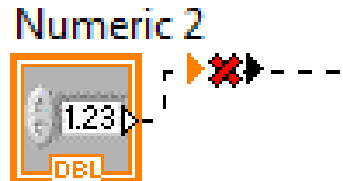


1. Debugging Techniques

1.1 Find Errors

When your VI cannot compile or run due to a program error, a **Broken Run** button appears on the toolbar.

You can list all the errors by clicking on the **Broken Run** button, and a box called **Error List** will list all the errors, as show in Figure 1.



Some of the most common reasons for a VI being broken during editing are:

1)A function terminal requiring an input is unwired.

2)The block diagram contains a broken wire, because of a mismatch of data, or a disconnected data.

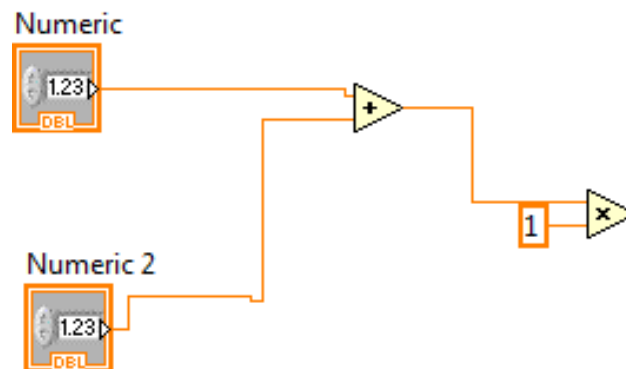
3)A subVI is broken.

1.2 Highlight Execution

For Debugging purpose, you can use **Highlight Execution** button to track the flow of the code. To do this,

- 1) Select **Highlight Execution** button
- 2) Run the code.

You can use the following code to test debugging by using the **Highlight Execution** button:

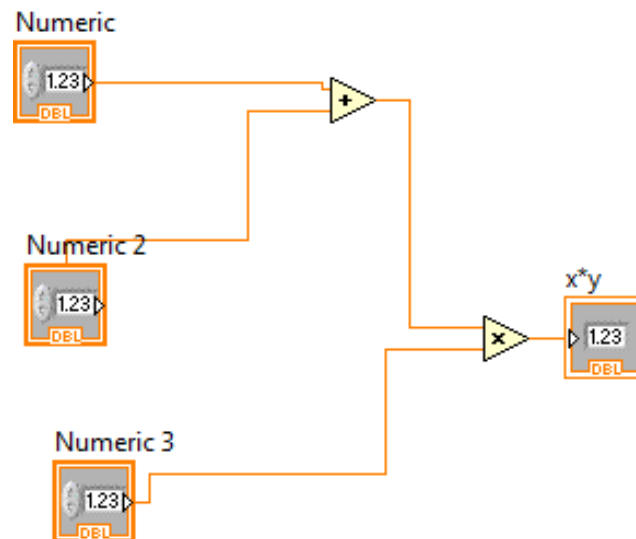


1.3 Single-Stepping Through a VI and its SubVIs

You can also use **Step Into** or **Step Over** button to execute to debug the code “node by node”.

You can terminate the debugging by using **Step Out** button.

Execute the following code by use the **Step Into** or **Step Over** button.



1.4 Remove Allow Debugging Option

A VI with Debugging Option takes more time for execution. You can switch off the Allow Debugging option and release the computer memory, and this can increase the performance by ~ 2%.

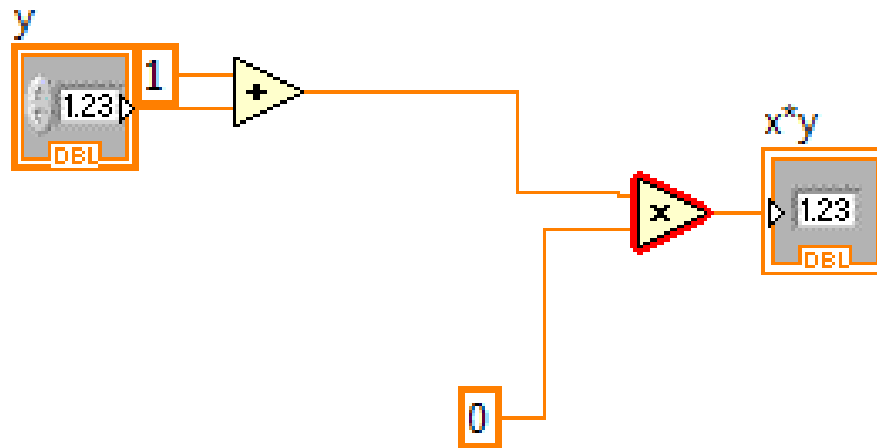
To do this,

- 1) Right-click the icon panel (upper right corner)
- 2) Select **VI Properties**
- 3) Deselect the **Allow Debugging** option.

1.5 Breakpoints and Probes

You can halt execution (set **Breakpoint**) at certain locations of the VI (subVIs, nodes, wires). To set a **Breakpoint**, right- click on any item in the block diagram where you want to set or clear a breakpoint. Breakpoint is highlighted as red frames or dots.

The following figure has a breakpoint at the multiplication function.



You can use **Probe** to view the data as it flow throught a block diagram wire. To place a **Probe**, right- click on any wire in the block diagram where you want to place a probe.

To retain wire values, you need to enable the **Retain Wire Value** button on the toolbar of the block diagram. Once enabled, you can probe the wire value *only after executing the VI*.

Assignment 1

Construct a VI that generates two random numbers (between 0 and 1) and displays both random numbers **on meters**. Label the meters **Random number 1** and **Random number 2**, respectively. Make the face of one meter blue and the face of the other meter red. When the value of the random number on the red meter is great than the random number on the meter with the blue face, have a circular LED show green; otherwise have the LED show black. Place the VI in a **while loop**. On block diagram select **Highlight Execution**. Run the VI and watch the data flow through the code. Disable the VI debugging, and run it again: what is the difference?