LabVIEW Formula Node

A Formula Node in LabVIEW evaluates mathematical formulas and expressions similar to C on the block diagram. In this way you may use existing C code directly inside your LabVIEW code. It is also useful when you have "complex" mathematical expressions.

Task: Create a simple SubVI where you use the Formula Node to calculate a *(slope)* and b *(intercept)* in the equation $y = ax + b$ when you have two points (x_1, y_1) and (x_2, y_2).

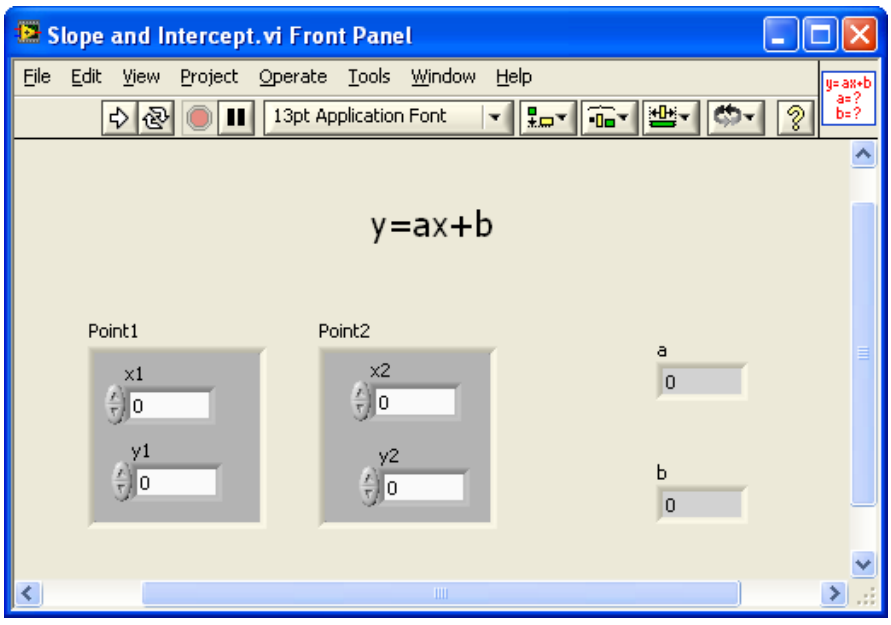
The Procedure is as follows:

Step 1: Create a New VI (File→New VI) (Blank VI)

Step 2: Give the VI a Name (**Linear Scaling.vi**)

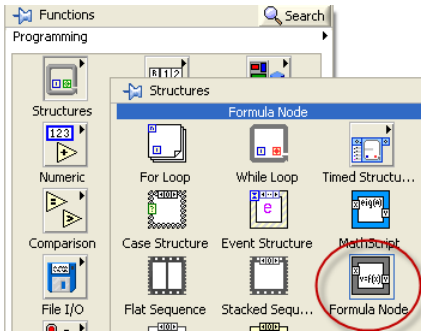
Step 3: Create your Front Panel with your necessary Controls and Indicators.

Example:

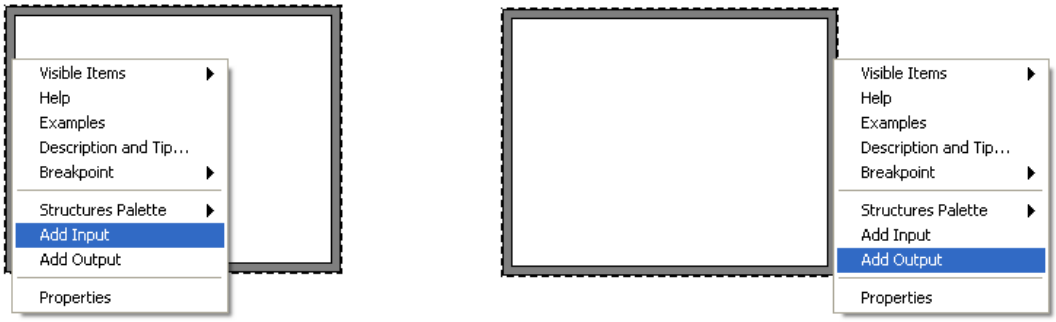


Step 4: Switch to your Block Diagram (**Ctrl+E**).

Step 5: Add the **Formula Node** to you Block Diagram:



Step 6: Add Inputs and Outputs:

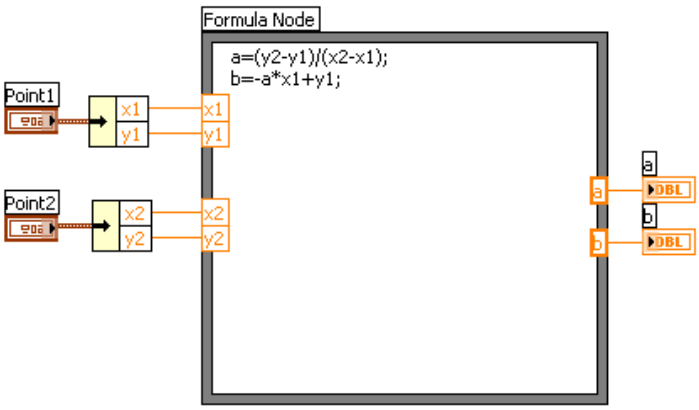


Step 7: Create your C-code inside your Formula Node.

The formula for finding the slope (a) and intercept (b) is as follows:

$$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1), where\ a = \frac{y_2 - y_1}{x_2 - x_1}$$

The Block Diagram could look something like this:



Step 8: Create the Input and Output Connectors. Right-click on the little icon in the upper right corner and select “Show Connector”.

Step 9: Create an Icon using the Icon Editor. Right-click on the little icon in the upper right corner and select “Edit Icon…”.

Step 10: Create a new VI that you use to test your Sub VI.