

SVKM'S NMIMS

Mukesh Patel School of Technology Management & Engineering

Department of Mechatronics Engineering

Signal Processing Lab

Subject- Virtual Instrumentation

EXPERIMENT NO. 6

Aim:

- 6a – Create a 1 dimensional numeric array of 7 elements using random numbers ranging from 10-99. Use for loop. Also obtain reverse of the array.
- 6b – Create 1D numeric array which consists of 10 elements and rotate it 10 times. For each rotation display the equivalent binary number of 1st array element in the form of boolean array. Also display reverse boolean array. Provide delay to view the rotation.
- 6c – Create a VI 2D array (5*5) using random numbers and also find its transpose and determinant

Software Used : PC with software (NI LabVIEW)

Theory:

In LabVIEW, an array is a data structure that allows you to store and manipulate a collection of elements of the same data type. Arrays can be one-dimensional, two-dimensional, or multi-dimensional, depending on the number of dimensions required for the particular application.

An array in LabVIEW can be created by selecting the array type from the Functions Palette and specifying the number of dimensions and the data type of the elements in the array. Once an array is created, you can manipulate the elements of the array using various array functions such as indexing, concatenation, and subset selection.

Indexing is one of the most commonly used array functions in LabVIEW, which allows you to access individual elements of an array by specifying the index number of the element. The index number starts from 0 for the first element and increments by 1 for each subsequent element. You can also use a range of indices to extract a subset of elements from the array.

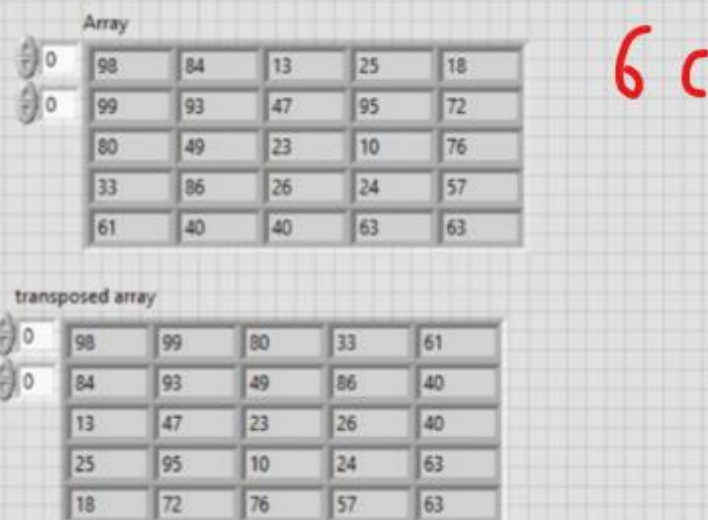
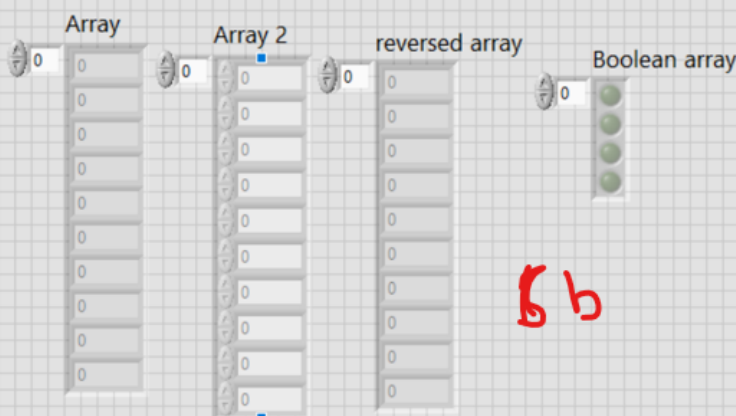
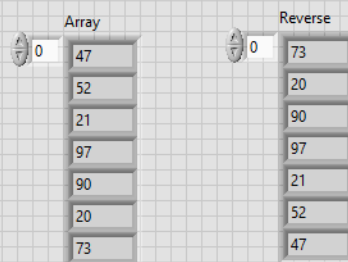
Concatenation is another useful array function in LabVIEW, which allows you to combine two or more arrays into a single array. This can be useful when you need to merge multiple sets of data into a single array, such as combining multiple sensor readings into a single data set.

Subset selection is a function that allows you to select a subset of elements from an array based on a particular condition. For example, you can use subset selection to extract only the elements of an array that meet a certain criteria, such as being above or below a certain threshold.

Arrays are a powerful and versatile data structure in LabVIEW, and they are widely used in various applications such as data acquisition, signal processing, and control systems. They allow you to organize and manipulate large sets of data efficiently, and with the many array functions available in LabVIEW, you can perform a wide range of operations on arrays with ease.

Front Panel:

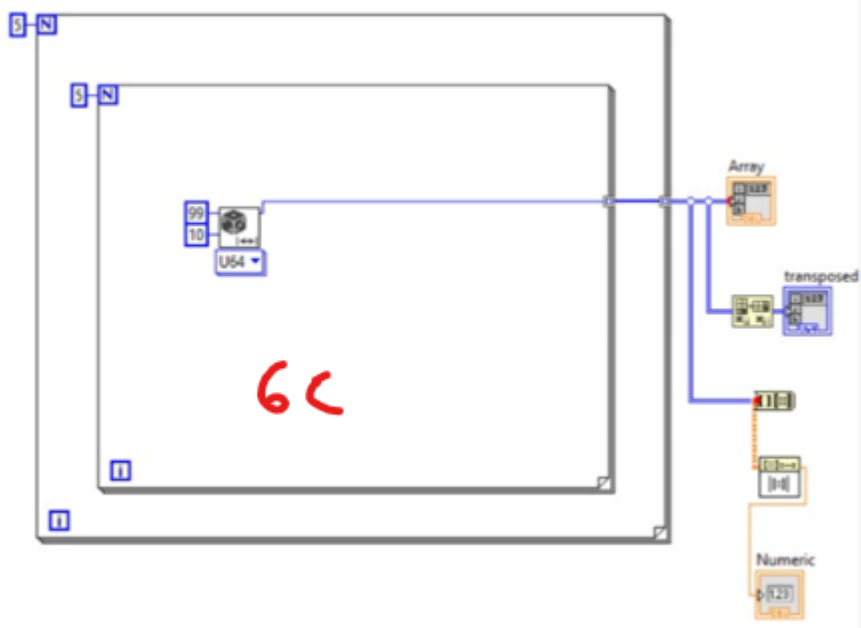
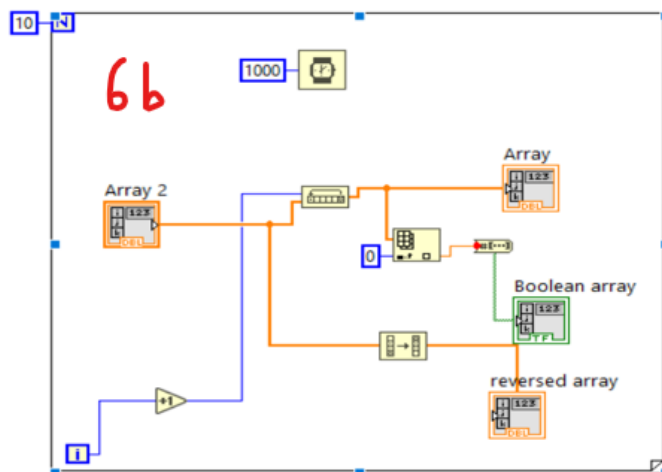
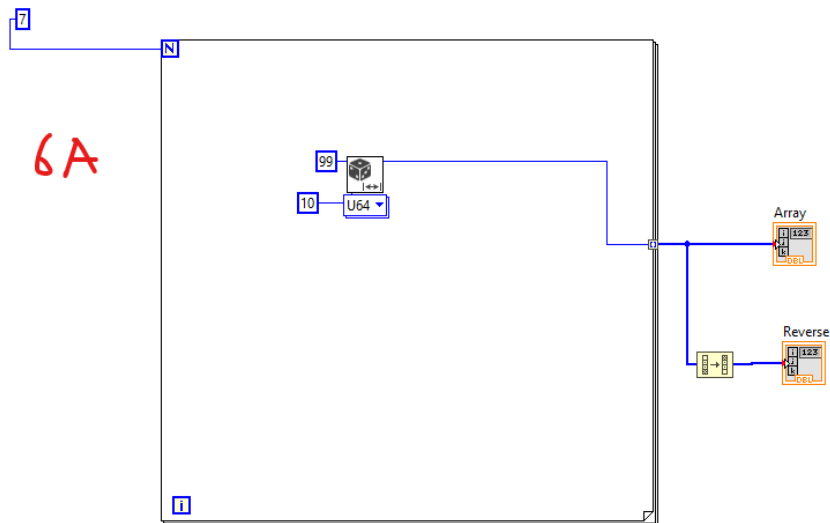
Experiment 6a: Create a 1 dimensional numeric array of 7 elements using random numbers ranging from 10-99. Use for loop. Also obtain reverse of the array.



Numeric
1.86373E+8

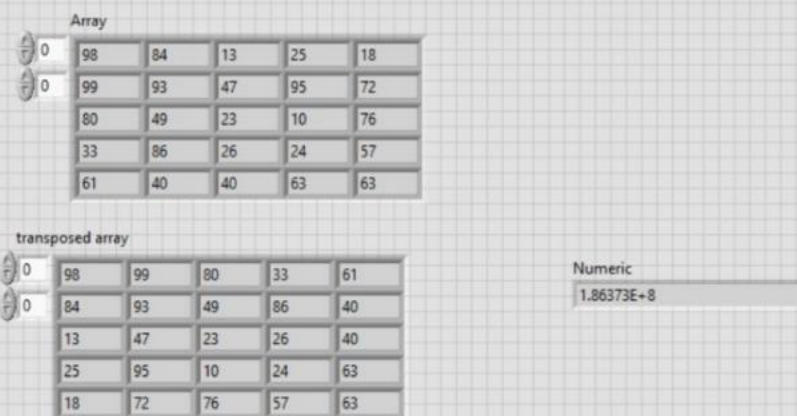
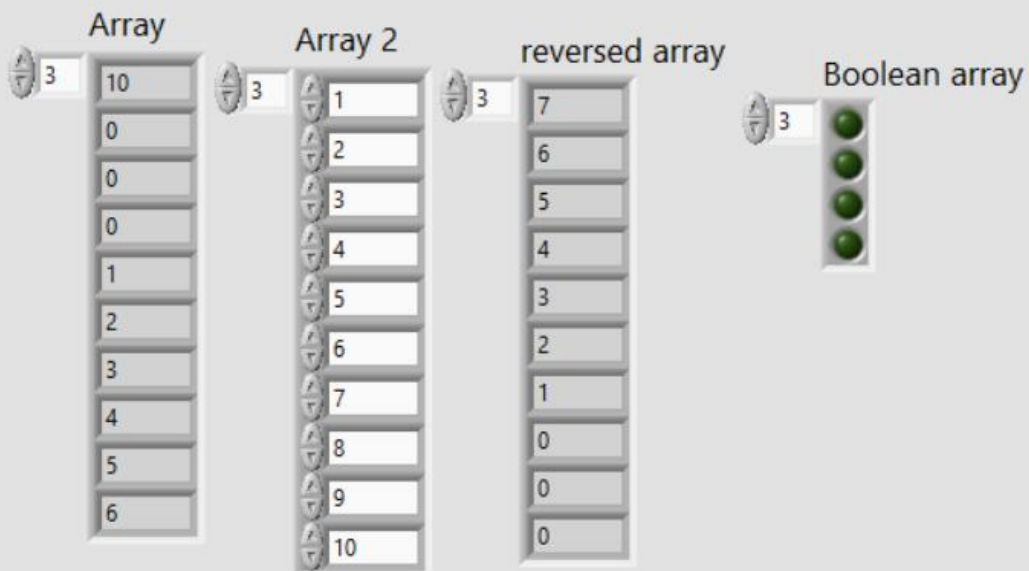
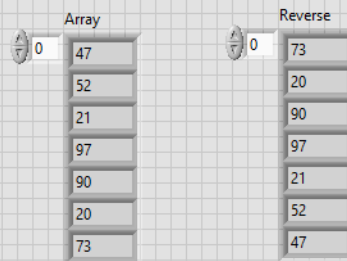
H006
Adnan Amir

Block Diagram:



Output :

Experiment 6a: Create a 1 dimensional numeric array of 7 elements using random numbers ranging from 10-99. Use for loop. Also obtain reverse of the array.



Conclusion: The experiment was successfully performed in LabView.