Debugging in LabVIEW

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What is “Debugging”?

Debugging is the process of locating and fixing or bugs (errors) in your computer program code, in this case your LabVIEW program

Debugging in LabVIEW

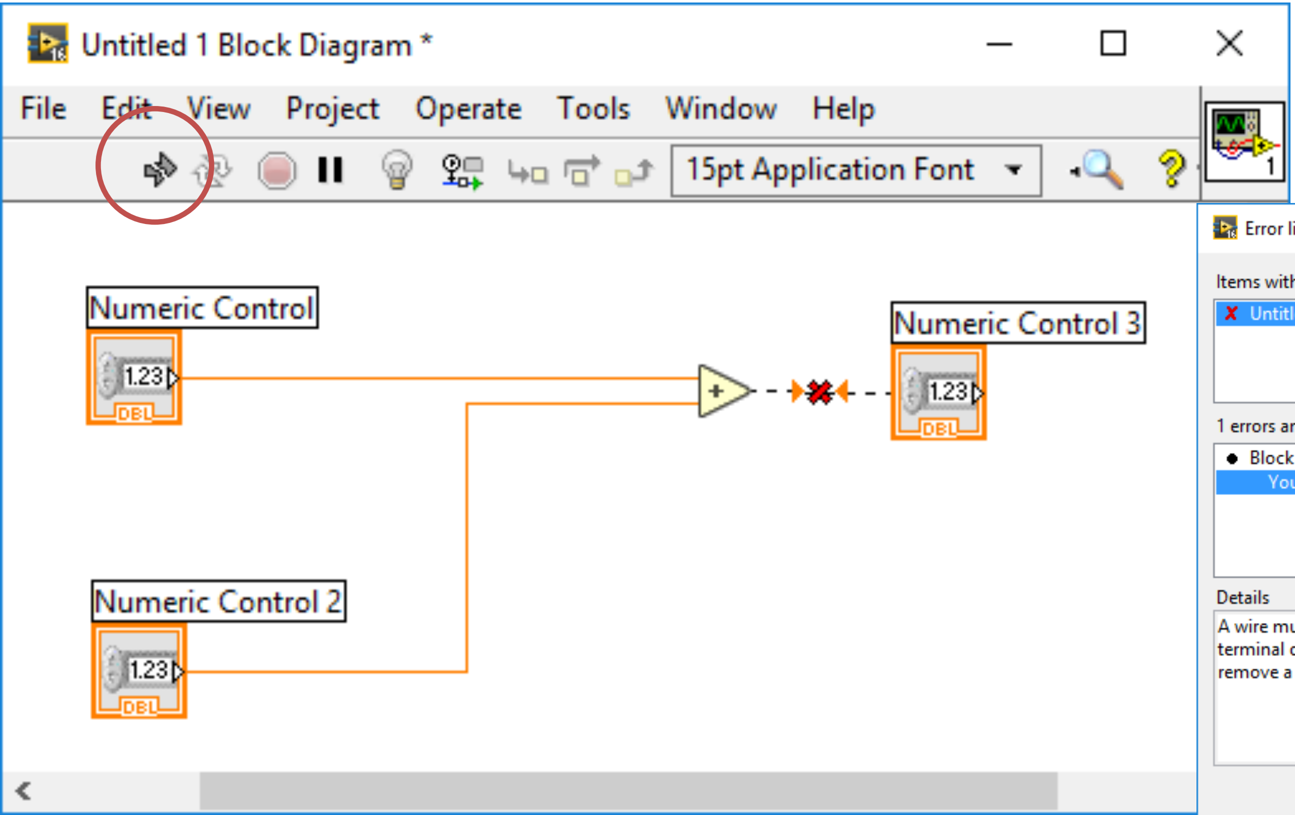
LabVIEW has powerful features for Debugging your Code, such as:

- Broken Run Arrow
- Highlight Execution
- Probes
- Breakpoints

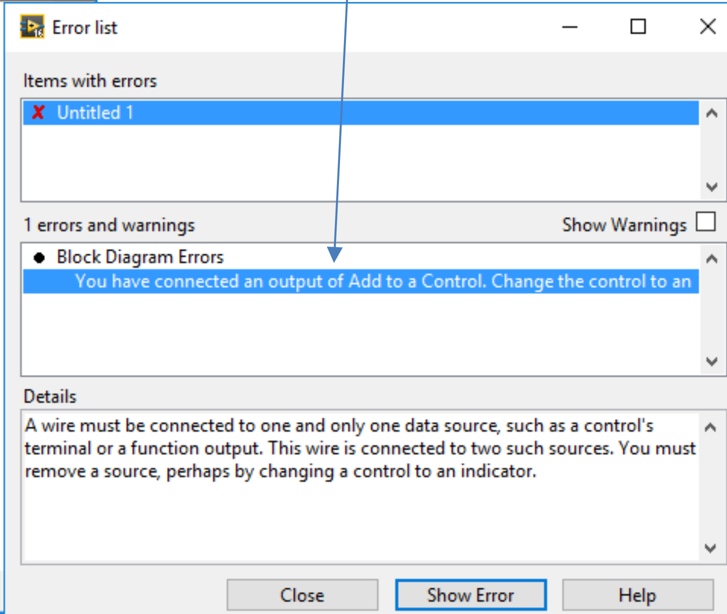
Broken Run Arrow

- Click the broken Run button to display the Error list window, which lists all the errors.
- Double-click an error description to display the relevant block diagram or front panel and highlight the object that contains the error.

Broken Run Arrow - Example



Double-click



Items with errors

Untitled 1

1 errors and warnings

Show Warnings

Block Diagram Errors

You have connected an output of Add to a Control. Change the control to an

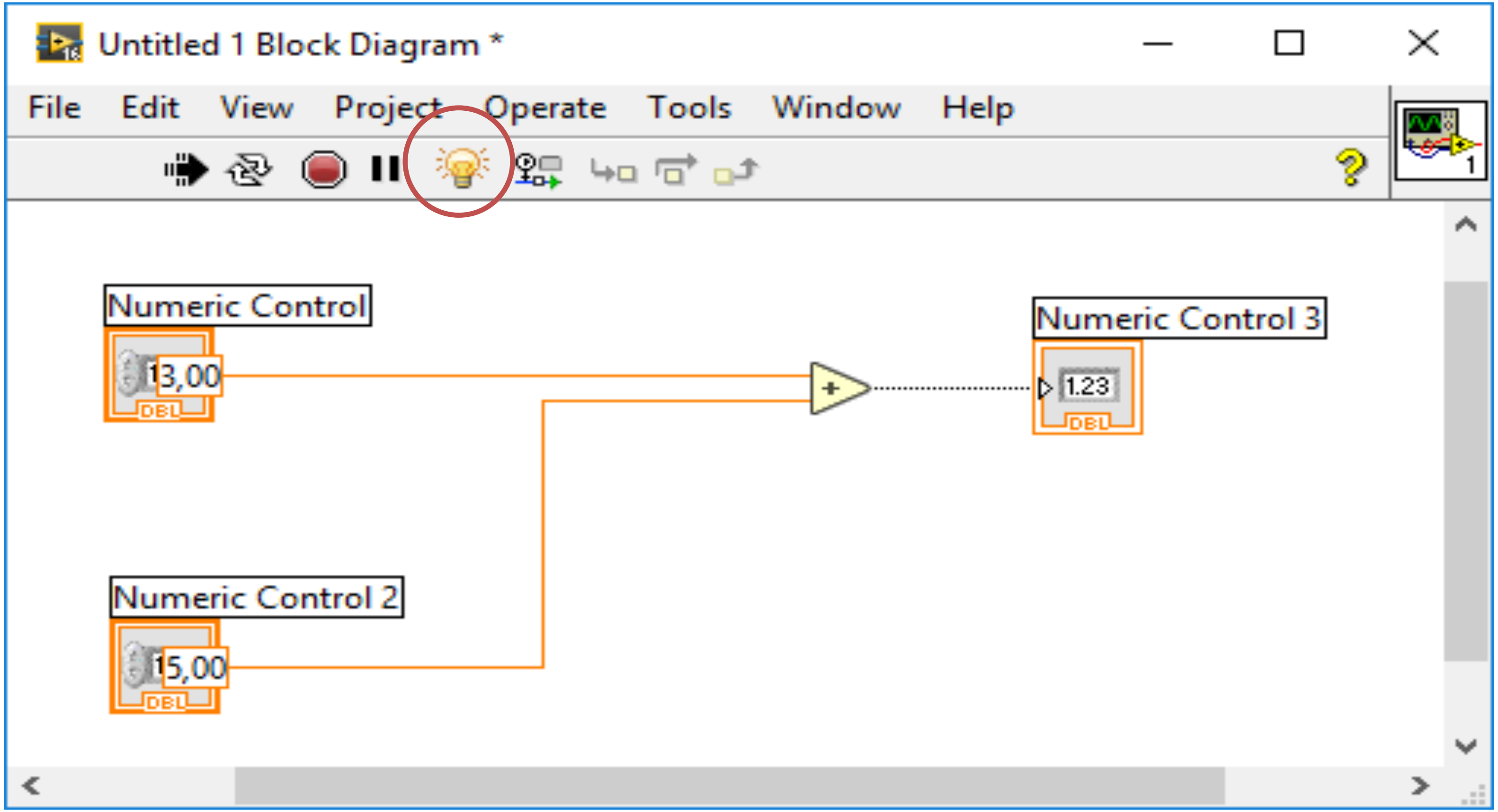
Details

A wire must be connected to one and only one data source, such as a control's terminal or a function output. This wire is connected to two such sources. You must remove a source, perhaps by changing a control to an indicator.

Highlight Execution

- View an animation of the execution of the block diagram by clicking the Highlight Execution button.
- Execution highlighting shows the flow of data on the block diagram from one node to another using bubbles that move along the wires.
- Note! Execution highlighting greatly reduces the speed at which the VI runs.

Highlight Execution

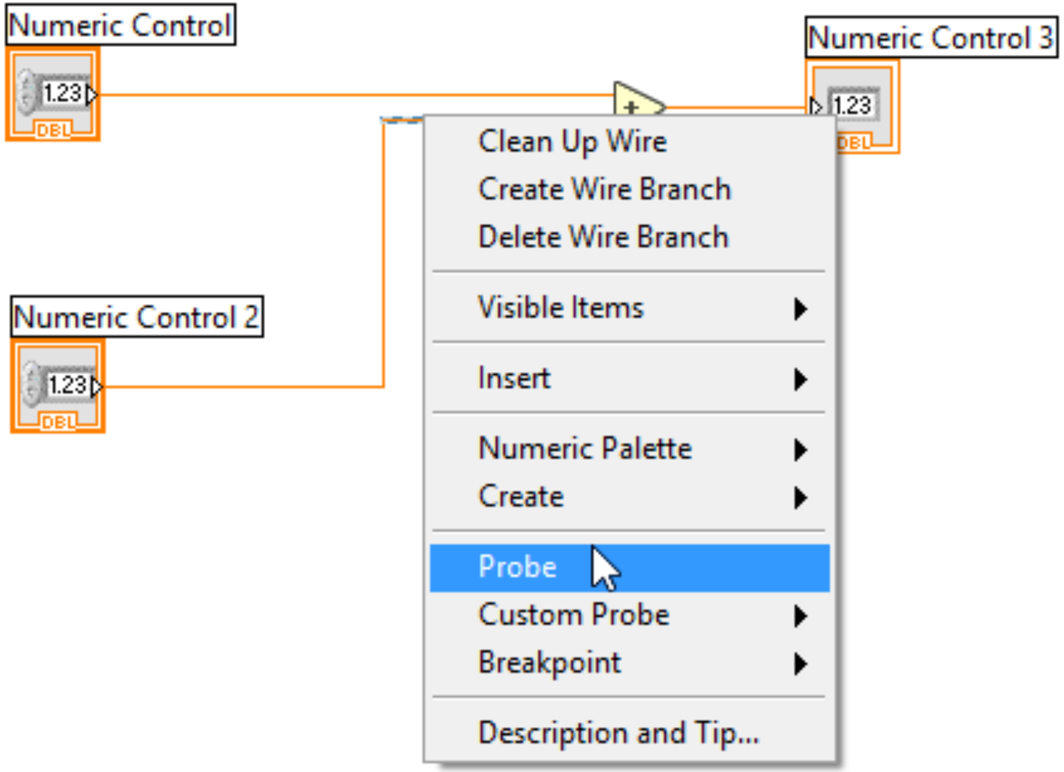


Probes

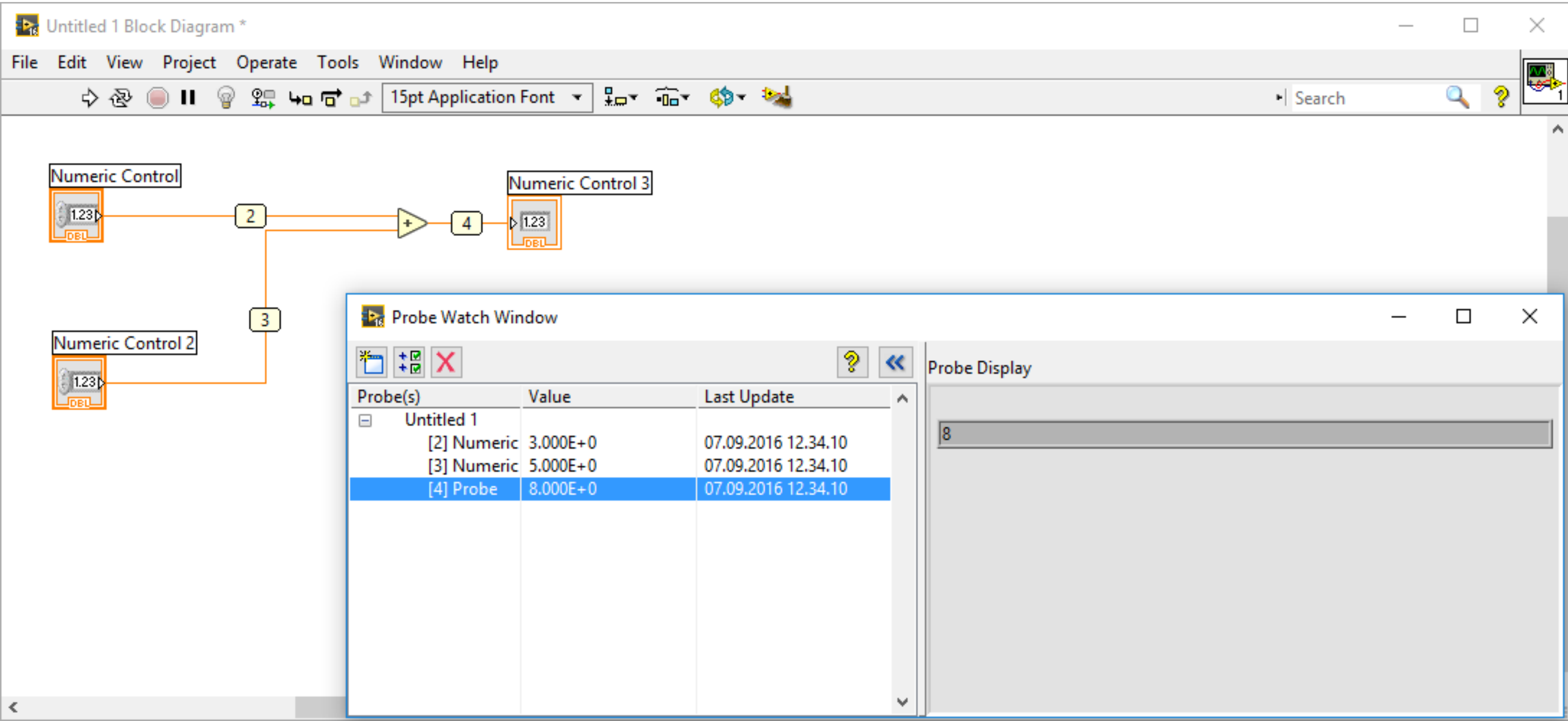
- Use the Probe tool to check intermediate values on a wire as a VI runs.

- Probe Watch Window

Probes


Numeric Control
1.23
DBL
Numeric Control 2
1.23
DBL
Numeric Control 3
1.23
DBL
Clean Up Wire
Create Wire Branch
Delete Wire Branch
Visible Items
Insert
Numeric Palette
Create
Probe
Custom Probe
Breakpoint
Description and Tip...

Probe Watch Window



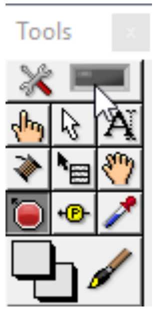
Probe(s)	Value	Last Update
Untitled 1		
[2] Numeric	3.000E+0	07.09.2016 12.34.10
[3] Numeric	5.000E+0	07.09.2016 12.34.10
[4] Probe	8.000E+0	07.09.2016 12.34.10

Breakpoints

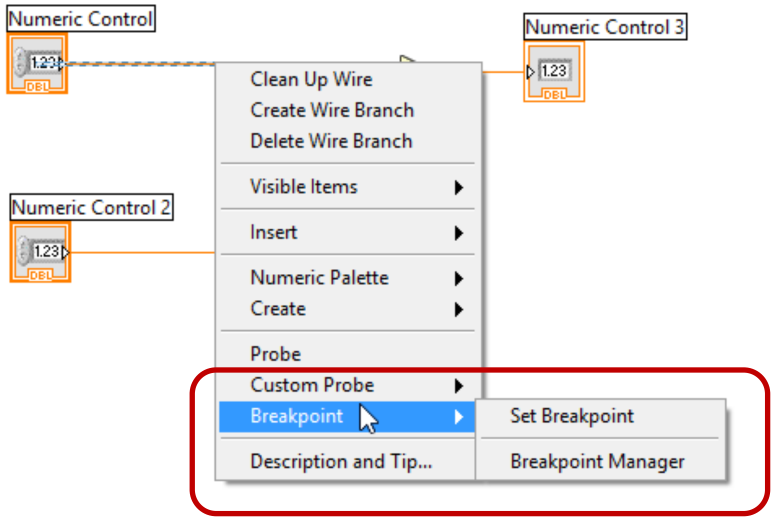
- Use the Breakpoint tool to place a breakpoint on a VI, node, or wire on the block diagram and pause execution at that location.
- When you set a breakpoint on a wire, execution pauses after data pass through the wire.

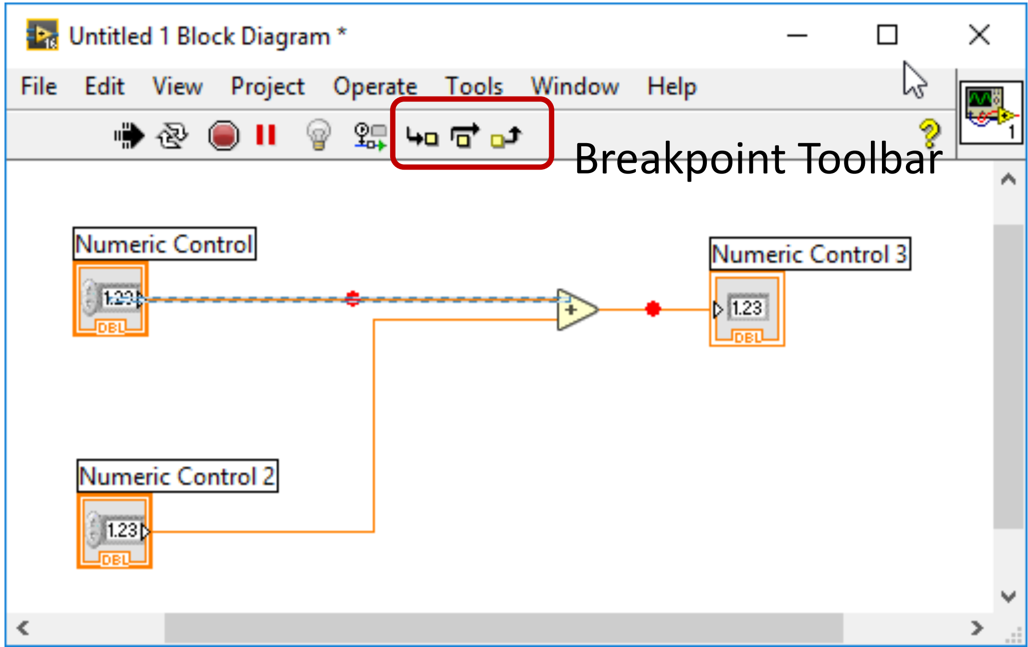
Breakpoints

Tools Palette:



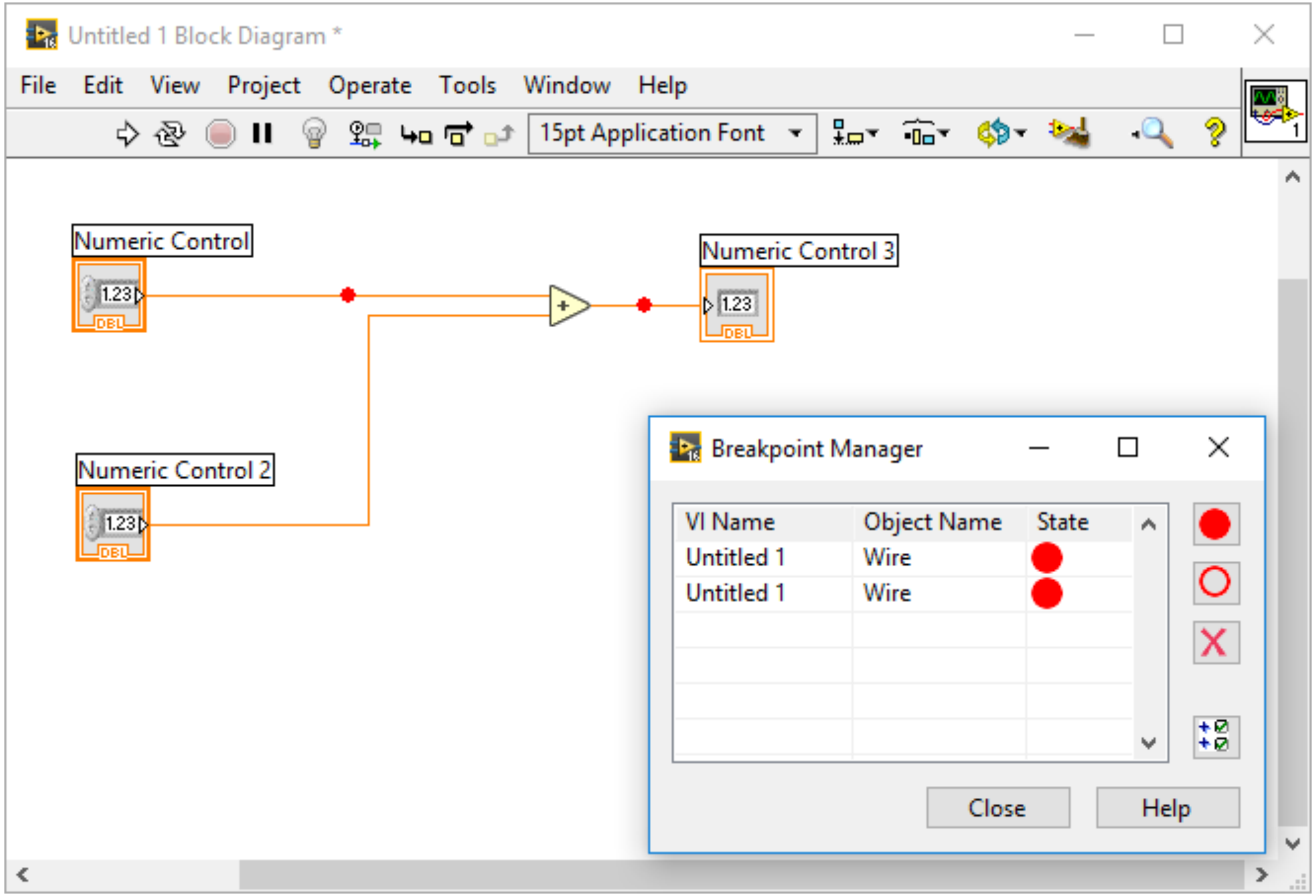
Set/Clear Breakpoint





Breakpoint Toolbar

Breakpoint Manager



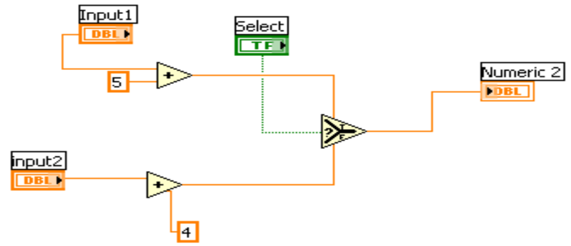
VI Name	Object Name	State
Untitled 1	Wire	●
Untitled 1	Wire	●

Enable/Disable Breakpoints

How To Avoid Bugs

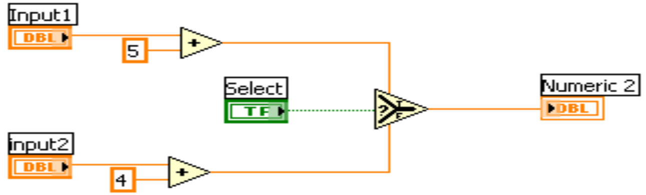
- Structure your Code properly, i.e., avoid socalled «Spaghetti Code»
- Flow from left to right
- Use SubVIs
- Use the State Machine Programming teqnique
- Make it simple
- Keep in mind that others should understand your Program
- ..

Bad vs. Good Code

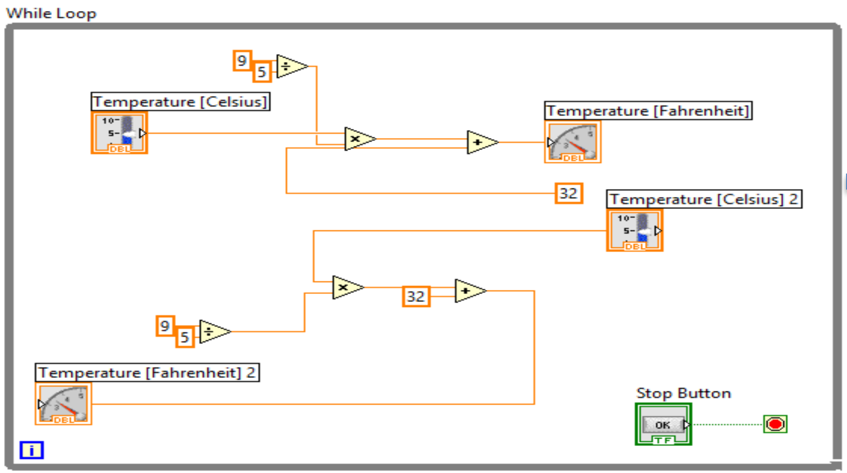


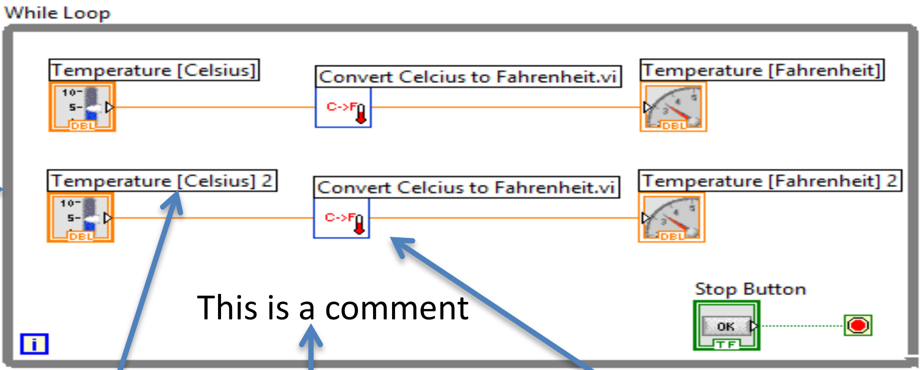
Avoid Spaghetti Code!

The Flow should go from left to right



Make your code readable for others!





Use SubVIs!!!

Use Labels and Comment your Code

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