

Concept: Parallelism and Dataflow

Goal

Investigate dataflow programming using mathematical calculations in parallel and in series.

Description

In this exercise, you begin with a VI which adds two numbers and displays the result. This VI is modified to demonstrate parallelism and dataflow.

Implementation

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

1. Open Dataflow.vi.
 - ☐ Open LabVIEW.
 - ☐ Select **File»Open**.
 - ☐ Select Dataflow.vi from the <Exercise> directory and click **OK**.
2. Copy the block diagram code.
 - ☐ Switch to the block diagram by pressing <Ctrl-E>.
 - ☐ Select all of the items on the front panel by pressing <Ctrl-A>.
 - ☐ Hold the <Ctrl> key and then drag the selected items to a new location on the block diagram.

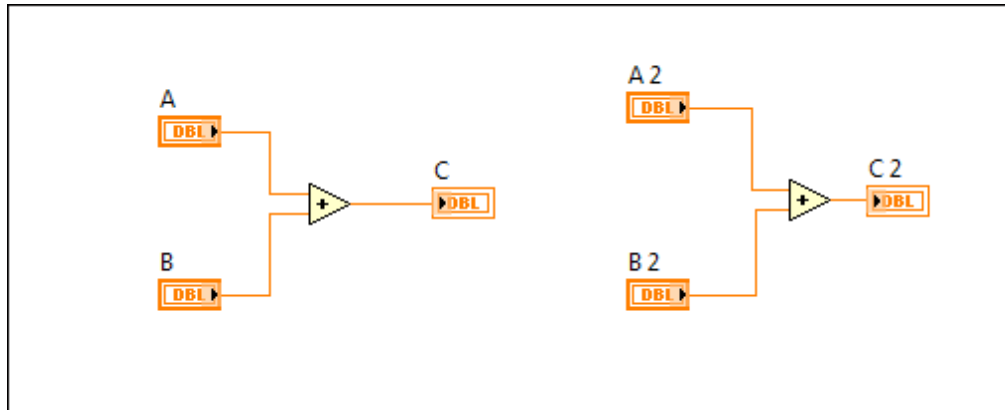


Figure 1. Block Diagram After Modifications



Note When you copy an object the name will be appended by a number.



3. Click the **Highlight Execution** button on the toolbar to enable execution highlighting. When execution highlighting is enabled and the program is run, the data is visible as the code is executed.



4. Click the **Run** button to run the VI. The two processes will execute in parallel as seen in Figure 2.

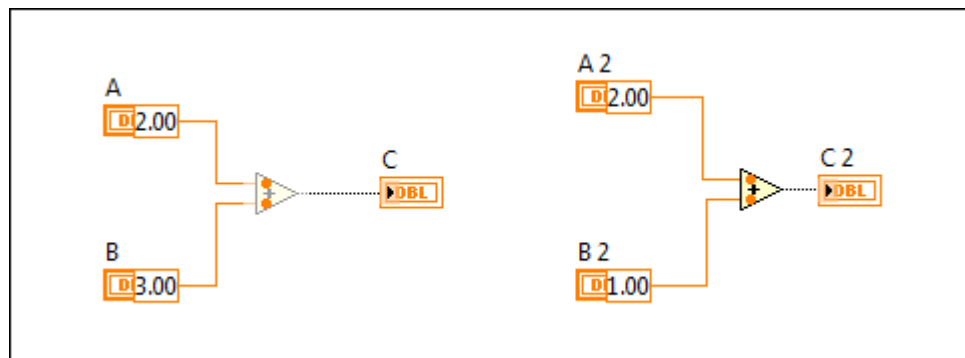


Figure 2. Code Executes in Parallel

The modifications you make below will make the code execute in sequence instead of in parallel.

5. Combine the two processes.

☐ Select the **B2** control.

☐ Press the <Delete> key.

☐ Move the cursor to the wire leading to the input of **C**, where the cursor will change to a wiring spool as seen on the left.



- ☐ Wire the value of **C** into the y-input of the second Add function.

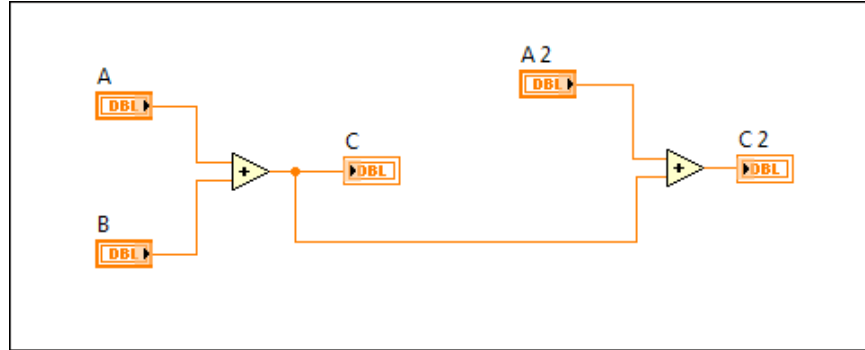


Figure 3. Block Diagram After Changes



- Click the **Run** button to run the VI.
 - ☐ This code will run in sequence because of the data dependency.
 - ☐ Observe the dataflow. **C** outputs the value of **A+B**. **C2** will output the value **A+B+A2**. Figure 4 shows this.

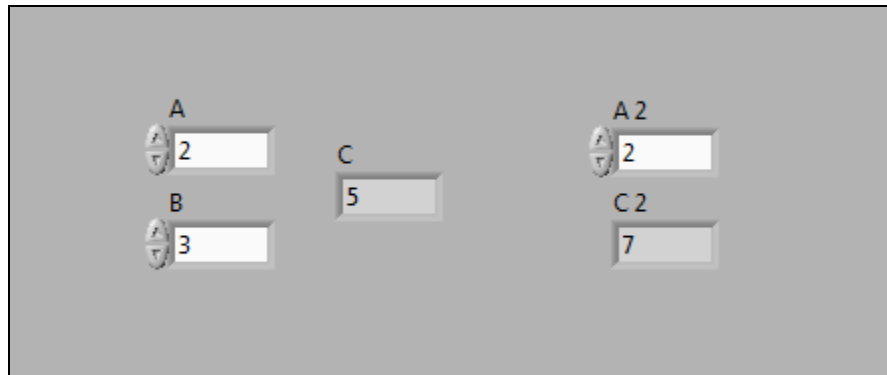


Figure 4. Dataflow Front Panel

- Save the VI.
- Compare your VI to the provided solution VI.
- Close the VI when you are finished.

End of Exercise

Notes
