Local, Global and Shared Variables

Local Variables provide a way to access front panel objects (either control or indicator) from several places in the block diagram of a VI, where you don't want to connect a write to the object's terminal.

Global variables allow you to access values of any data type at the same time **between several VIs (at least 2 VIs) when they are running simultaneously.**

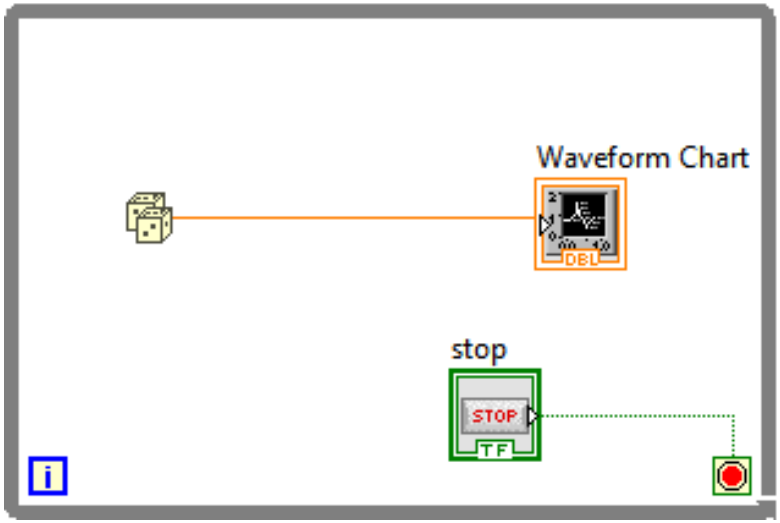
Shared variables are similar to global variables , but work across multiple local and networked applications.

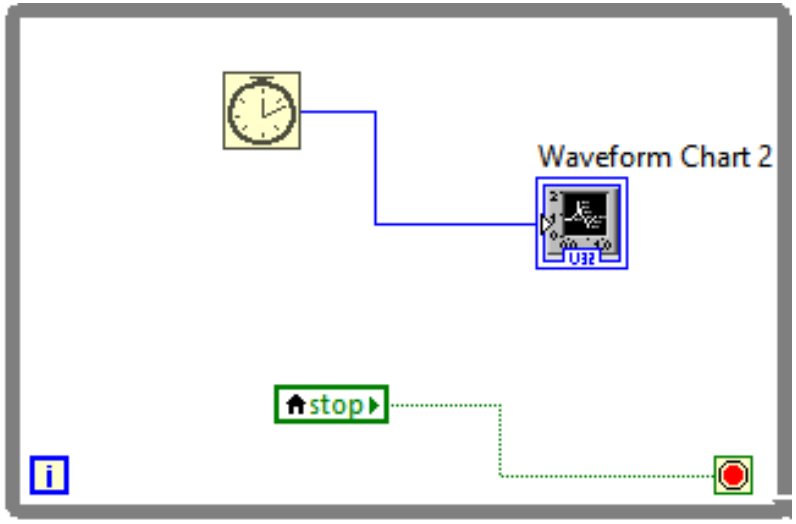
They are accessible from Programming>>Structure palette.

Local Variable

The following is an example to use the local variable for the stop.

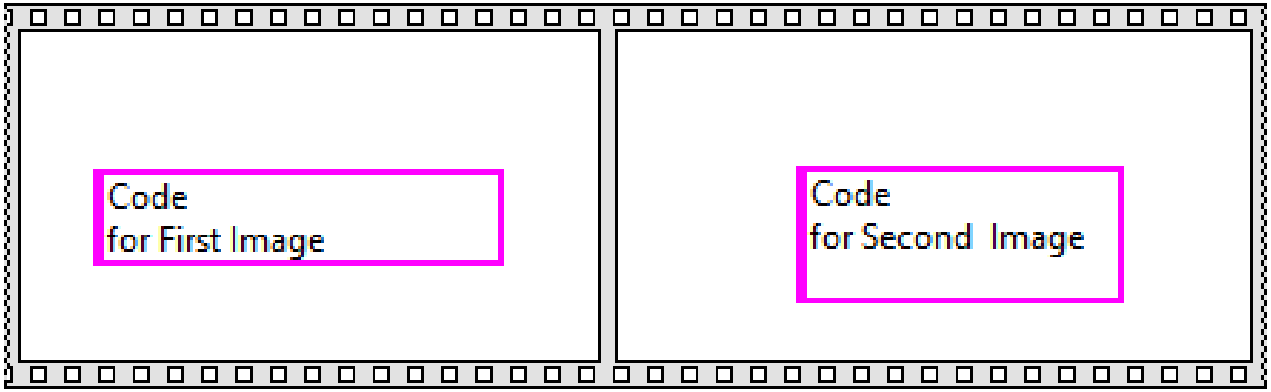
- The local viable node can be convert as an indicator by "**Change to Read**".
- The first stop must be selected "**Mechanical Action/ Switch When Press**"
- To create the local variable: click the first stop, and select Create>Local variable

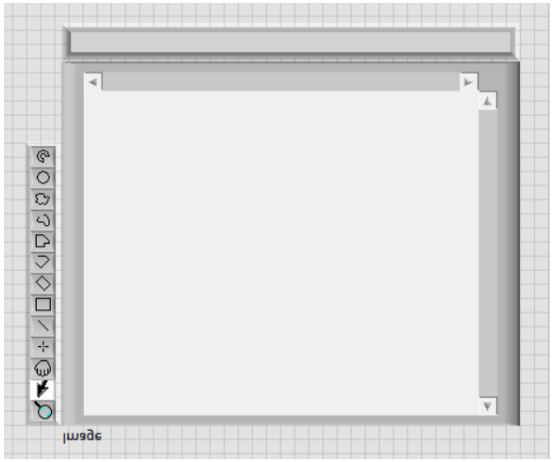


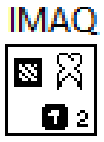


Assignment 1

Create VI to read and show an image in a display window, then select part of the image and show the extracted image in the same display window. You can use the **IMAQ Extract** function with the input sub-window defined a value. (You may also need to use **IMAQ Select Rectangle** function).

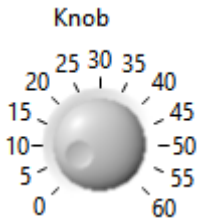


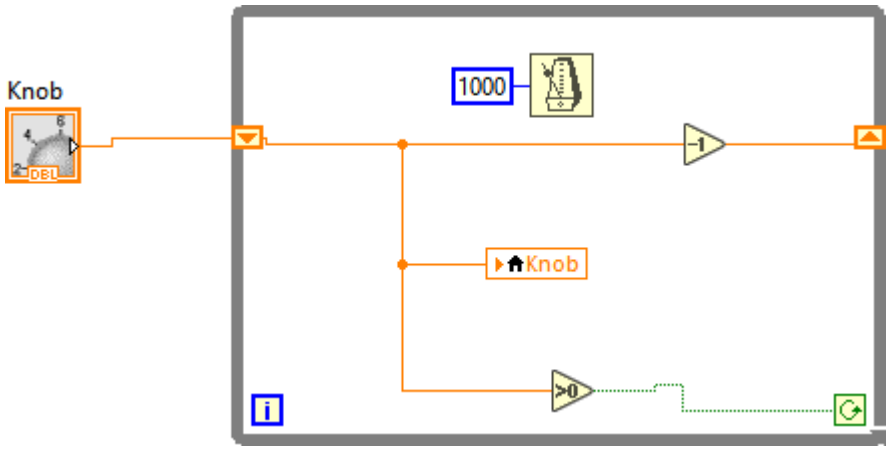




Assignment 2

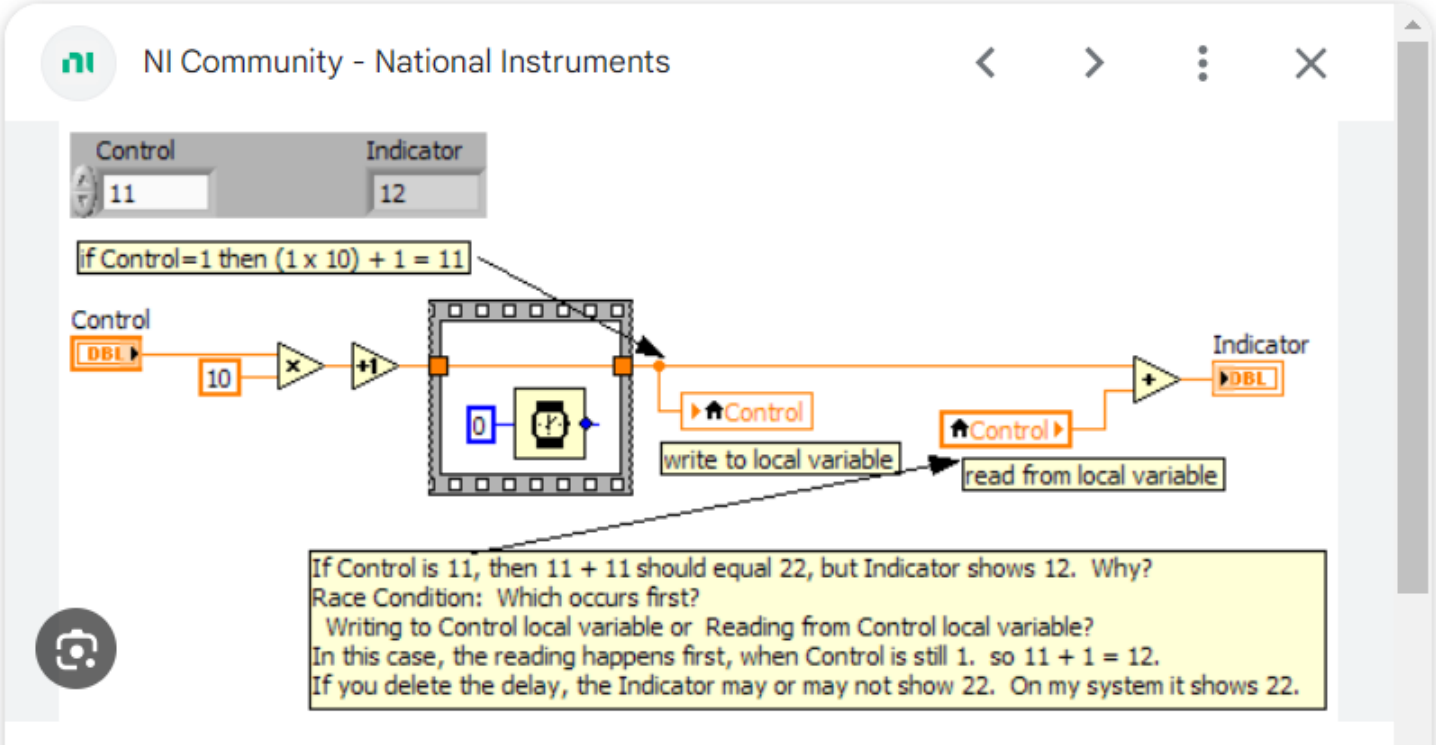
Write a VI as show with the following Front Panel and Black Diagram. A local variable Knob is created, but in writing mode for the Knob control. Run this VI to see how the “Kitchen Timer” (such as the microwave) works.





Assignment 3

Local variable competition: create the following VI. In this VI, your input value on the Control is 1. Why the result in the Indicator may not be 22?



Global Variables

You can create several single global VIs, each with one front panel object, or if you want to group similar variables together, you can create one global VI with multiple front panel objects.

Complete the following steps **to create** a global VI with multiple front panel objects:

Code 1:

1.Add a global variable to the block diagram.

2.Double-click the **global variable** node to display the front panel window of the global.

3. Add controls and indicators to the front panel window the same way you do in a standard front panel window.

4.Save the global variable as a VI (need to give a name) and close it. (the 2 codes are connected via the saved Global variable)

5. Return to the block diagram of the original VI and right-click the global variable node and select a front panel object from the **Select Item** shortcut menu. The shortcut menu lists all the front panel objects that have owned labels. (You also can use the Operating tool or Labeling tool to click the global variable node and select the front panel object from the shortcut menu.)

Global Variables (continue)

Complete the following steps **to use** a global variable in other Vis:

Code 2:

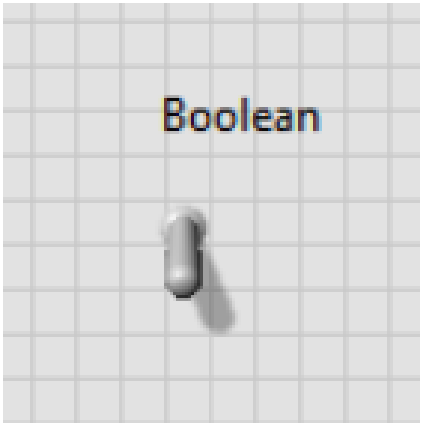
1. Click the **Select a VI** icon or text on the **Functions** palette, navigate to the directory where you saved the global VI, and double-click the VI.
2. Add the global variable to the block diagram. By default, the global variable is associated with the first front panel object with an owned label you added to the global VI.
3. Right-click the global variable node you added to the block diagram and select a front panel object from the **Select Item** shortcut menu to associate the global variable with the data from another front panel object.

Example:

For two VI codes with while loops, using a stop in one code to stop the running of the 2 codes.

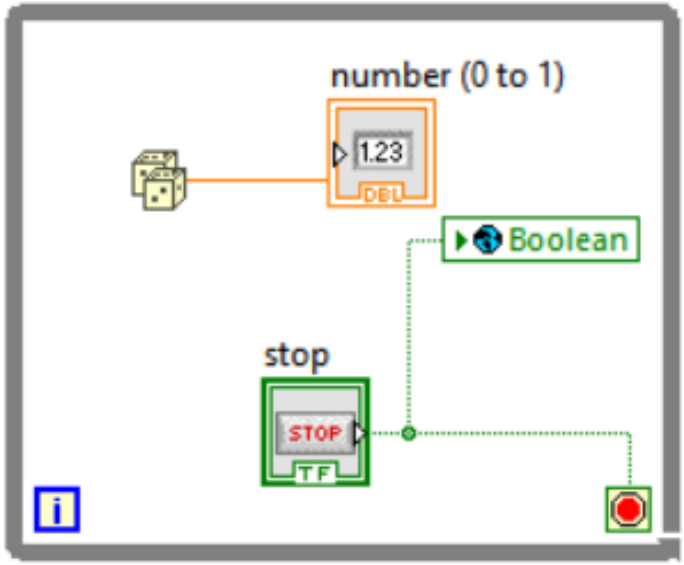
Step 1: Plug the **Global variable** function in the block digraph, and double click it to open a new window to create a global variable, and save this code on computer:

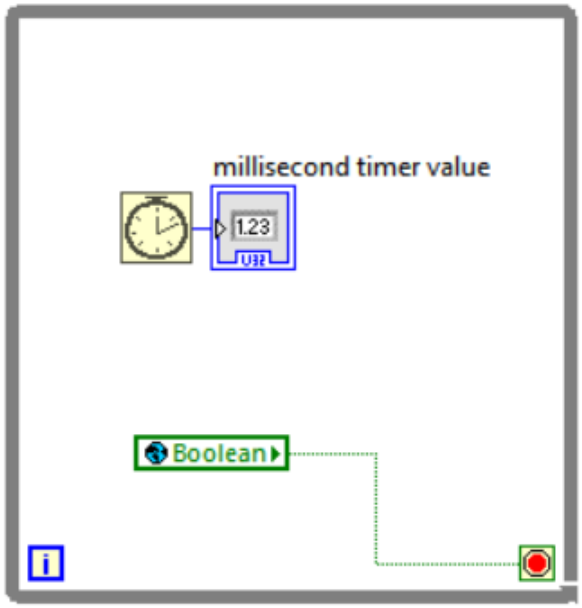
You only have a front panel for this file!



Step 2: Write the 2 VI codes, and insert **the file of the global** from the Select VI… menu in the block diagram (the same to insert a sub-VI).

And now, you can run both Vis.





Assignment 4

Global Variable: Create the 2 VIs (left-bottom and right panels). Two global variables are created (left-top panel) and save on computer. When running the 2 VIs, You need to use the Stop control in the right panel VI to stop the running of the 2 VIs.