LabVIEW Exercises

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)

<u>Step 3:</u> Create your Front Panel with your necessary Controls and Indicators.

Example:

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<u>Step 4:</u> Switch to your Block Diagram (Ctrl+E).

<u>Step 5:</u> Add the Formula Node to you Block Diagram:

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Step 6: Add Inputs and Outputs:



<u>Step 7:</u> 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:



<u>Step 8:</u> Create the Input and Output Connectors. Right-click on the little icon in the upper right corner and select "Show Connector".

<u>Step 9:</u> 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.