

# Block Diagram

## Goal

Become familiar with the block diagram and learn to find and use VIs and functions on the Functions palette.

## Description

In this exercise, you create a VI to add or subtract two numbers. Figure 1 and Figure 2 show an example of the completed front panel and block diagram respectively.

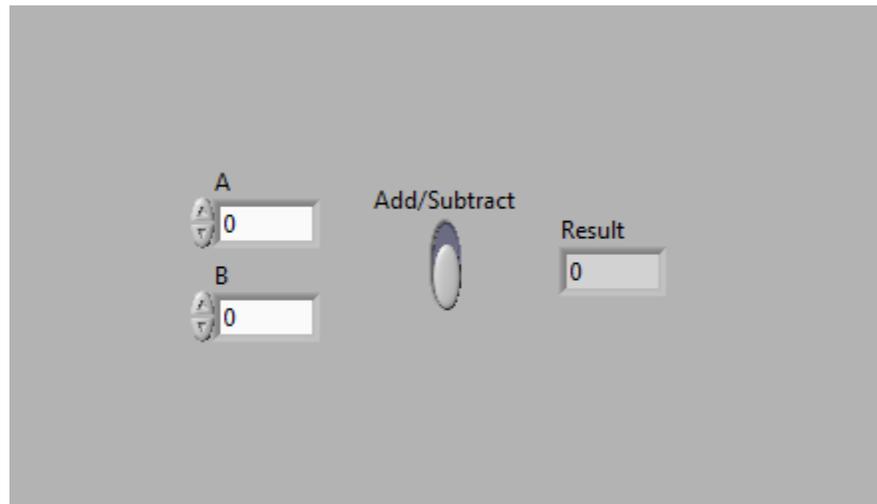


Figure 1. Addition or Subtraction Front Panel

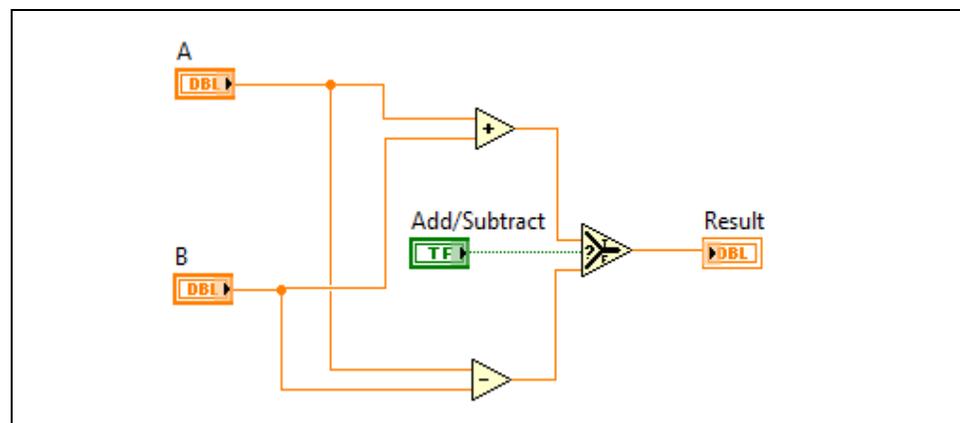


Figure 2. Addition or Subtraction Block Diagram

## Implementation

The files you need to complete this exercise are here: <NI eLearning>\LV Core 1\BD\_Writing LV Programs\Exercise.

1. Open Numeric Controls and Indicators.vi.
  - Open LabVIEW.
  - Select **File»Open**.
  - Select Numeric Controls and Indicators.vi from the <Exercise> directory and click **OK**.
2. Add a Vertical Slide Switch onto the front panel.
  - Select **View»Controls Palette**.
  - Select **Boolean** category.
  - Select and drag the **Vertical Slide Switch** onto the front panel.
3. Add an Add function to the block diagram.
  - Press <Ctrl-E> to switch to the block diagram.
  - Select **View»Functions Palette**.
  - Select the **Numeric** category.
  - Select and drag the **Add** function onto the block diagram.
4. Add a Subtract function onto the block diagram.
  - Select the **Numeric** category.
  - Select and drag the **Subtract** function onto the block diagram.
5. Add a Select function onto the block diagram.
  - Select the **Comparison** category.
  - Choose and drag the **Select** function onto the block diagram.
6. Rename the first numeric control to A.
  - Double-click the label that says Control 1.
  - Enter the text A.



7. Rename the second numeric control to B.
  - Double-click the label that says `Control 2`.
  - Enter the text B.
8. Rename the Vertical Slide Switch to Add/Subtract.
  - Double-click the label that says `Boolean`.
  - Enter the text `Add/Subtract`.
9. Rename the numeric indicator to Result.
  - Double-click the label that says `Indicator`.
  - Enter the text `Result`.
10. Wire the A control to the x input of the Add and Subtract functions.
11. Wire the B control to the y input of the Add and Subtract functions.
12. Wire the output of the Add function to the t input of the Select function.
13. Wire the output of the Subtract function to the f input of the Select function.
14. Wire the Add/Subtract control to the s input of the Select function.
15. Wire the output of the Select function to the Result indicator.
16. Save the VI.
  - Select **File»Save**.
  - Save the VI as `Addition or Subtraction.vi` in the `<Exercise>` folder.

## Test

1. On the front panel change the values of the two controls using the up/down arrows or by typing a numeric value into the text field.
2. Run the VI and observe the operation it performs.
3. Click the Add/Subtract switch to switch the numeric operation and then run the VI again to see how it changes.
4. Compare your VI to the provided Solution VI.
5. Close the VI when you are finished.

## End of Exercise

# Notes

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