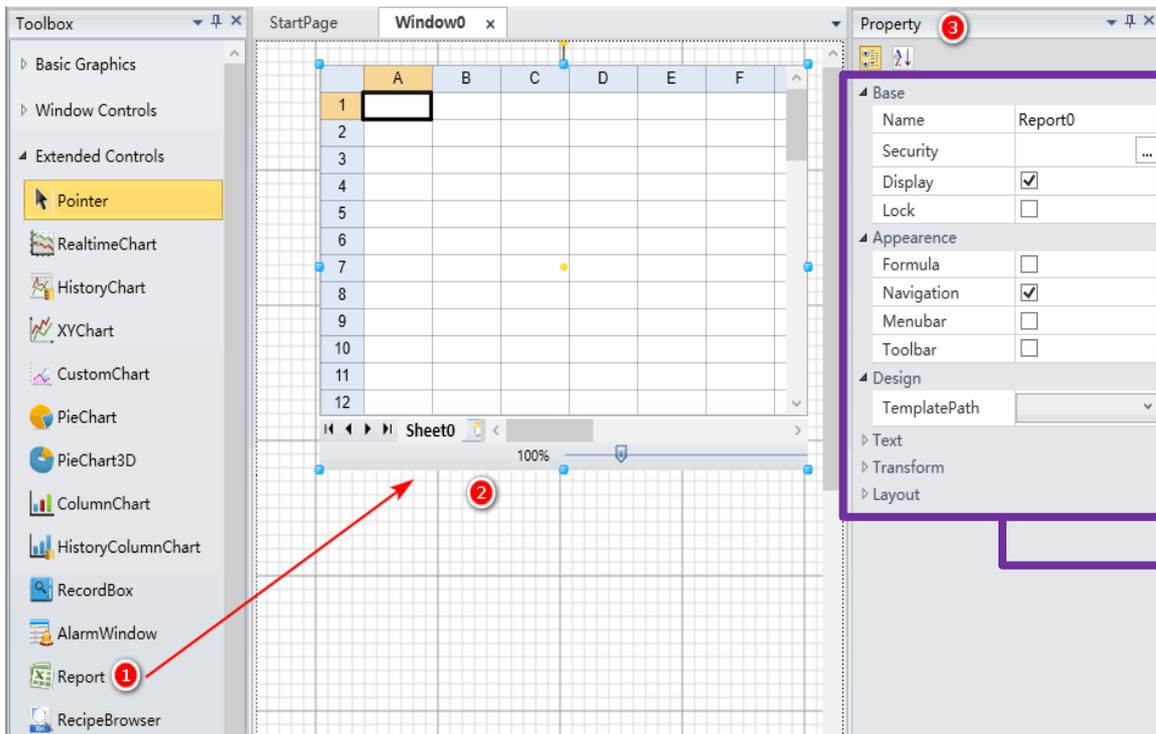
1 History Alarm Real Time Alarm

2 NearestOne

3

Alarm Name	Variable Path	Trigger Time	Ack Time	Recovery Time	Record Type	Alarm Type	Alarm Level	Alarm Text	Alarm Value	Limit Value	Recovery Value	Alarm Source	Des
1 Alarm.AlarmVariable0	Var.Variable0	3/31/2020 9:22:19 AM			Alarm	HighHighAlarm	Heavier	HighHigh	111	90		CNWJ6IAPC015	

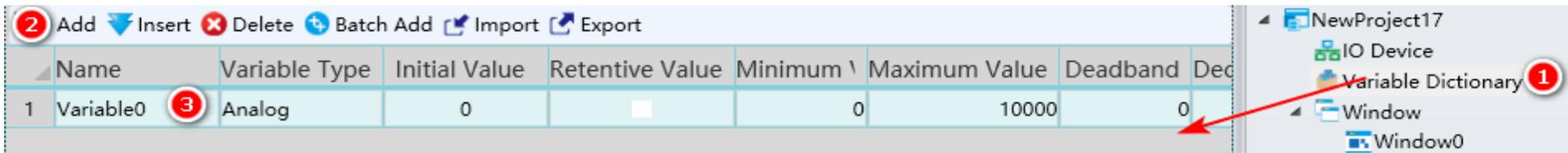
➤ Create a Report0, open its properties window



- **Formula:** Set whether to display formula bar
- **Navigation:** Set whether to display navigation bar
- **Menubar:** Set whether to display menu bar, check valid only when the current template path is null
- **ToolBar:** Set whether to display toolbar
- **TemplatePath:** Set current report template

➤ Report query history data:

(1) Create a variable: Variable0



The screenshot shows a software interface with a table of variables and a project tree on the right. The table has columns for Name, Variable Type, Initial Value, Retentive Value, Minimum Value, Maximum Value, Deadband, and Dec. The first row is highlighted, showing 'Variable0' with an 'Analog' type, an initial value of '0', and a maximum value of '10000'. A red arrow points from the 'Variable Dictionary' entry in the project tree to the 'Variable0' entry in the table. Red circles with numbers 1, 2, and 3 are overlaid on the interface to indicate steps: 1 on the Variable Dictionary, 2 on the 'Add' button, and 3 on the 'Variable0' cell.

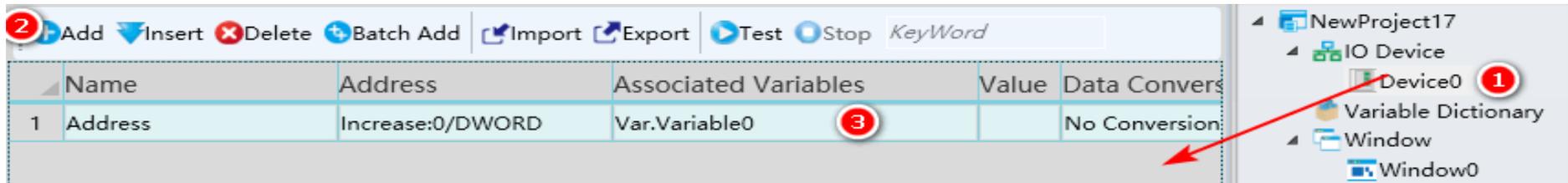
	Name	Variable Type	Initial Value	Retentive Value	Minimum Value	Maximum Value	Deadband	Dec
1	Variable0	Analog	0		0	10000	0	

Project Tree:

- NewProject17
 - IO Device
 - Variable Dictionary
 - Window
 - Window0

※Refer to the section "6.3 Variables" in user manual.

(2) Create a simulation device-Device0, add a address in Device0 that associated Variable0



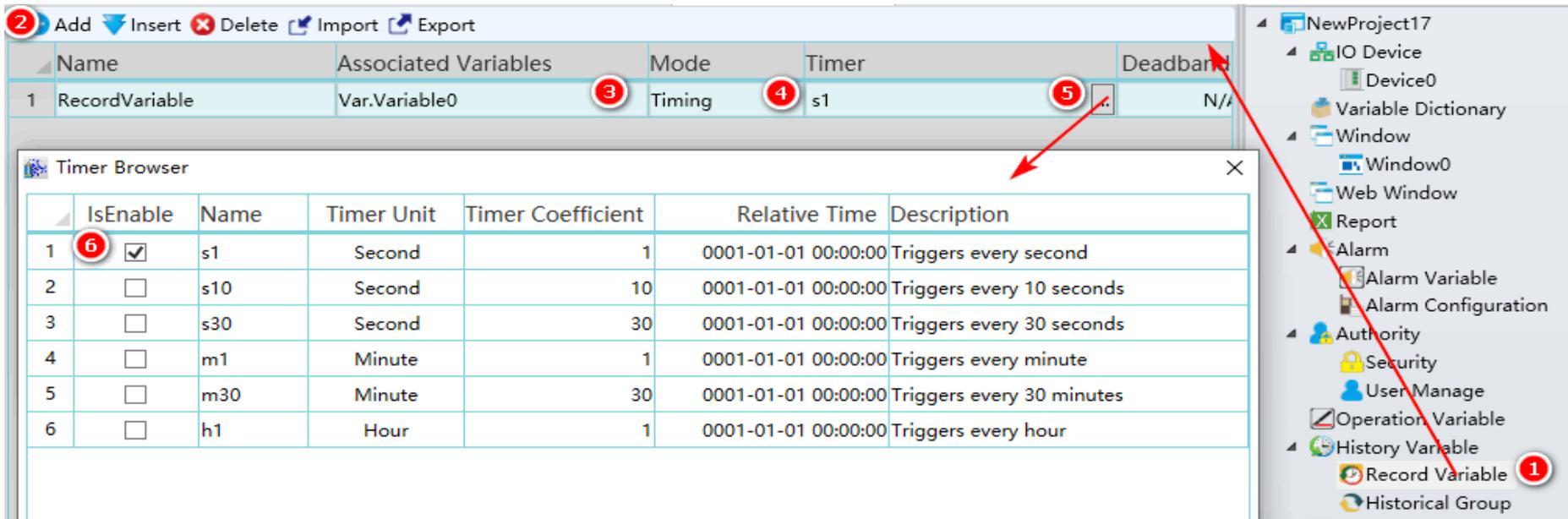
Name	Address	Associated Variables	Value	Data Conversion
1 Address	Increase:0/DWORD	Var.Variable0		No Conversion

Project Tree:

- NewProject17
 - IO Device
 - Device0 (1)
 - Variable Dictionary
 - Window
 - Window0

✘ The method of creating a simulation device, refer to section “5.10.1 Simulator” in the user manual

(3) Create a history variable(RecordVariable) that associated Variable0



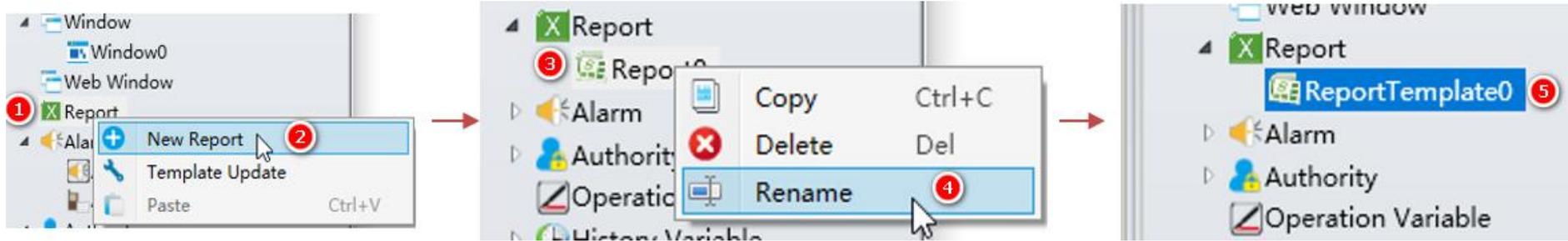
The screenshot shows the Delta Controls software interface. At the top, a menu bar includes 'Add', 'Insert', 'Delete', 'Import', and 'Export'. Below it is a table with columns: Name, Associated Variables, Mode, Timer, and Deadband. The first row is highlighted and contains: Name: RecordVariable, Associated Variables: Var.Variable0, Mode: Timing, Timer: s1, Deadband: N/A. Red circles with numbers 2, 3, 4, and 5 are placed over the 'Add' button, the 'Associated Variables' cell, the 'Mode' cell, and the 'Timer' cell respectively. A red arrow points from the 'Timer' cell to a 'Timer Browser' dialog box. The dialog box has a table with columns: IsEnable, Name, Timer Unit, Timer Coefficient, Relative Time, and Description. The first row is checked and has a red circle with the number 6 over the 'IsEnable' checkbox. To the right is a project tree for 'NewProject17' with various components. A red circle with the number 1 is placed over the 'Record Variable' component in the tree. A red arrow points from the 'Record Variable' component in the tree to the 'Timer Browser' dialog box.

Name	Associated Variables	Mode	Timer	Deadband
1 RecordVariable	Var.Variable0	Timing	s1	N/A

IsEnable	Name	Timer Unit	Timer Coefficient	Relative Time	Description
<input checked="" type="checkbox"/>	s1	Second	1	0001-01-01 00:00:00	Triggers every second
<input type="checkbox"/>	s10	Second	10	0001-01-01 00:00:00	Triggers every 10 seconds
<input type="checkbox"/>	s30	Second	30	0001-01-01 00:00:00	Triggers every 30 seconds
<input type="checkbox"/>	m1	Minute	1	0001-01-01 00:00:00	Triggers every minute
<input type="checkbox"/>	m30	Minute	30	0001-01-01 00:00:00	Triggers every 30 minutes
<input type="checkbox"/>	h1	Hour	1	0001-01-01 00:00:00	Triggers every hour

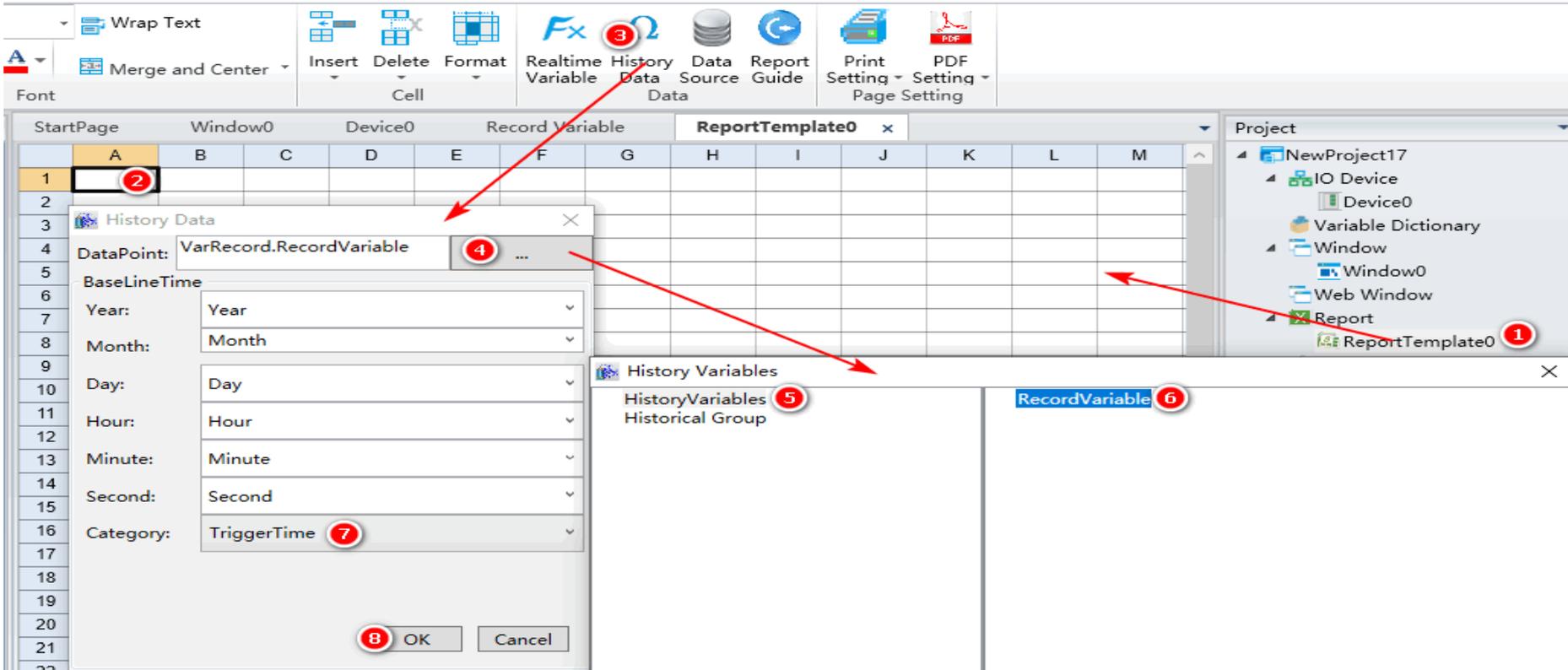
※Refer to the section "14.2 Setting history record variable" in user manual.

(4) Create a report template and name it ReportTemplate0



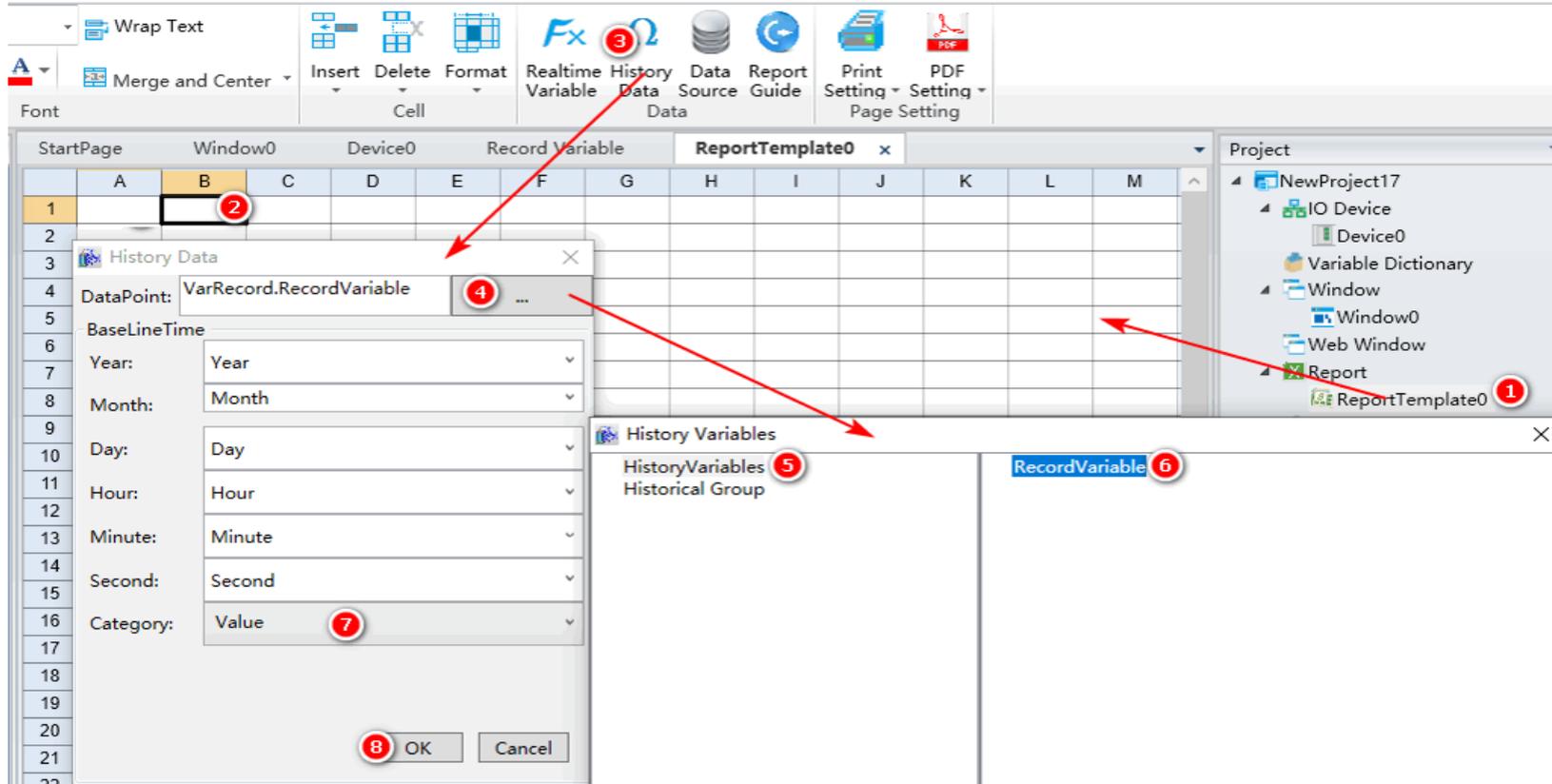
- ① Right click the Report node to open the menu
- ② Click New Report to add a report template: Report0
- ③ Right click the Report0 node to open the menu
- ④ Click the Rename to rename the report template
- ⑤ The report template is renamed as ReportTemplate0

(5) The cell in the first row , column A in the ReportTemplate0 is associated with the trigger time of RecordVariable



The screenshot displays the Delta software interface for configuring a report template. The main window shows a spreadsheet with columns A through M and rows 1 through 22. The active cell is A1, highlighted with a red circle '2'. The ribbon at the top includes options like 'Wrap Text', 'Merge and Center', 'Insert', 'Delete', 'Format', 'Realtime Variable', 'History Data', 'Data Source', 'Report Guide', 'Print Setting', and 'PDF Setting'. The 'History Data' dialog is open, showing the 'DataPoint' field set to 'VarRecord.RecordVariable' (circled '4'). The 'BaseLineTime' section includes dropdowns for Year, Month, Day, Hour, Minute, and Second. The 'Category' dropdown is set to 'TriggerTime' (circled '7'). The 'History Variables' dialog is also open, showing 'HistoryVariables Historical Group' (circled '5') and 'RecordVariable' (circled '6') selected. The 'OK' button in the 'History Data' dialog is circled '8'. The Project tree on the right shows the hierarchy: NewProject17 > IO Device > Device0 > Variable Dictionary > Window > Window0 > Web Window > Report > ReportTemplate0 (circled '1').

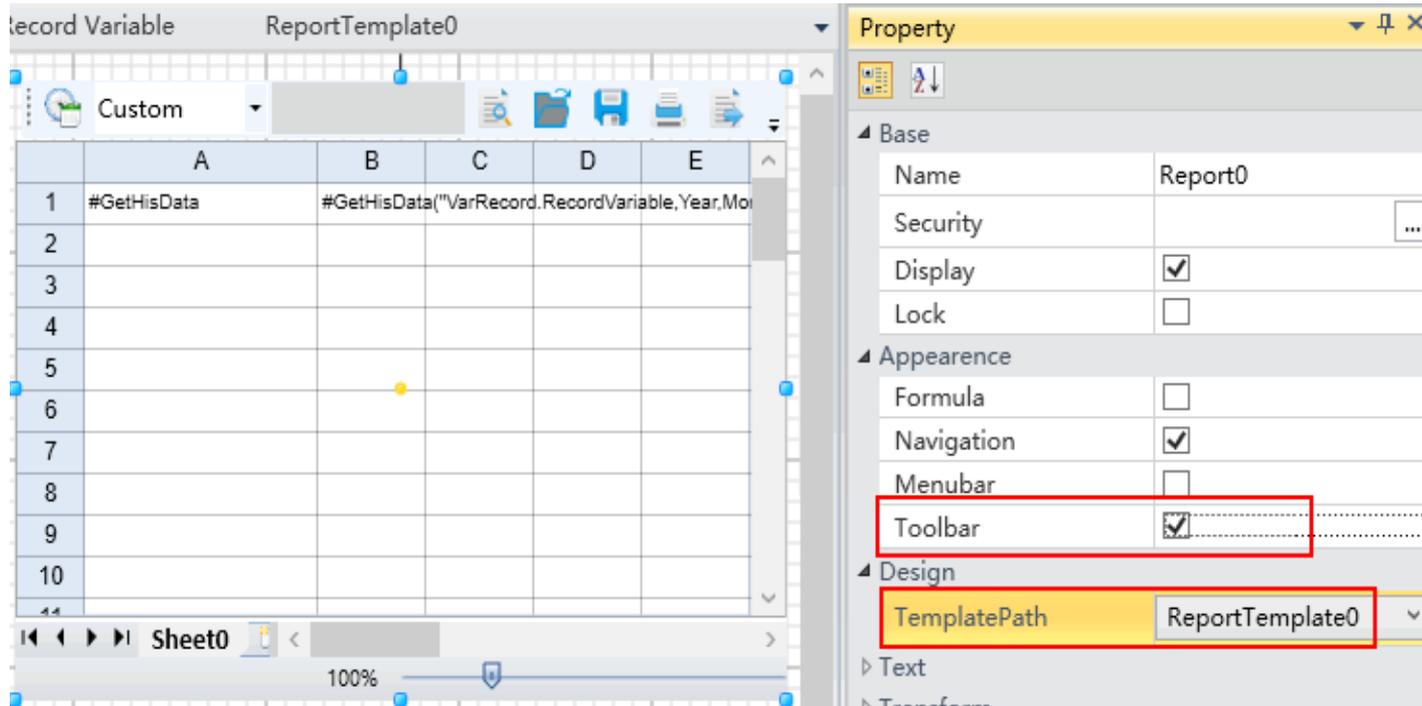
(6) The cell in the first row , column B in the ReportTemplate0 is associated with the value of the RecordVariable



The screenshot displays the Delta software interface with the following components and annotations:

- Report Template Grid:** The grid shows columns A through M and rows 1 through 22. Cell B1 is highlighted with a red circle labeled '2'. A red arrow points from this cell to the 'History Data' dialog.
- History Data Dialog:** This dialog is open over the grid. It contains the following fields:
 - DataPoint:** Set to 'VarRecord.RecordVariable' with a red circle labeled '4' next to the text.
 - BaseLineTime:** A section with dropdown menus for Year, Month, Day, Hour, Minute, and Second.
 - Category:** Set to 'Value' with a red circle labeled '7' next to the text.
 - Buttons:** 'OK' and 'Cancel' buttons at the bottom, with a red circle labeled '8' next to the 'OK' button.
- History Variables Dialog:** This dialog is open below the 'History Data' dialog. It shows a list of variables with 'RecordVariable' selected and highlighted in blue, with a red circle labeled '6' next to it. A red arrow points from the '...' button in the 'History Data' dialog to this dialog.
- Project Tree:** On the right side, the 'Project' tree shows a hierarchy including 'NewProject17', 'IO Device', 'Device0', 'Variable Dictionary', 'Window', 'Web Window', and 'Report'. The 'Report' folder is expanded, and 'ReportTemplate0' is selected with a red circle labeled '1'.
- Toolbar:** At the top, the toolbar includes icons for 'Wrap Text', 'Merge and Center', 'Insert', 'Delete', 'Format', 'Realtime Variable', 'History Data', 'Data Source', 'Report Guide', 'Print Setting', and 'PDF Setting'.

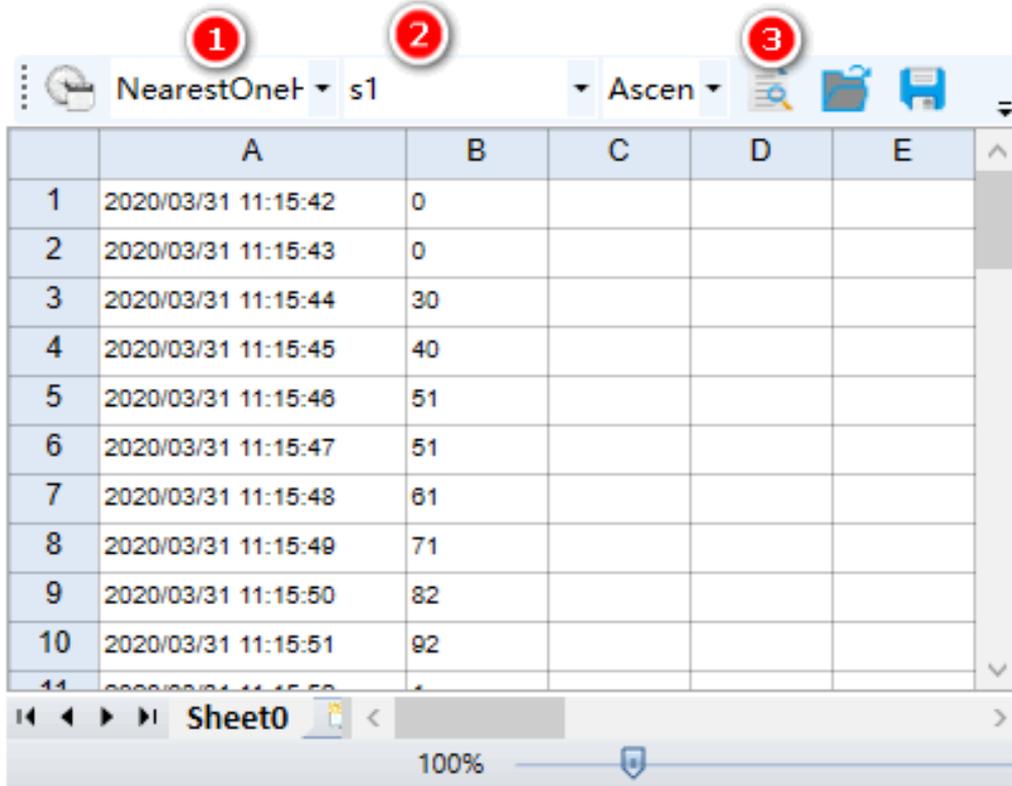
(7) Create a Report0 in Window0 and associate the ReportTemplate0, check the Toolbar property



The screenshot displays a software interface for editing a report template. On the left, a grid editor shows a table with columns A through E and rows 1 through 10. Row 1 contains the text "#GetHisData" in column A and "#GetHisData('VarRecord.RecordVariable, Year, Mo" in column B. A toolbar is visible above the grid. On the right, a "Property" pane is open, showing various settings for the report template. The "Base" section includes "Name" (Report0), "Security", "Display" (checked), and "Lock". The "Appearance" section includes "Formula", "Navigation" (checked), "Menubar", and "Toolbar" (checked). The "Design" section includes "TemplatePath" (ReportTemplate0). The "Toolbar" and "TemplatePath" properties are highlighted with red boxes.

Property	Value
Name	Report0
Security	...
Display	<input checked="" type="checkbox"/>
Lock	<input type="checkbox"/>
Formula	<input type="checkbox"/>
Navigation	<input checked="" type="checkbox"/>
Menubar	<input type="checkbox"/>
Toolbar	<input checked="" type="checkbox"/>
TemplatePath	ReportTemplate0

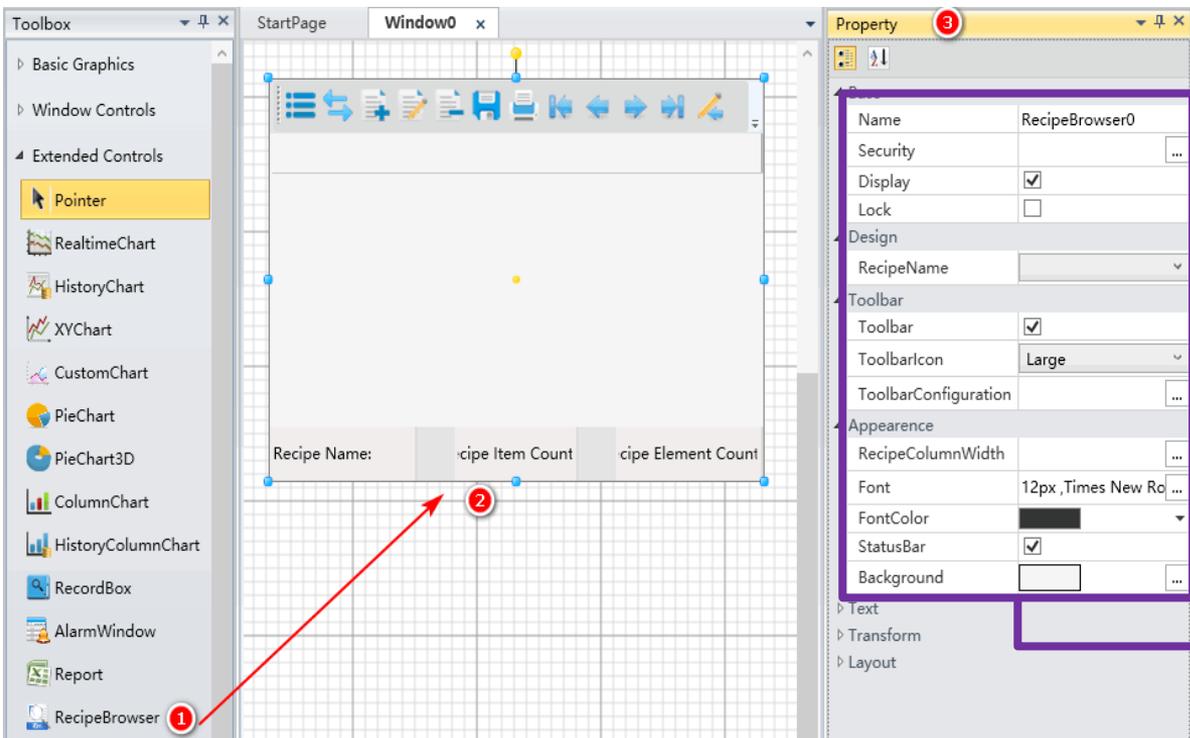
(8) Run the Window0 and query the last hour data at run time



The screenshot shows a data table with columns A through E. The data in column A represents timestamps from 2020/03/31 11:15:42 to 11:15:51. Column B shows values increasing from 0 to 92. Three red circles with numbers 1, 2, and 3 are placed above the table header. Circle 1 is above 'NearestOne', circle 2 is above 's1', and circle 3 is above 'Ascen'.

	A	B	C	D	E
1	2020/03/31 11:15:42	0			
2	2020/03/31 11:15:43	0			
3	2020/03/31 11:15:44	30			
4	2020/03/31 11:15:45	40			
5	2020/03/31 11:15:46	51			
6	2020/03/31 11:15:47	51			
7	2020/03/31 11:15:48	61			
8	2020/03/31 11:15:49	71			
9	2020/03/31 11:15:50	82			
10	2020/03/31 11:15:51	92			
11	2020/03/31 11:15:52				

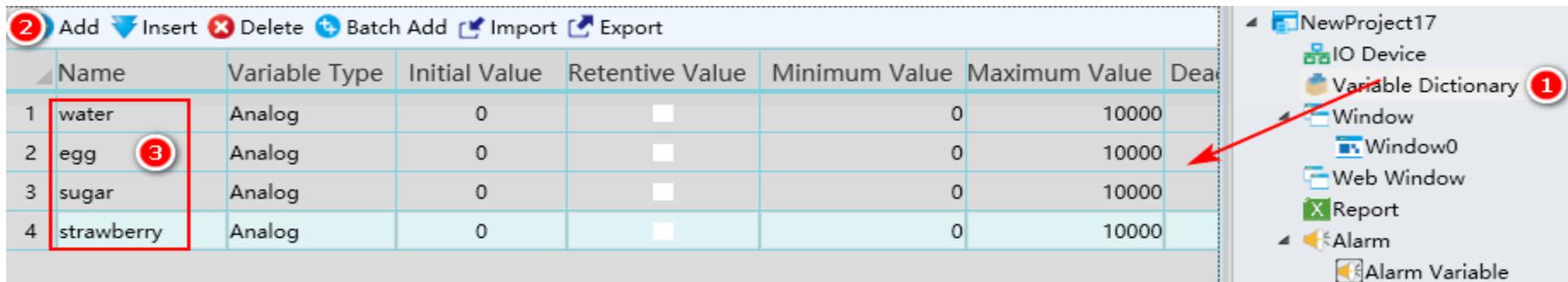
- Create a RecipeBrowser0, open its properties window



- **RecipeName:** Set the recipe bound by the recipe browser
- **ToolBar:** Set whether to display toolbar
- **ToolBarIcon:** Set the size of button in the toolbar
- **RecipeColumnWidth:** Set the recipe column width
- **Font:** Set the font of recipe browser
- **FontColor:** Set the font color of recipe browser
- **StatusBar:** Set whether to display the status bar

Use the recipe browser to display recipe:

(1) Create 4 Variables and name them water, egg, sugar, strawberry



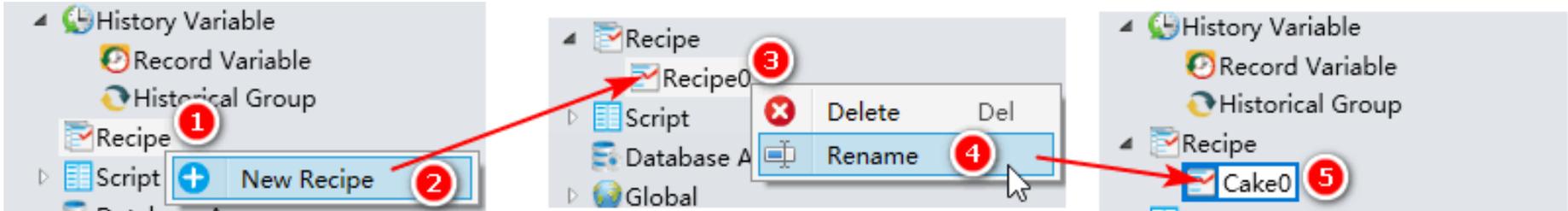
The screenshot displays the Delta Controls software interface. On the left, a table lists four variables: 'water', 'egg', 'sugar', and 'strawberry'. Each variable is of type 'Analog', has an initial value of 0, and a maximum value of 10000. A red box highlights the 'egg' variable, and a red circle with the number '3' is next to it. On the right, a project tree shows the hierarchy: 'NewProject17' > 'IO Device' > 'Variable Dictionary' (marked with a red circle and '1'). A red arrow points from the 'Variable Dictionary' node to the 'egg' variable in the table.

	Name	Variable Type	Initial Value	Retentive Value	Minimum Value	Maximum Value	Dead
1	water	Analog	0	<input type="checkbox"/>	0	10000	
2	egg	Analog	0	<input type="checkbox"/>	0	10000	
3	sugar	Analog	0	<input type="checkbox"/>	0	10000	
4	strawberry	Analog	0	<input type="checkbox"/>	0	10000	

- NewProject17
 - IO Device
 - Variable Dictionary (1)
 - Window
 - Window0
 - Web Window
 - Report
 - Alarm
 - Alarm Variable

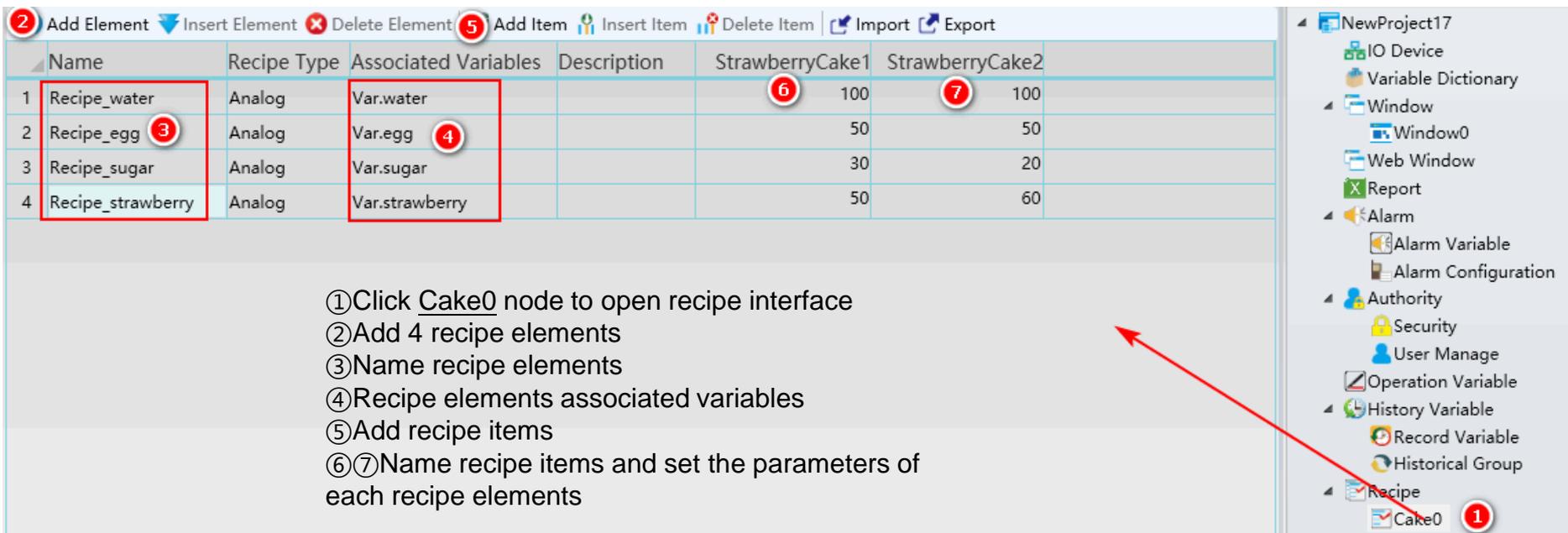
✘ Refer to the section "6.3 Variables" in user manual.

(2) Create a recipe and name it Cake0



- ① Right click the Recipe node to open the menu
- ② Click New Recipe to add a recipe : Recipe0
- ③ Right click the Recipe0 node to open the menu
- ④ Click the Rename to name the recipe
- ⑤ The recipe is renamed as Cake0

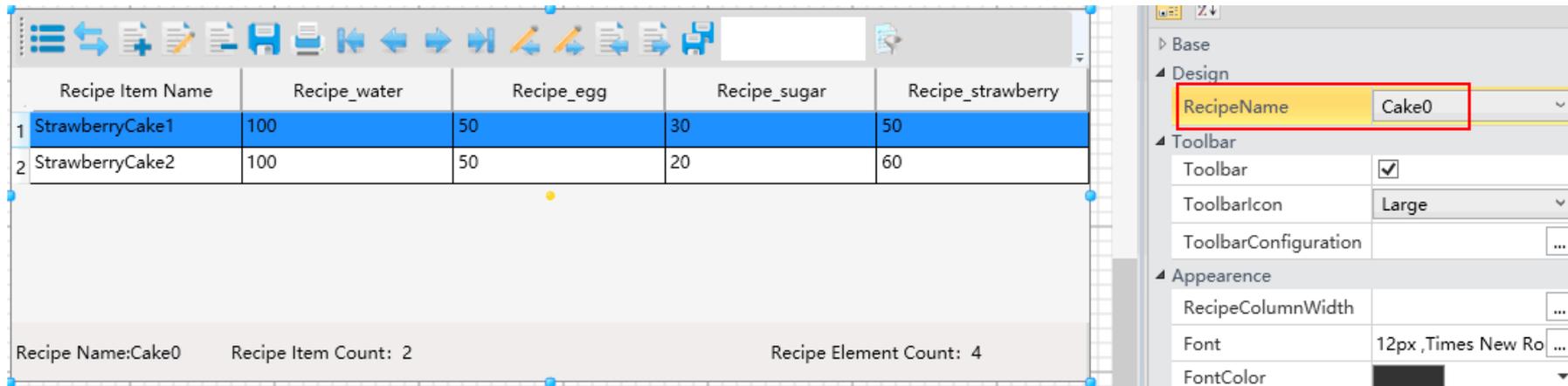
(3) Create 4 recipe variables and name them Recipe_water, Recipe_egg, Recipe_sugar, Recipe_strawberry, which are associated with the water, egg, sugar and strawberry respectively



Name	Recipe Type	Associated Variables	Description	StrawberryCake1	StrawberryCake2
1 Recipe_water	Analog	Var.water		100	100
2 Recipe_egg	Analog	Var.egg		50	50
3 Recipe_sugar	Analog	Var.sugar		30	20
4 Recipe_strawberry	Analog	Var.strawberry		50	60

- ① Click Cake0 node to open recipe interface
- ② Add 4 recipe elements
- ③ Name recipe elements
- ④ Recipe elements associated variables
- ⑤ Add recipe items
- ⑥⑦ Name recipe items and set the parameters of each recipe elements

(4) Create RecipeBrowser0 and bind Cake0



The screenshot displays a software interface with a recipe browser control and its properties. The control is a table with the following data:

	Recipe Item Name	Recipe_water	Recipe_egg	Recipe_sugar	Recipe_strawberry
1	StrawberryCake1	100	50	30	50
2	StrawberryCake2	100	50	20	60

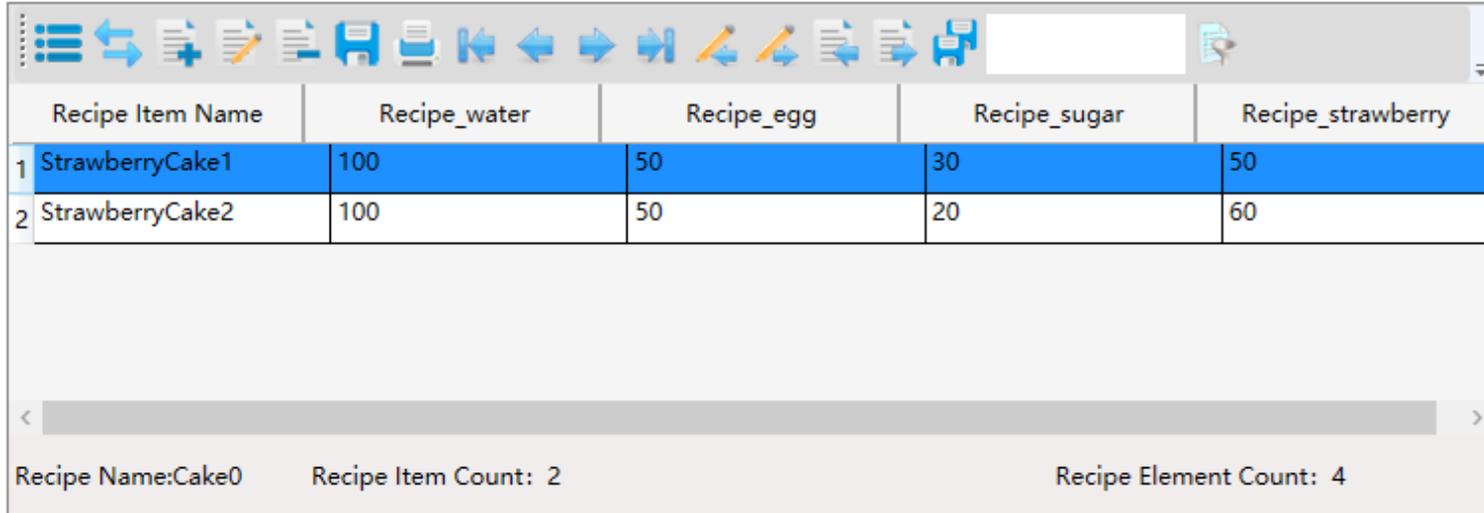
Below the table, the control displays the following information:

Recipe Name: Cake0 Recipe Item Count: 2 Recipe Element Count: 4

The properties panel on the right shows the following settings:

- Base
- Design
 - RecipeName: Cake0
- Toolbar
 - Toolbar:
 - ToolbarIcon: Large
 - ToolbarConfiguration: ...
- Appearance
 - RecipeColumnWidth: ...
 - Font: 12px, Times New Ro ...
 - FontColor: [Black]

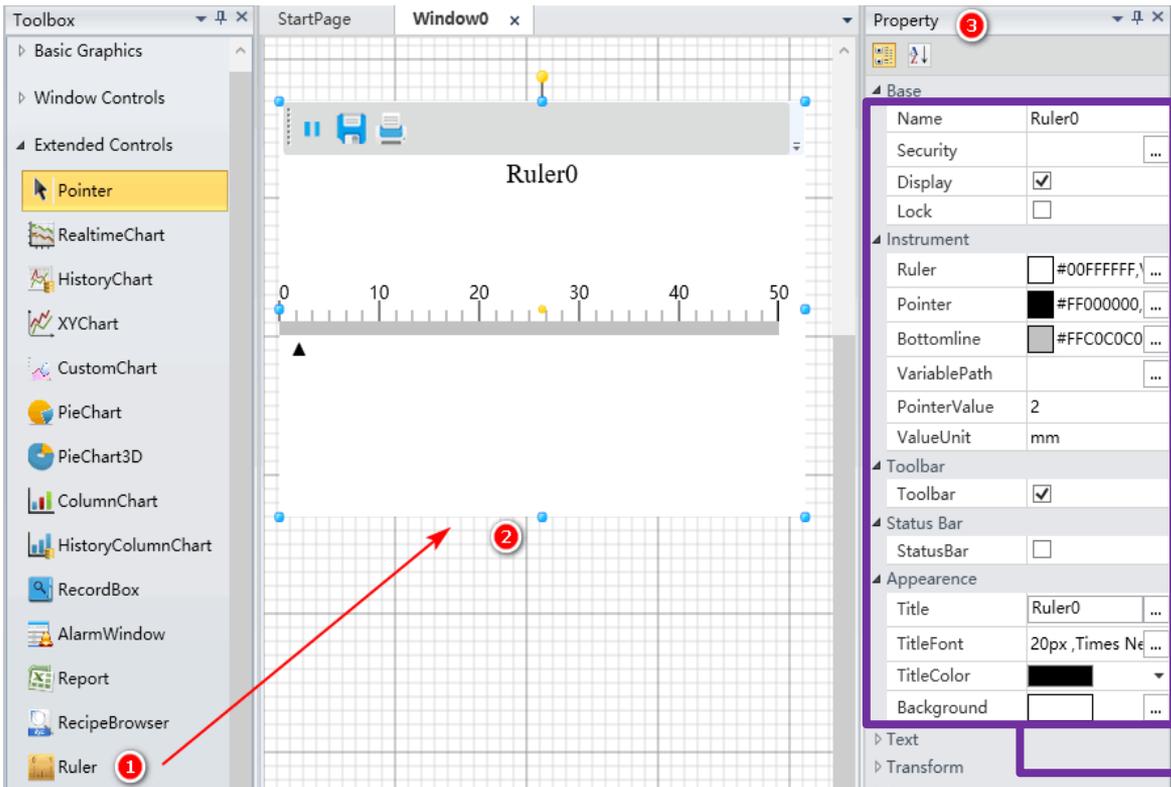
(5) Run the Window0



	Recipe Item Name	Recipe_water	Recipe_egg	Recipe_sugar	Recipe_strawberry
1	StrawberryCake1	100	50	30	50
2	StrawberryCake2	100	50	20	60

Recipe Name: Cake0 Recipe Item Count: 2 Recipe Element Count: 4

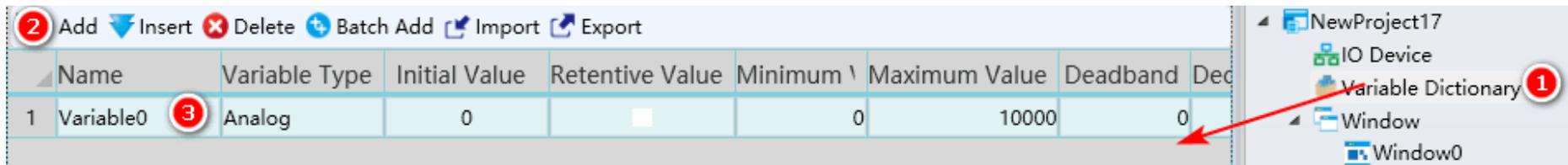
➤ Create a Ruler0, open its properties window



- **Ruler:** Set the parameters of ruler
- **Pointer:** Set the style of pointer
- **Bottomline:** Set the style of bottom line
- **VariablePath:** Set variable path associated with ruler
- **PointerValue:** Set the default value of the pointer
- **ValueUnit:** Set the value unit
- **Toolbar:** Set whether to display toolbar
- **StatusBar:** Set whether to display status bar
- **Title:** Set the content of title
- **TitleFont:** Set the font for the title
- **TitleColor:** Set the color of the title
- **Background:** Set the background color of ruler

➤ Ruler display real-time data:

(1) Create a variable : Variable0

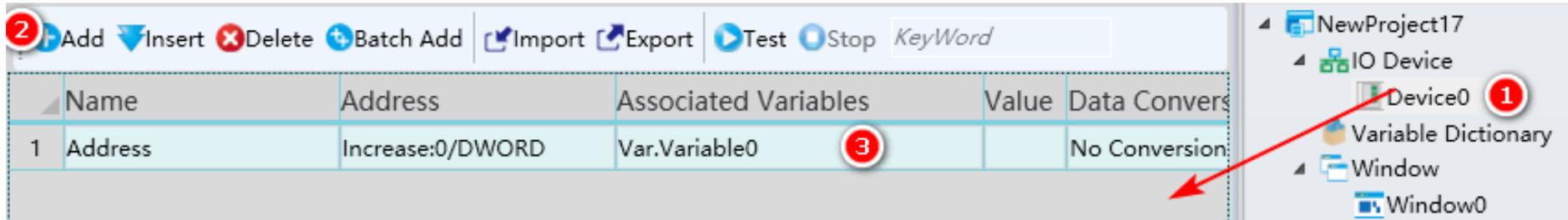


The screenshot shows a software interface with a table of variables and a project tree on the right. The table has columns for Name, Variable Type, Initial Value, Retentive Value, Minimum Value, Maximum Value, Deadband, and Dec. The first row is highlighted with a red circle '3' around the 'Variable0' name. The project tree on the right shows a hierarchy: NewProject17 > IO Device > Variable Dictionary (circled with a red '1') > Window > Window0. A red arrow points from the 'Variable Dictionary' node to the 'Variable0' row in the table.

	Name	Variable Type	Initial Value	Retentive Value	Minimum Value	Maximum Value	Deadband	Dec
1	Variable0	Analog	0	<input type="checkbox"/>	0	10000	0	

※Refer to the section "6.3 Variables" in user manual.

(2) Create a simulation device-Device0, add a address in Device0 that associated Variable0



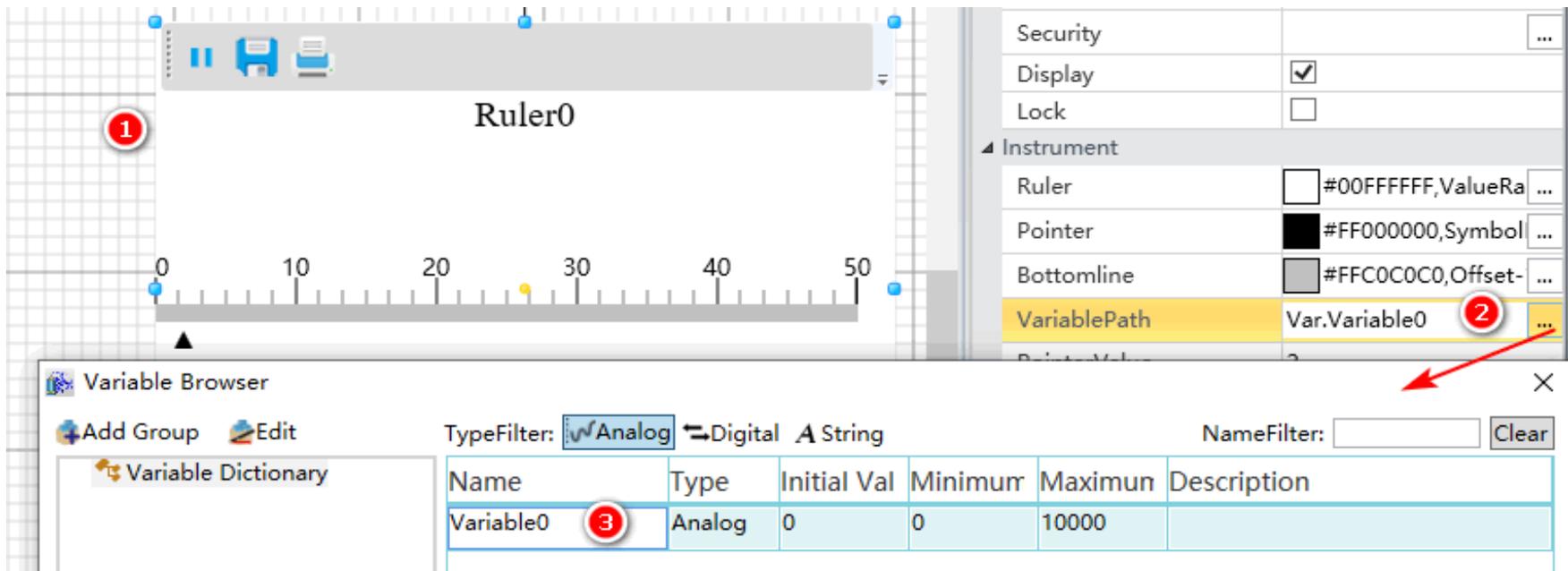
The screenshot shows a software interface with a table of simulation devices and a project tree on the right. The table has columns for Name, Address, Associated Variables, Value, and Data Conversion. A red circle '2' highlights the 'Add' button in the toolbar. A red circle '1' highlights 'Device0' in the project tree. A red circle '3' highlights the 'Associated Variables' column in the table, which contains 'Var.Variable0'. A red arrow points from the project tree to the table.

Name	Address	Associated Variables	Value	Data Conversion
1 Address	Increase:0/DWORD	Var.Variable0		No Conversion

- NewProject17
 - IO Device
 - Device0
 - Variable Dictionary
 - Window
 - Window0

✘ The method of creating a simulation device, refer to section “5.10.1 Simulator” in the user manual

(3) Create a Ruler0 in the Window0 that associated Variable0

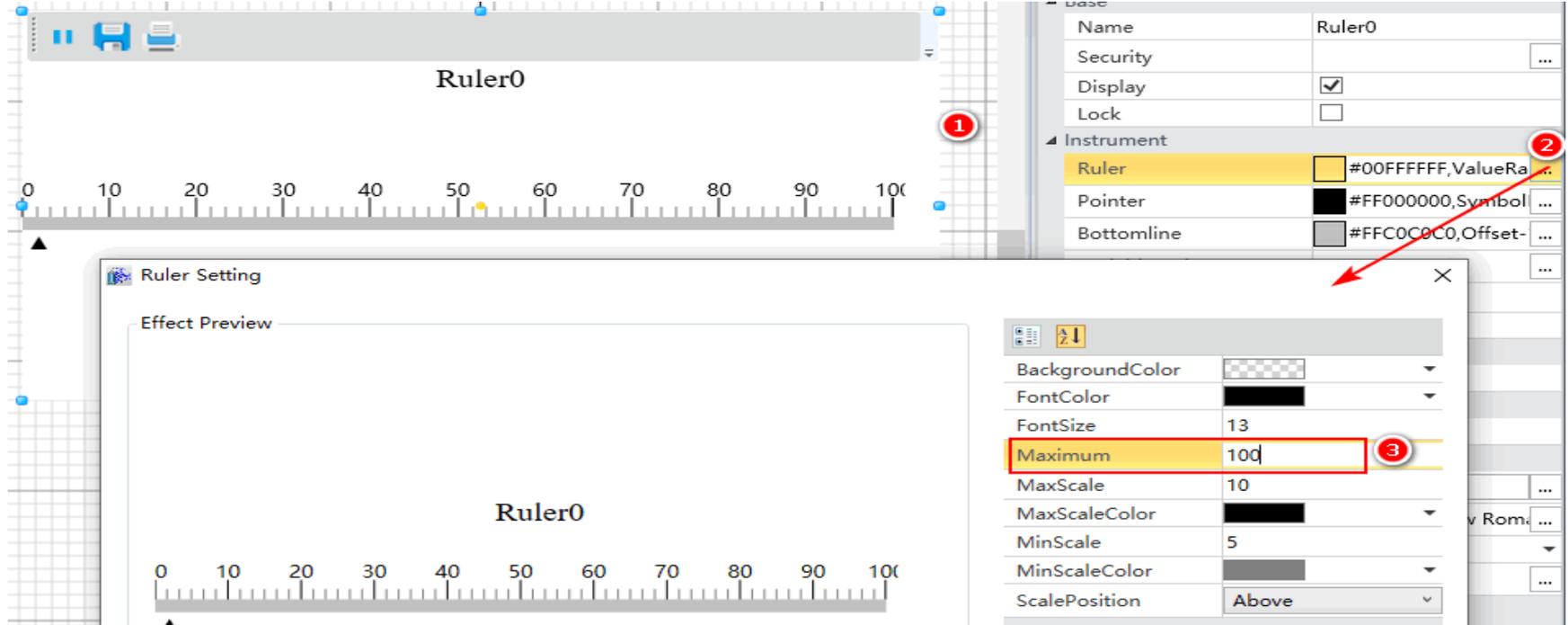


Variable Browser

TypeFilter: Analog Digital String NameFilter: Clear

Name	Type	Initial Val	Minimum	Maximum	Description
Variable0	Analog	0	0	10000	

(4) Set Ruler0 maximum to 100

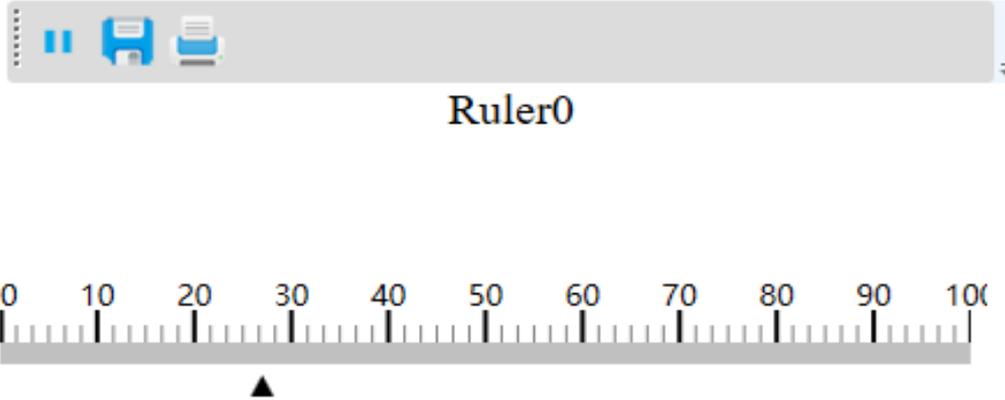


The screenshot displays the Delta software interface with a ruler labeled "Ruler0" and its settings. The ruler is currently set to 100. The "Ruler Setting" dialog is open, showing the "Effect Preview" and the "Maximum" property set to 100. A red box highlights the "Maximum" field, and a red arrow points to it from the "Instrument" table in the background.

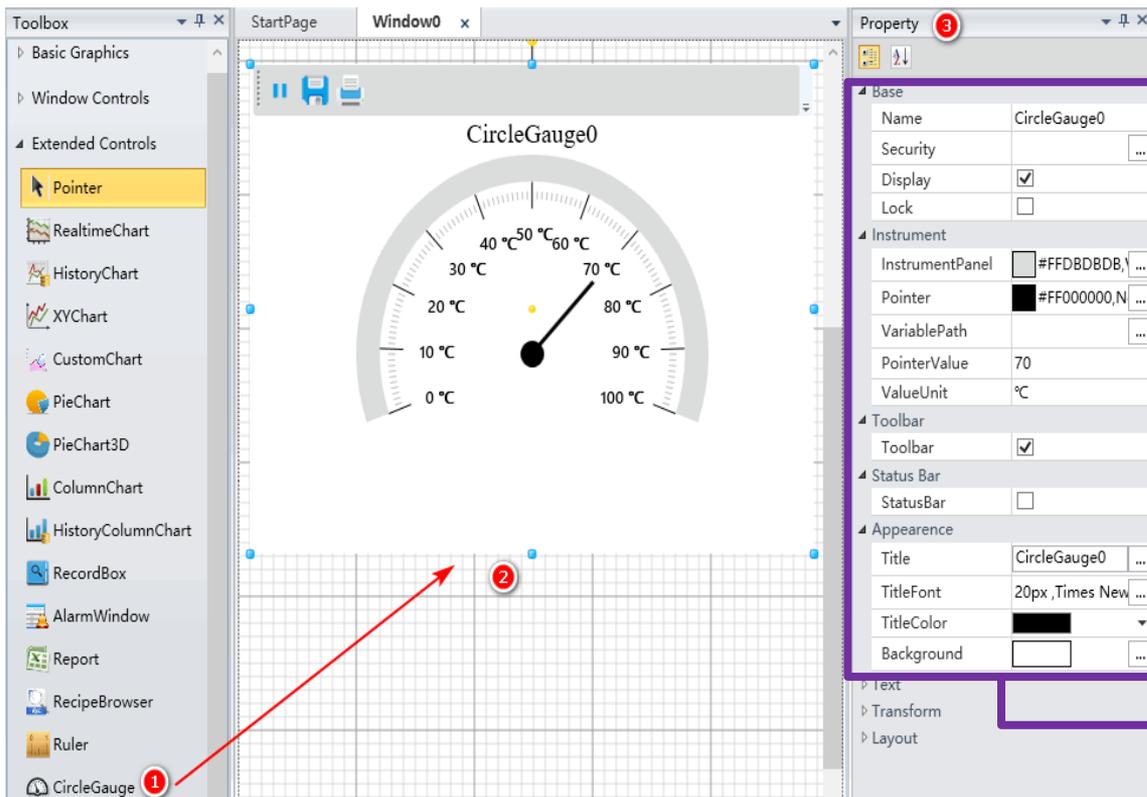
Property	Value
Name	Ruler0
Security	...
Display	<input checked="" type="checkbox"/>
Lock	<input type="checkbox"/>
Instrument	
Ruler	#00FFFFFF,ValueRa...
Pointer	#FF000000,Symbol...
Bottomline	#FFC0C0C0,Offset-

Property	Value
BackgroundColor	...
FontColor	...
FontSize	13
Maximum	100
MaxScale	10
MaxScaleColor	...
MinScale	5
MinScaleColor	...
ScalePosition	Above

(5) Run the project



➤ Create a CircleGauge0, open its properties window



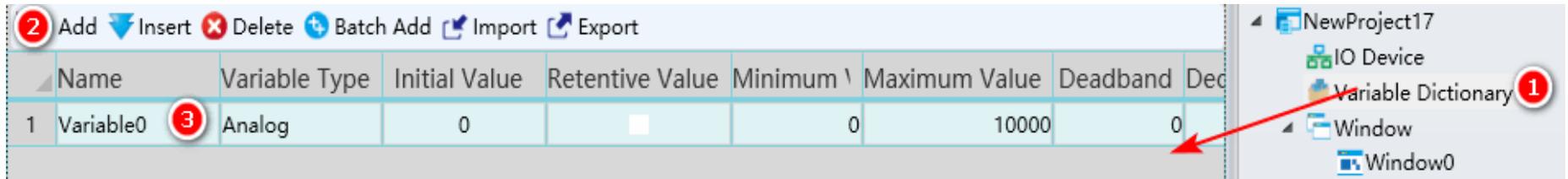
The screenshot shows the software interface with a 'CircleGauge0' control on the canvas. The gauge is a semi-circular scale ranging from 0 °C to 100 °C, with a pointer currently at 70 °C. The Properties window is open, showing the following settings:

Category	Property	Value
Base	Name	CircleGauge0
	Security	...
	Display	<input checked="" type="checkbox"/>
	Lock	<input type="checkbox"/>
Instrument	InstrumentPanel	#FFDBBDBD, ...
	Pointer	#FF000000, N, ...
	VariablePath	...
	PointerValue	70
	ValueUnit	°C
Toolbar	Toolbar	<input checked="" type="checkbox"/>
	Status Bar	<input type="checkbox"/>
Appearance	Title	CircleGauge0, ...
	TitleFont	20px, Times New, ...
	TitleColor	...
	Background	...

- **InstrumentPanel:** Set the parameters of instrument panel
- **Pointer:** Set the style of pointer
- **VariablePath:** Set variable path associated with CircleGauge
- **PointerValue:** Set the default value of the pointer
- **ValueUnit:** Set the value unit
- **Toolbar:** Set whether to display toolbar
- **StatusBar:** Set whether to display status bar
- **Title:** Set the content of title
- **TitleFont:** Set the font for the title
- **TitleColor:** Set the color of the title
- **Background:** Set the background color of CircleGauge

➤ CircleGauge display real-time data:

(1) Create a variable : Variable0

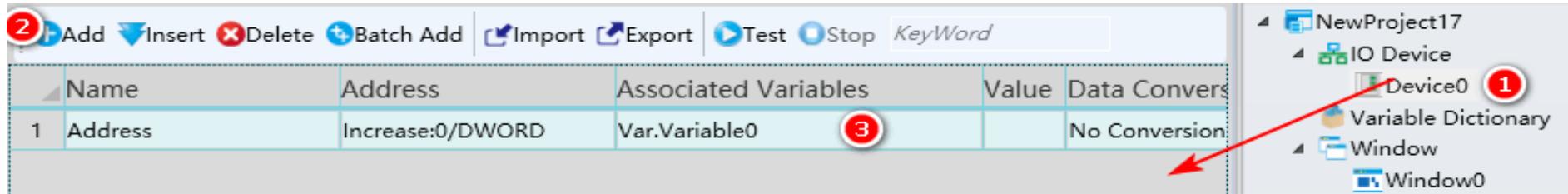


The screenshot shows a software interface with a table of variables and a project tree on the right. The table has columns for Name, Variable Type, Initial Value, Retentive Value, Minimum, Maximum Value, Deadband, and Dec. The first row contains 'Variable0' with an 'Analog' type, an initial value of '0', and a maximum value of '10000'. A red arrow points from the 'Variable Dictionary' entry in the tree to the 'Variable0' row in the table. Red circles with numbers 1, 2, and 3 highlight the 'Variable Dictionary' entry, the 'Add' button, and the 'Variable0' row respectively.

	Name	Variable Type	Initial Value	Retentive Value	Minimum	Maximum Value	Deadband	Dec
1	Variable0	Analog	0		0	10000	0	

※Refer to the section "6.3 Variables" in user manual.

(2) Create a simulation device-Device0, add a address in Device0 that associated Variable0



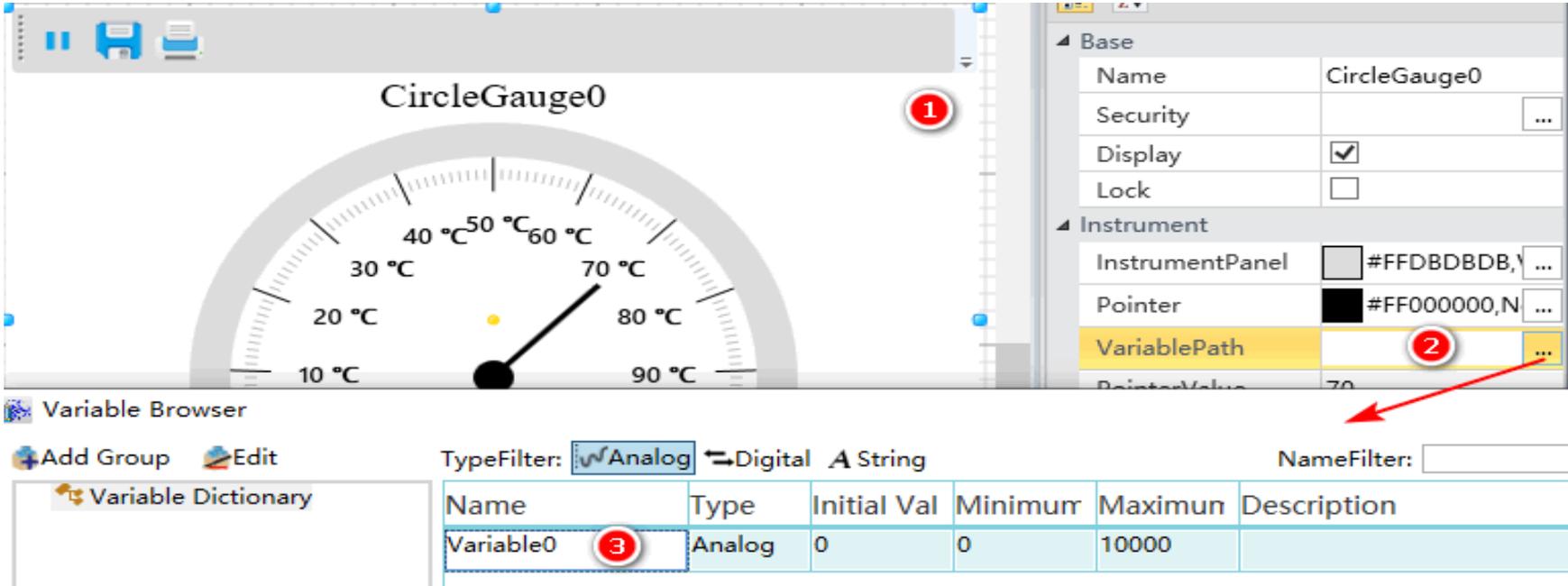
Name	Address	Associated Variables	Value	Data Conversion
1 Address	Increase:0/DWORD	Var.Variable0		No Conversion

Project Tree:

- NewProject17
 - IO Device
 - Device0 (1)
 - Variable Dictionary
 - Window
 - Window0

✘ The method of creating a simulation device, refer to section “5.10.1 Simulator” in the user manual

(3) Create a CircleGauge0 in the Window0 that associated Variable0



CircleGauge0

1

Base

Name	CircleGauge0
Security	...
Display	<input checked="" type="checkbox"/>
Lock	<input type="checkbox"/>

Instrument

InstrumentPanel	#FFDBDBDB,...
Pointer	#FF000000,N...
VariablePath	...
PointerValue	70

2

Variable Browser

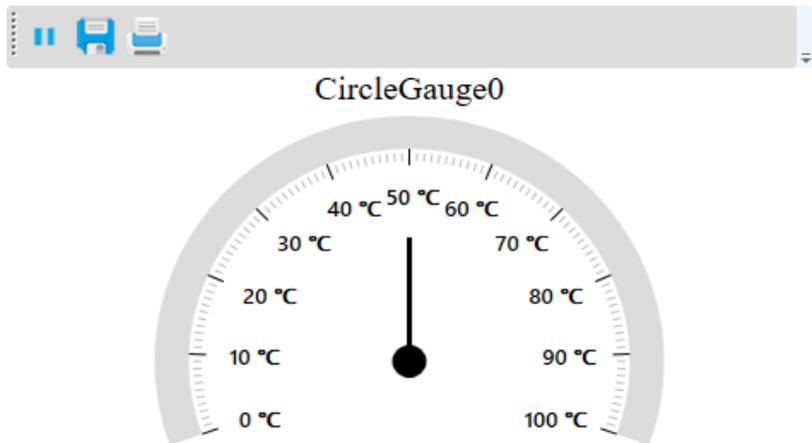
Add Group Edit

TypeFilter: Analog Digital String NameFilter:

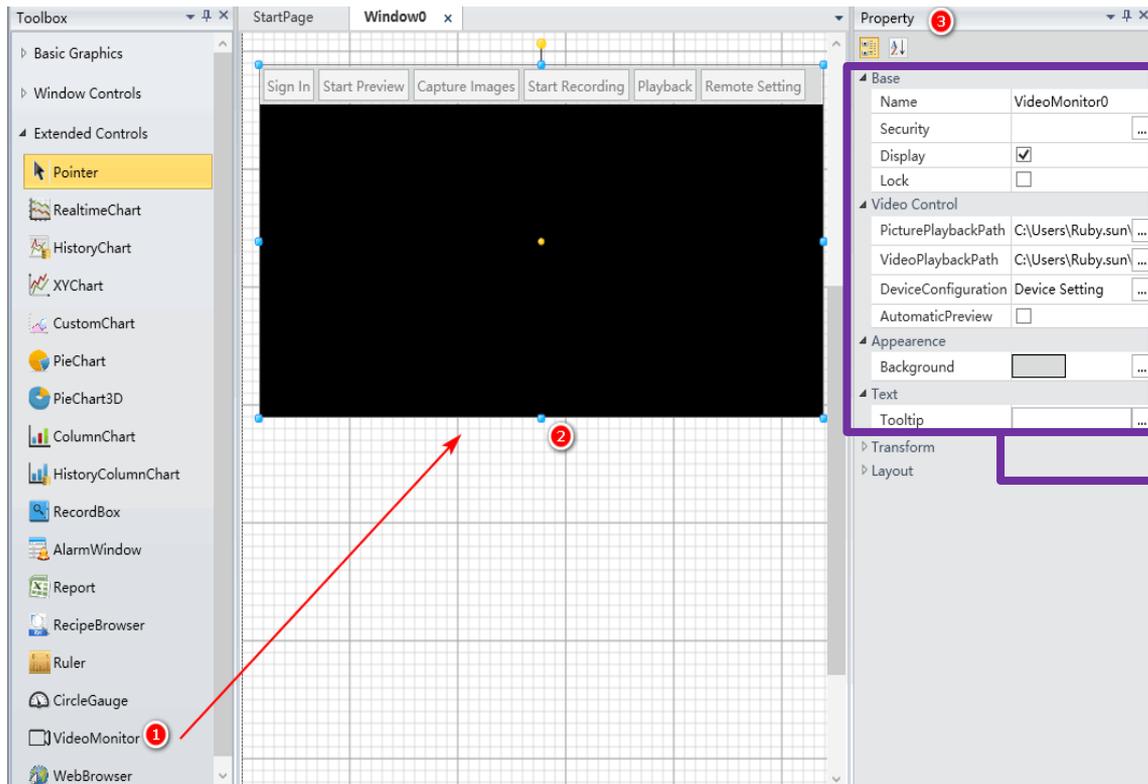
Name	Type	Initial Val	Minimum	Maximum	Description
Variable0	Analog	0	0	10000	

3

(4) Run the project



- Create a VideoMintor0, open its properties window



- **PicturePlaybackPath**: get or set picture playback path.
- **VideoPlaybackPath**: get or set video playback path.
- **DeviceConfiguration**: Device IP, Device port, and UserName, password.
- **AutomaticPreview**: Set whether to preview the video automatically
- **Background**: Set the background color of VideoMintor



Extend Controls-VideoMintor

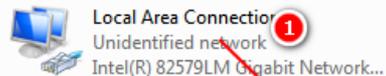
➤ Record a video and play it back:

(1) The information for the camera (remote device) is as follows

Device Parameters

Device IP:	<input type="text" value="192.168.1.32"/>	Device Port:	<input type="text" value="8000"/>	<input type="button" value="Logging Device"/>
User Name:	<input type="text" value="admin"/>	User Password:	<input type="password" value="•••••"/>	

(2) Computer connected to camera over Ethernet



Local Area Connection Status

General

Connection

IPv4 Connectivity:	No Internet access
IPv6 Connectivity:	No Internet access
Media State:	Enabled
Duration:	99 days 04:59:07
Speed:	100.0 Mbps

Details...

Activity

Sent	Received
Bytes: 289,322,360	1,574,152,850

Properties (2) Disable Diagnose

Close

Local Area Connection Properties

Networking

Connect using:

Intel(R) 82579LM Gigabit Network Connection

Configure...

This connection uses the following items:

- Client for Microsoft Networks
- QoS Packet Scheduler
- File and Printer Sharing for Microsoft Networks
- Internet Protocol Version 6 (TCP/IPv6)
- Internet Protocol Version 4 (TCP/IPv4) (3)
- Link-Layer Topology Discovery Mapper I/O Driver
- Link-Layer Topology Discovery Responder

Install... Uninstall Properties

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

OK Cancel

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

Obtain an IP address automatically

Use the following IP address:

IP address: 192 . 168 . 1 . 99 (4)

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 1 . 1

Obtain DNS server address automatically

Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

Validate settings upon exit

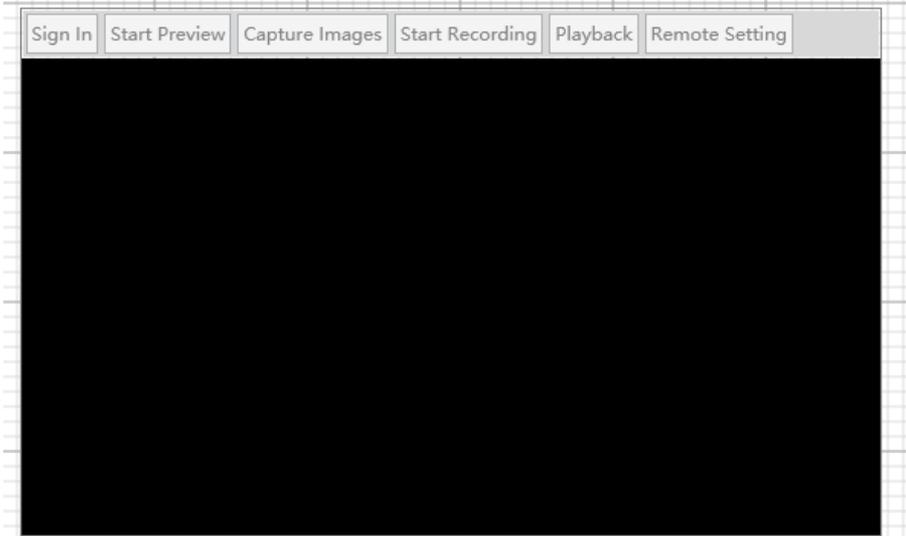
Advanced...

5 OK Cancel

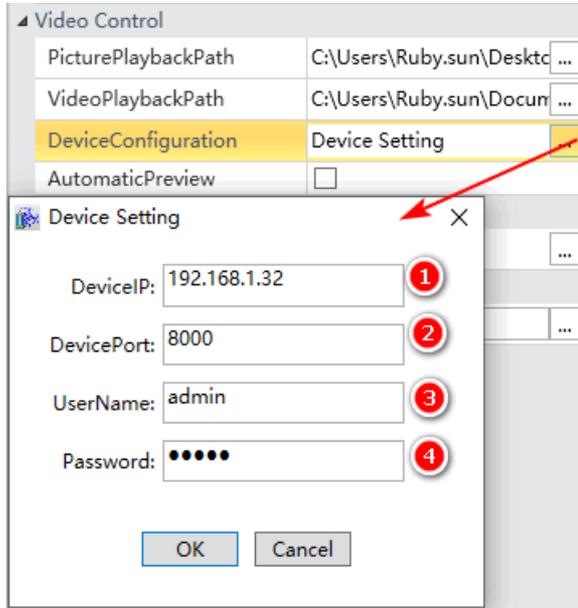


Extend Controls-VideoMintor

(3) Create a VideoMintor0 in the Window0

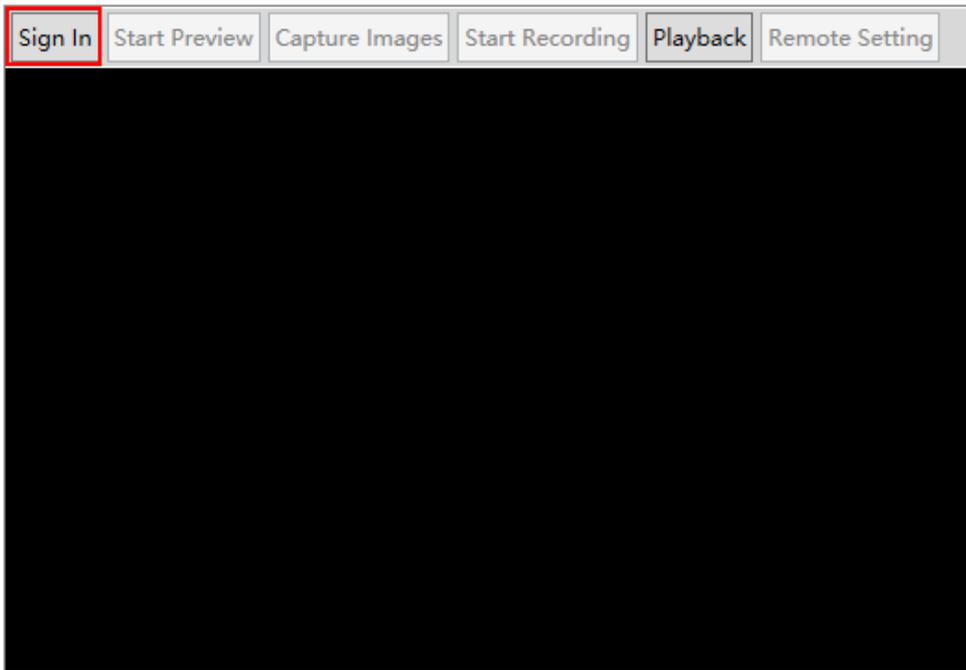


(4) Input the device parameters in the DeviceConfiguration window

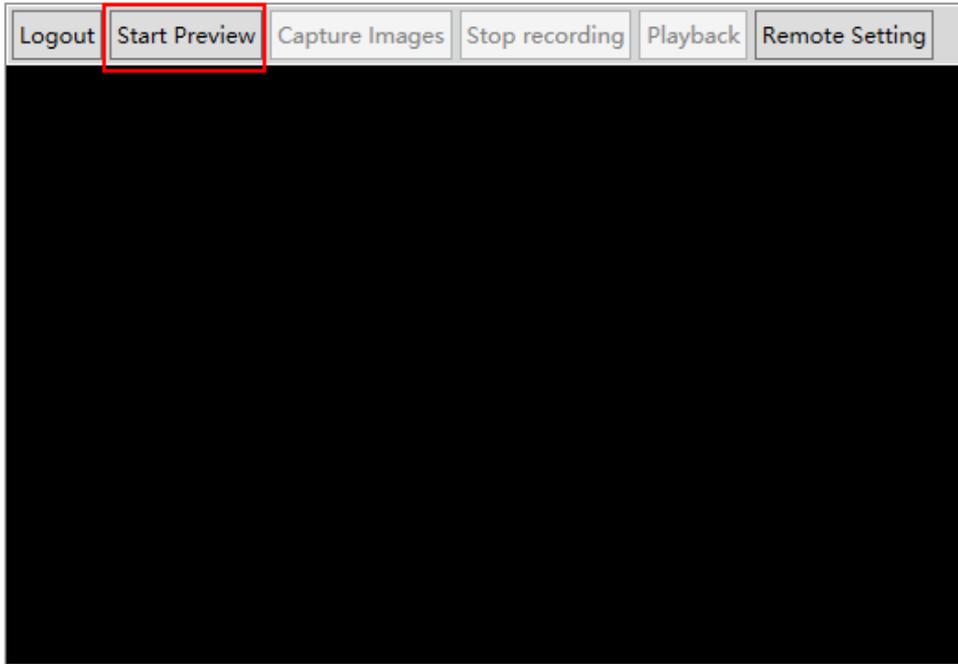


- ① Remote device IP
- ② Remote device port
- ③ Remote device user name
- ④ Remote device user password

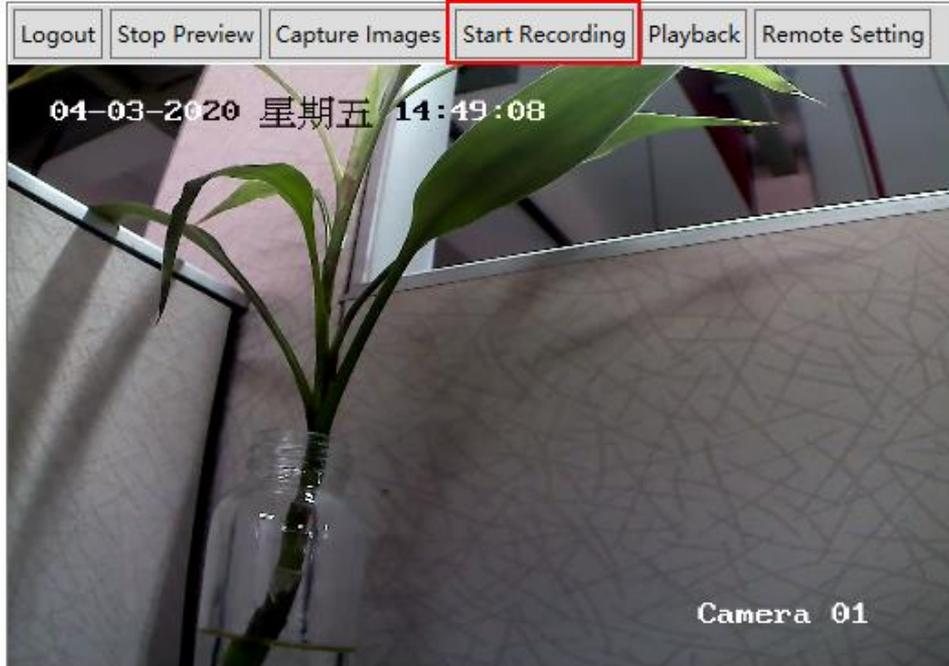
(5)Run the Project , login success



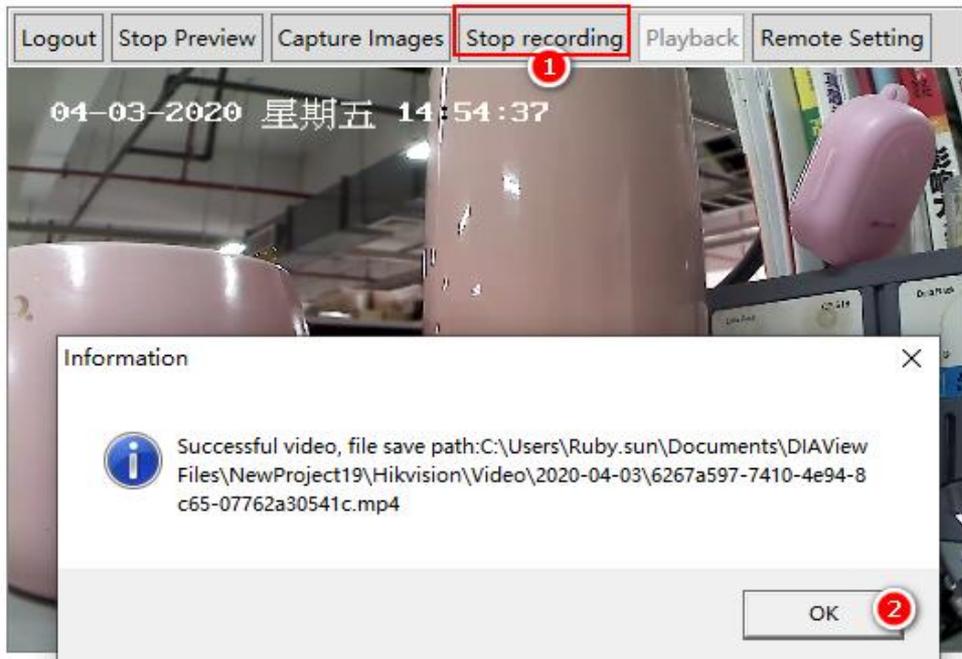
(6)Start Preview



(7)Start Recording



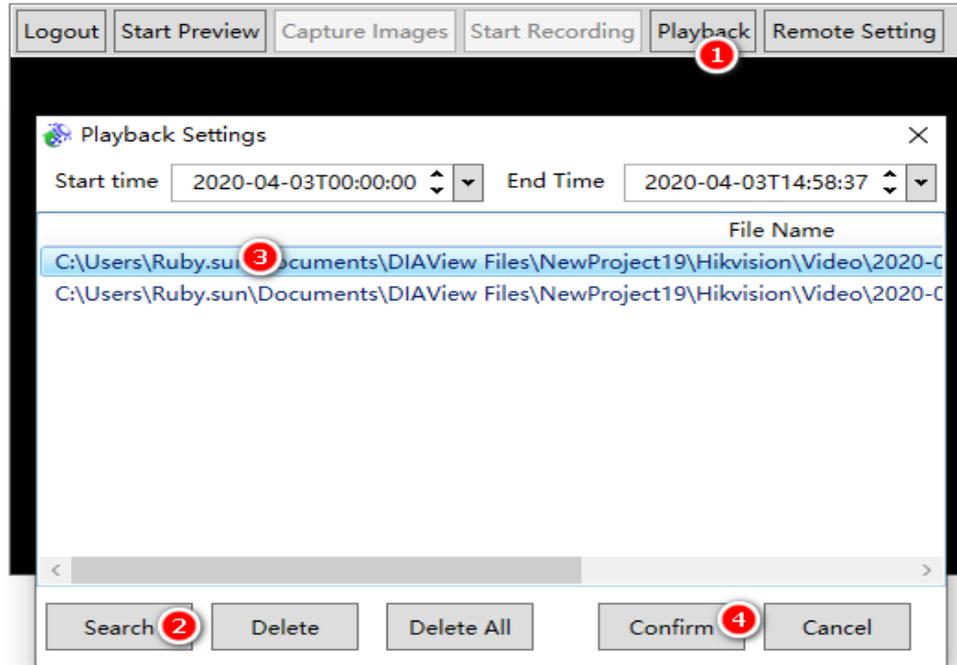
(8) Stop Recording to end record and save the video



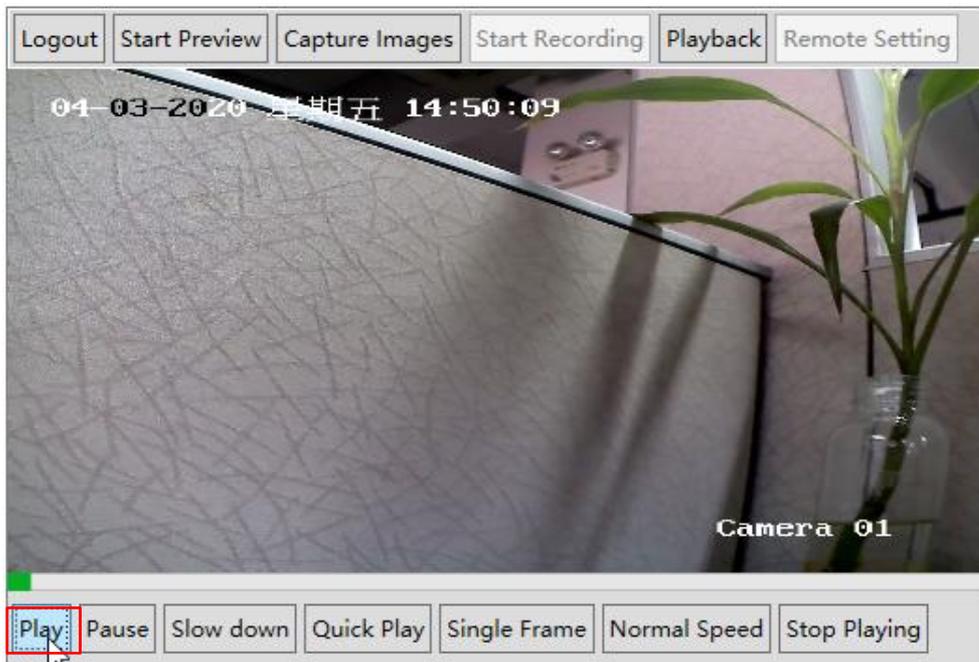
(9)Stop Preview



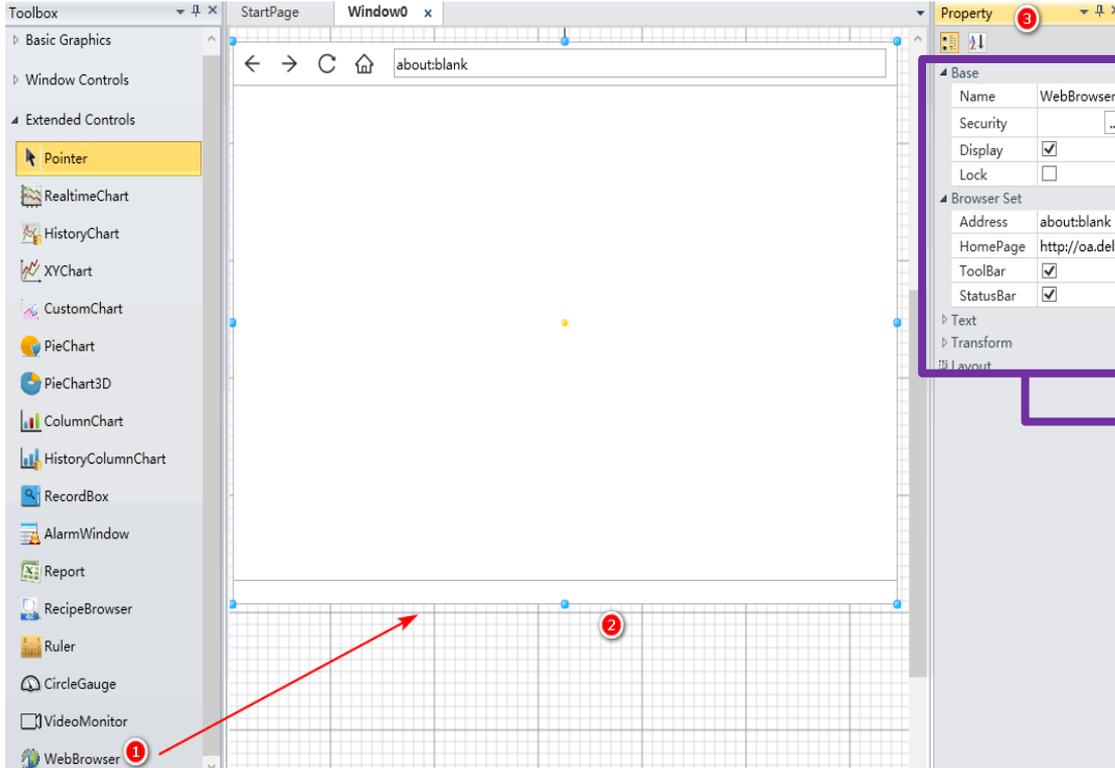
(10) Playback the video



(11)Start play

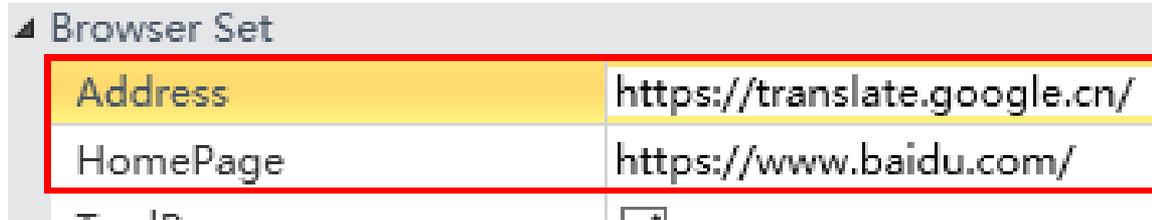


➤ Create a WebBrowser0, open its properties window



- **Address:** Set the current address of web browser
- **HomePage:** Set the home address of Web browser
- **ToolBar:** Set whether to display toolbar
- **StatusBar:** Set whether to display status bar

- The usage of Address property and Homepage property:
 - (1) Create a WebBrowser0 in the Window0, set its address and homepage, as shown in the figure below



Browser Set	
Address	https://translate.google.cn/
HomePage	https://www.baidu.com/

Address: <https://translate.google.cn/>

HomePage: <https://www.baidu.com/>

(2)Run the project, the initial page is as follows

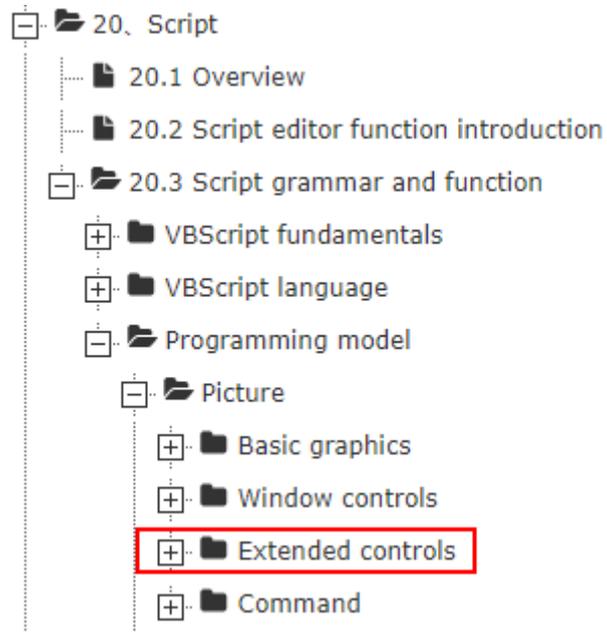


(3) Click HomePage button, and the following figure appears



The Scripts of Extend Controls

The scripts usage of extend controls, please refer to the section “20.3 Script grammar and function” in the user manual. As shown in the figure below:



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