**Introduction to Computing**

**Lab Manual**

**Week 03 – Lab 02**

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**Arrays - 2**

**Session: FALL 2012**

**Faculty of Information Technology**

**UCP Lahore Pakistan**

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# Objective

* Understanding the working of arrays.
* To work with arrays
* To be able to write a C++ program using arrays.

# Things to remember:

* Indent your code
* Comment your code
* Use meaningful variable names
* Plan your code carefully on a piece of paper before you implement it

# Lab Task 1

Write a C++ program to get 15 **POSITIVE** integer values from user and

* Store these values into an array if and only if the new value does not exist into the array.
* If the value exists into the array and array is not full, your program should display “Sorry: Value Already Exist”.
* Once the array is full your program should replace overwrite the value at the last index of the array and display a message “Oops: Array overflow”.
* If user enters negative integer value, your program should take its modulus with maximum size of array, use the result as index and delete the value from that index.

# Lab Task 2

Write a program that reads numbers from an array and graphs the information in the form of a bar chart or histogram—each number is printed, then a bar consisting of that many asterisks is printed beside the number.

**Expected output:**

Element Value Histogram

0 19 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

1 3 \*\*\*

2 15 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

3 7 \*\*\*\*\*\*\*

4 11 \*\*\*\*\*\*\*\*\*\*\*

5 9 \*\*\*\*\*\*\*\*\*

6 13 \*\*\*\*\*\*\*\*\*\*\*\*\*

7 5 \*\*\*\*\*

8 17 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

9 1 \*

# Lab Task 3

(a) Twenty-five numbers are entered from the keyboard into an array. The number to be searched is entered through the keyboard by the user. Write a program to find if the number to be searched is present in the array and if it is present, display the number of times it appears in the array.

(b) Twenty-five numbers are entered from the keyboard into an array. Write a program to find out how many of them are positive, how many are negative, how many are even and how many odd.

# Lab Task 4

**(Using Arrays to Summarize Survey Results)** Write a program using arrays to summarize the results of data collected in a survey. Consider the problem statement. Forty students were asked to rate the quality of the food in the student cafeteria on a scale of 1 to 10 (1 means awful and 10 means excellent). Place the 40 responses in an integer array and summarize the results of the poll. Summarize the number of responses of each type (i.e., 1 through 10). The array ***response*** is a 40-element array of the students’ responses. Use an 11-element array frequency to count the number of occurrences of each response. Ignore frequency [0] because it is logical to have response 1 increment frequency [1] rather than frequency [0]. Use each response directly as the subscript in the frequency array.

**Expected output:**

**Rating Frequency**

1 2

2 2

3 2

4 2

5 5

6 11

7 5

8 7

9 1

10 3