

Concept: Array Functions

Goal

Use functions in the Array sub-palette to manipulate an array.

Scenario

Modify the Array Investigation VI so that the VI creates a new array that contains the contents of the third row, and another new array that contains the contents of the second column.

Then, modify the resulting VI to replace the second row of data with an array of the same size as the second row, with a value of zero in each element.

Part 1: Implementation

1. The files that you need to complete this exercise are here:
<NI eLearning>\LV Core 1\Array Functions\Exercise.
2. Open Array Investigation.vi located in the <Exercise> directory.
3. Save the VI as Array Investigation Part 3.vi.
4. Open the block diagram of the VI.

In the following steps, you build a block diagram similar to that shown in Figure 1.

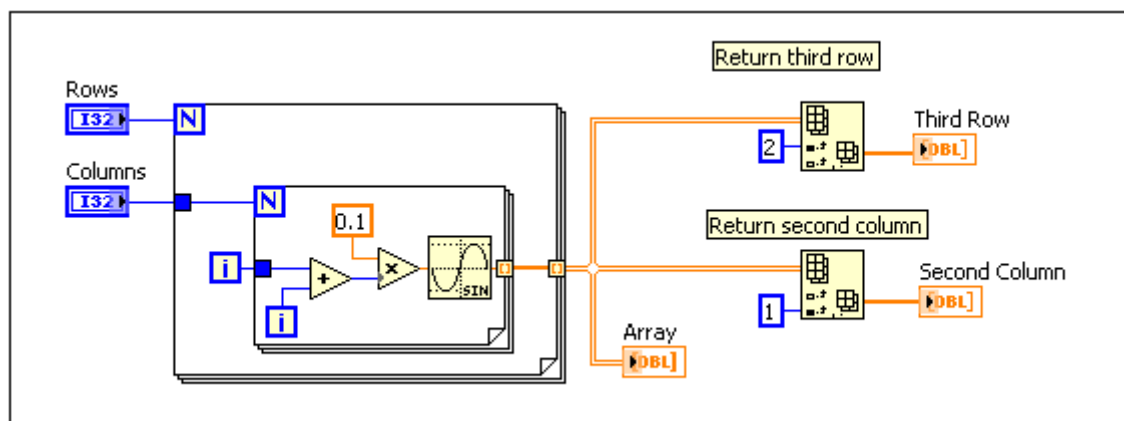


Figure 1. Array Investigation Part 3 VI Block Diagram

5. Retrieve the third row of data from Array using the Index Array function.



- ☐ Add the Index Array function to the block diagram.
- ☐ Wire Array to the array input of the Index Array function.



Tip The Index Array function accepts an n -dimensional array. After you wire the input array to the Index Array function, the input and output terminal names change to match the dimension of the array wired. Therefore, wire the input array to the Index Array function before wiring any other terminals.

- ☐ Right-click the **index(row)** input of the Index Array function.
- ☐ Select **Create»Constant** from the shortcut menu.
- ☐ Enter 2 in the constant to retrieve the third row. Remember that the index begins at zero.
- ☐ Right-click the **subarray** output of the Index Array function.
- ☐ Select **Create»Indicator** from the shortcut menu.
- ☐ Name the indicator `Third Row`.

6. Retrieve the second column of data from the Array using the Index Array function.



- ☐ Add another Index Array function to the block diagram.
- ☐ Wire Array to the array input of the Index Array function.
- ☐ Right-click the **disabled index(col)** input of the Index Array function.
- ☐ Select **Create»Constant**.
- ☐ Enter 1 in the constant to retrieve the second column because the index begins at zero.
- ☐ Right-click the **subarray** output of the Index Array function.
- ☐ Select **Create»Indicator**.
- ☐ Name the indicator `Second Column`.

7. Save the VI.

8. Switch to the front panel.
9. Enter values for Rows and Columns.
10. Run the VI.

Part 2: Implementation

1. With the previous VI open, select **File»Save As**.
2. Select the **Substitute copy for original** option and save the VI as Array Investigation Part 4.vi.
3. Open the block diagram of the VI.

In the following steps, you build a block diagram similar to that shown in Figure 2.

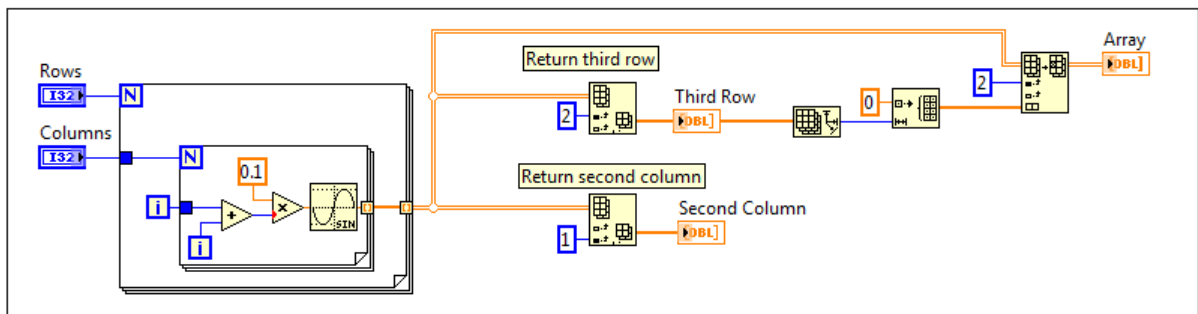


Figure 2. Array Investigation Part 4 VI Block Diagram

4. Retrieve the number of elements in the third row of data using the Array Size function.



- ☐ Add the Array Size function to the block diagram.
- ☐ Wire Third Row to the array input of the Array Size function.

5. Create an array of equal size as the Third Row array using the Initialize Array function.



- ☐ Add the Initialize Array function to the block diagram.
- ☐ Wire the size(s) output of the Array Size function to the dimension size input of the Initialize Array function.
- ☐ Right-click the **element** input of the Initialize Array function.
- ☐ Select **Create»Constant** from the shortcut menu.
- ☐ Enter 0 in the constant to create an array with values of 0.

6. Replace the third row of data in the original array with the Replace Array Subset function.



- ☐ Add the Replace Array Subset function to the block diagram.
 - ☐ Wire the 2D array output from the For Loop to the array input of the Replace Array Subset function.
 - ☐ Wire the initialized array output of the Initialize Array function to the new element/subarray input of the Replace Array Subset function.
 - ☐ Right-click the **index(row)** input of the Replace Array Subset function.
 - ☐ Select **Create»Constant** from the shortcut menu.
 - ☐ Enter 2 in the constant to replace the third row.
7. Output the new array.
 - ☐ Delete the section of wire going into the Array indicator.
 - ☐ Move the indicator to the right of the Replace Array Subset function.
 - ☐ Wire the output array output from the Replace Array Subset function into the Array indicator.
 8. Save the VI.
 9. Switch to the front panel.
 10. Run the VI. Notice that the third row has been replaced with zeros.

End of Exercise

Notes
