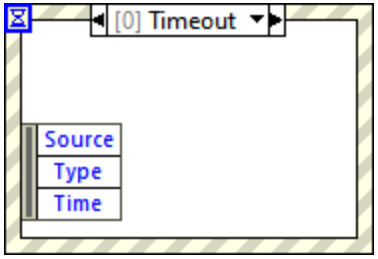
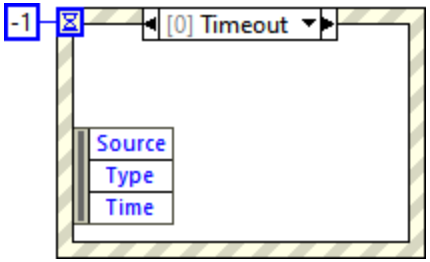
Event Structure (similar to case structure)

Event structure (in Structures palette) is a powerful tool. It allows you to write code that wait for events to happen.
The even can be anything that “happen”:



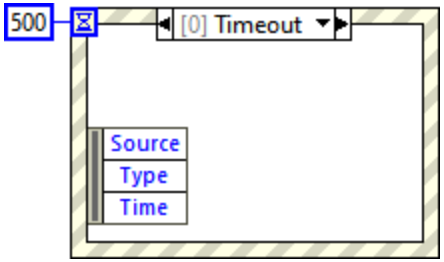
For example:

- You press a front panel Boolean.
- The value of a numeric control changes.
- The mouse cursor enter the VI window.
- A key is pressed.



The **time** in the even structure:

- -1: means “never time out”.
- Default (not wired): -1.
- A Number means the even will be time out (ms unit).



Example: Data change (two frames)

The following VI output a changed data and termite the running within 5 seconds. If there is no data change, it output a random number after 5 seconds.

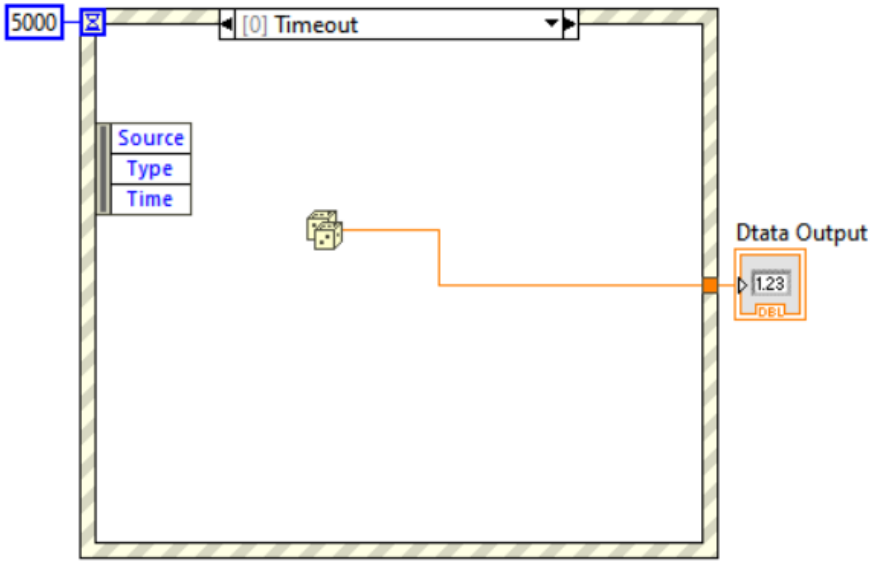
Step:

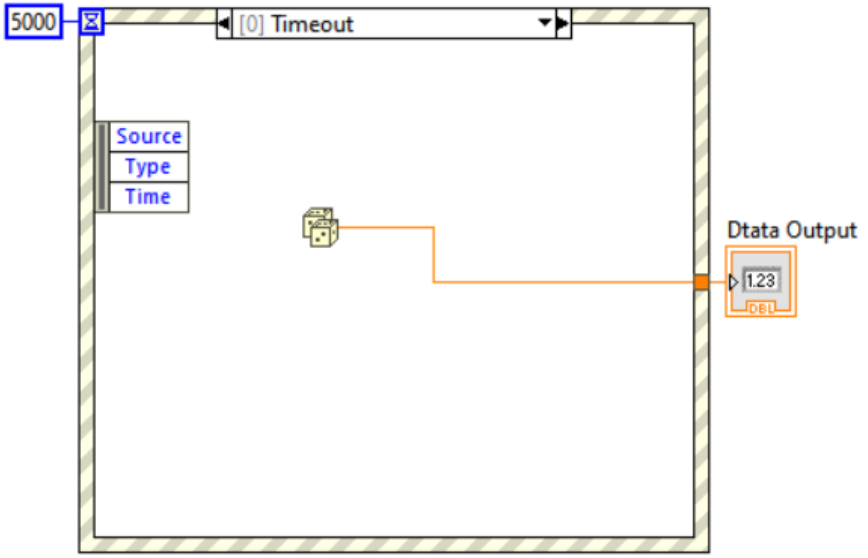
1.**First**, place a numeric control in the Front Panel (**important! So that you can choose an event from a list of events**).

2.Place the Event Structure in the Block Diagram widow.

3. Add a frame and at the same time choose Controls=> value change

(very similar to the Case Structure!

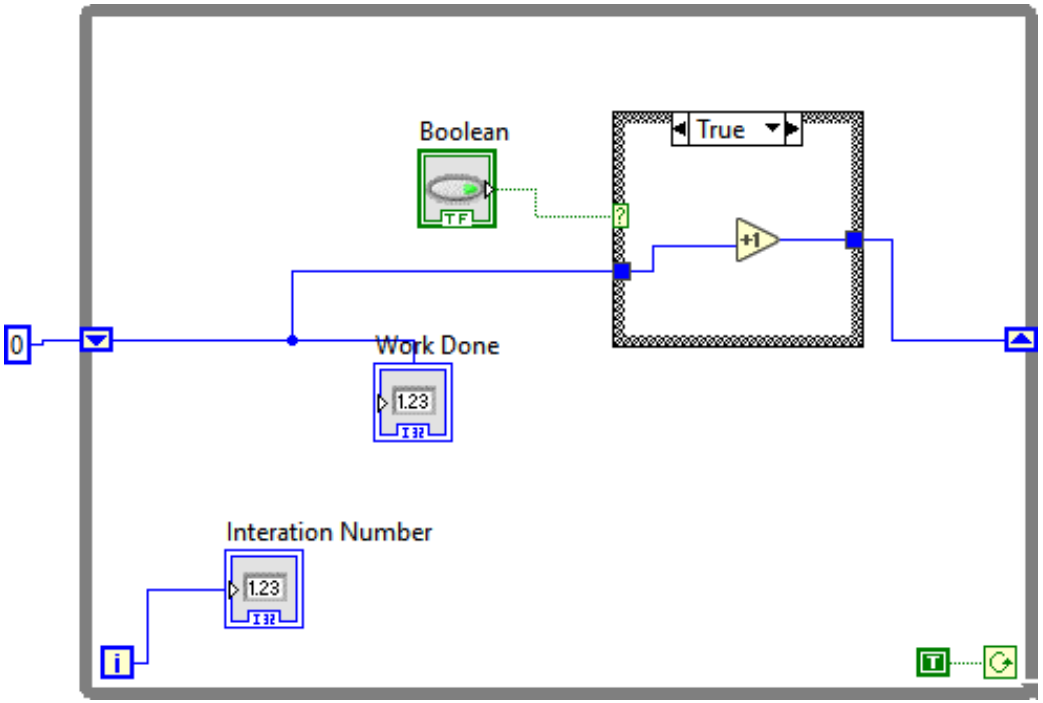


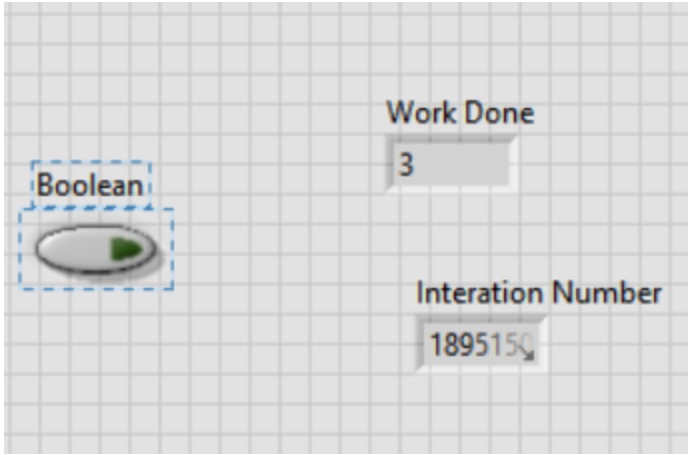


Assignment 1: Using polling technique to create a event

Complete the following VI for the value change event: Each time the "Do some work?" bottom is push, it adds a number. The number 3 indicates pushing 3 times of the bottom.

Note: the Boolean control must be configured as "**Latch When Released**" in Mechanical Action, so that it bounces back to False immediately.

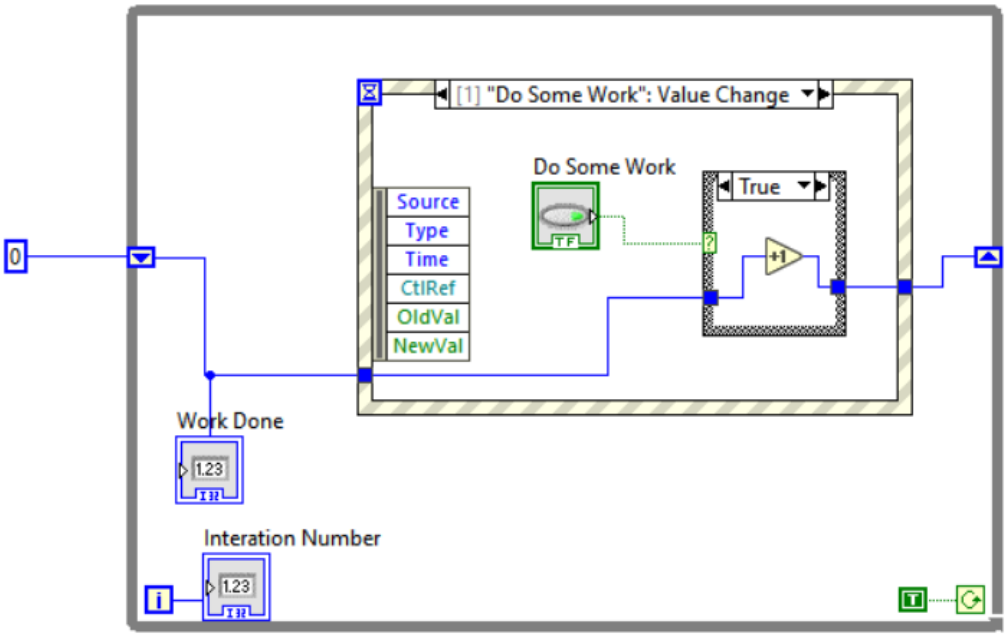


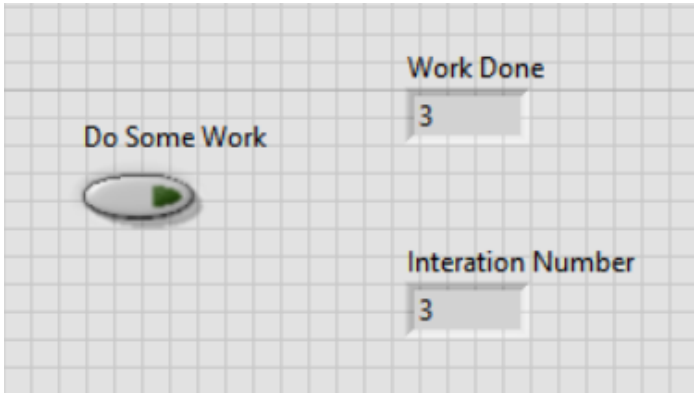


Assignment 2: Event Structure

Complete the following VI: It use a even structure now to replace the value change in the Assignment 1.

Note: the Boolean control must be configured as "**Latch When Released**" in Mechanical Action, so that it bounces back to False immediately. The Boolean control must be must placed on the Front Panel, before place the Event Structure in the Block Diagram, so that it will wait for the Boolean event!





Assignment 3: Event Structure (3 frames)

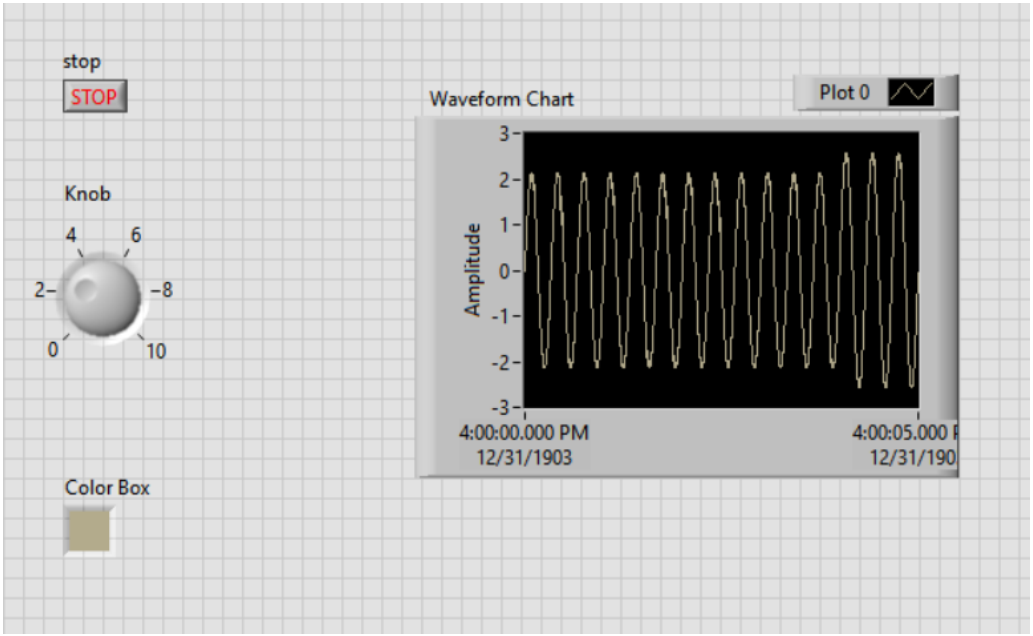
Complete the following VI to generate *sine* wavefront chart, and control it with 3 events.

The **Event 0** is timeout with knob for amplitude of the plot; The **Event 1** is the Stop of the running; The **Event 2** is color change of the plot.

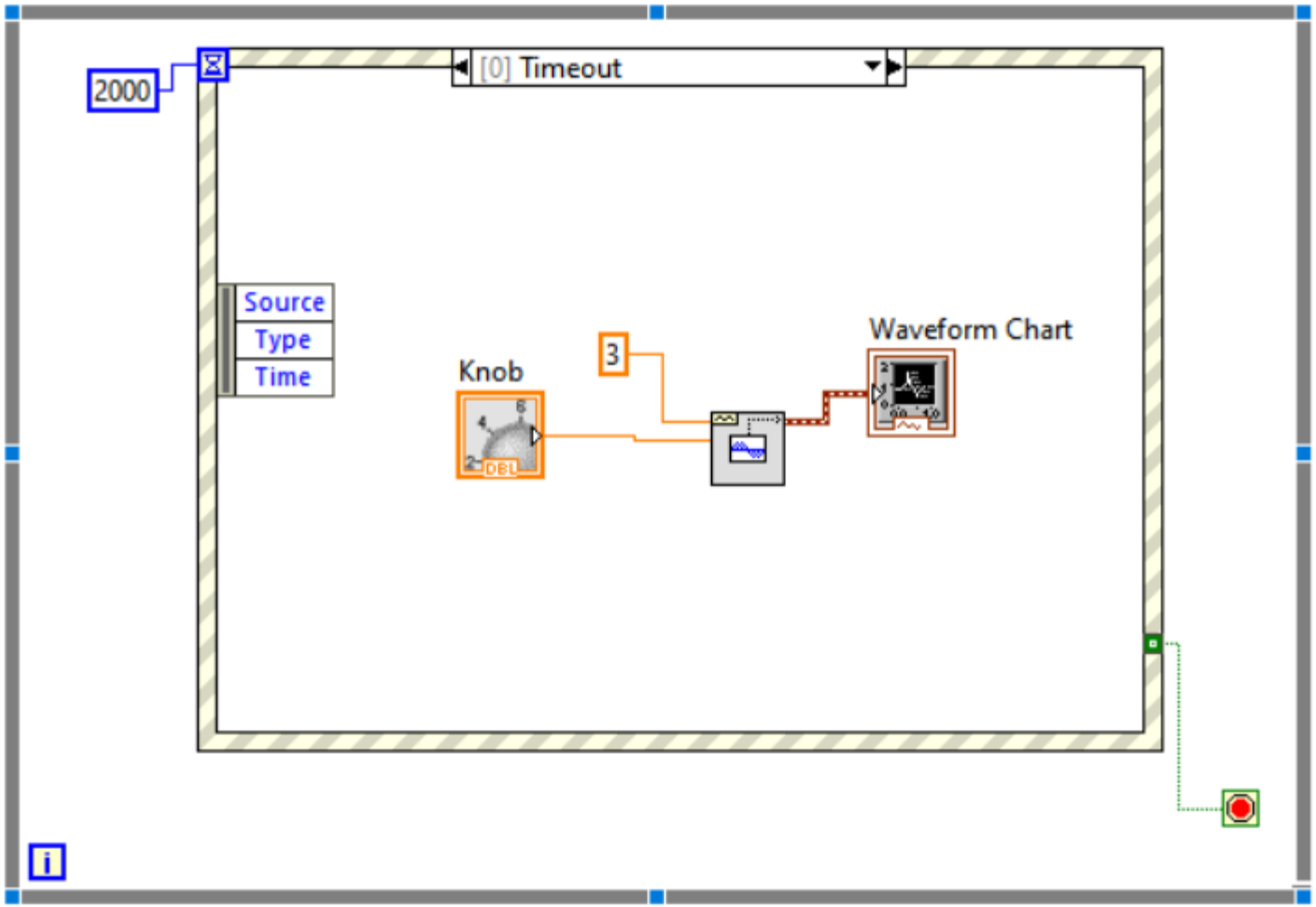
See the follow front panel.

Step 1: complete this front panel.

The Color Box can be found Modern>>**Numeric** palette in the front panel.

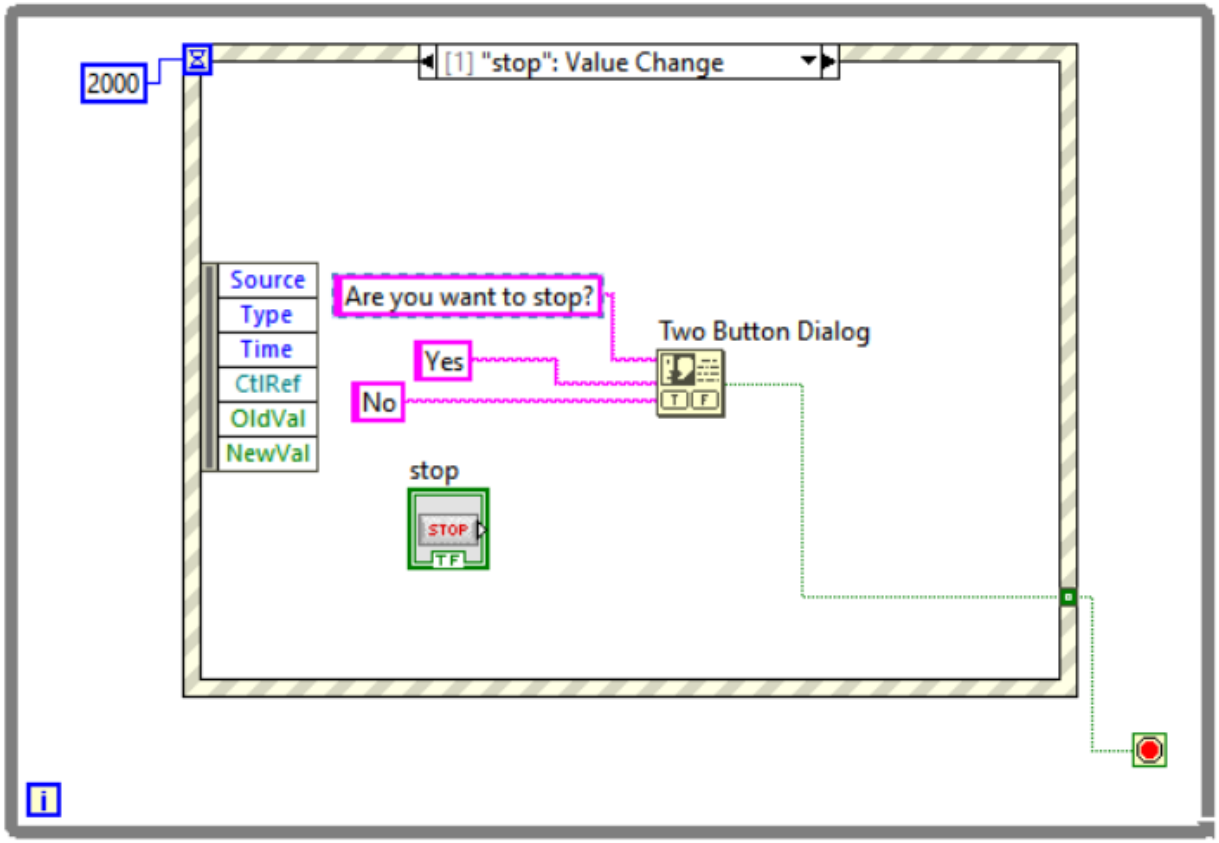


Step 1: Complete this Even Case (Even Case 0)
Event 0: Timeout



Step 2: Complete this Even Case (Even Case 1)
Event 1: “stop”: Value Change

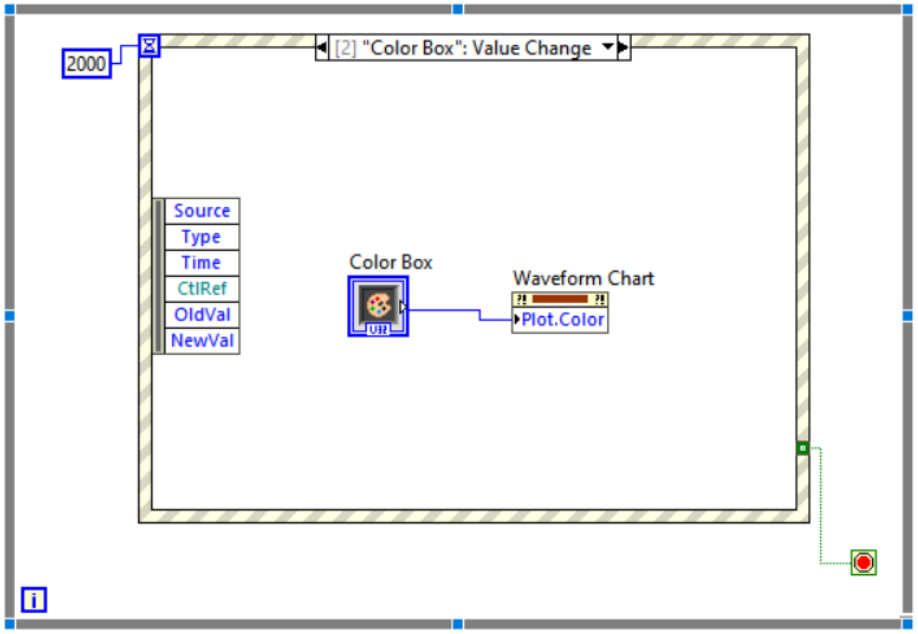
The Two Btn Dialog is found in
Programming>>Dialog & User palette



Step 3: Complete this Even Case (Even Case 2)

1. Event 2 frame: create “Color Box”: Value Change

2. The Plot Color in the Wavefront Chart can be found from right-click the Wavefront chart:
Create>>Property Node>>Plot>>Plot Color (You can change between Write and Read)



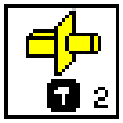
After you complete, run you VI you make sue it can run properly.

Assignment 4: **Open an existing image and select small part of it**

Write a VI to open an image from your computer and shows it a display window in gray scale intensity scale. Then select a small part of rectangle from the image and show this selected small rectangle image in the Same Display window, by using a local variable.

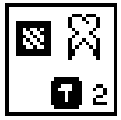
You need use these functions:

IMAQ Cast Image 2



IMAQ Select Rectangle

IMAQ Extract 2



Hint: After running the code, the front panel should look like this: