

# **Programming Assignment-V**

(Programming using JAVA)

## **One-Dimensional Arrays:**

1. Write a java program to create an array of size N and store the random values in it and find the sum and average.
2. Write a java program to input 10 integers from keyboard and store them into an array. Then find out how many of them are positive, how many are negative, how many are even and how many are odd.
3. Input 10 integers from the keyboard into an array. The number to be searched is entered through the keyboard by the user. Write a java 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.
4. Write a java program to find the maximum and minimum and how many times they both occur in an array of n elements. Find out the positions where the maximum first occurs and the minimum last occurs.
5. Write a java program to find the second largest value in an array of n elements.
6. There are 500 light bulbs (numbered 1 to 500) arranged in a row. Initially they are all OFF. Starting with bulb 2, all even numbered bulbs are turned ON. Next, starting with bulb 3, and visiting every third bulb, it is turned ON if it is OFF, and it is turned OFF if it is ON. This procedure is repeated for every fourth bulb, then every fifth bulb, and so on up to the 500<sup>th</sup> bulb. Write a java program to determine which bulbs are OFF at the end of above exercise.

## **Two-Dimensional Arrays:**

7. Suppose a teacher with M students and N Marks of each student is maintained in an (M+1)-by-(N+1) array, reserving the last column for each student's average mark and the last row for average test mark. Write a java program to compute the average mark for each student (average values of each row) and calculate the average test mark (average values of each column).
8. Write a java program to find the addition of two matrices. After inserting the two matrices first display the both matrices and then add them and show the result.
9. Write a java program to transpose a square two-dimensional array in place without creating a second array.
10. Write a java program to multiply two rectangular matrices that are not necessarily square.

Note: For the dot product to be well-defined, the number of columns in the first matrix must be equal to the number of rows in the second matrix. Print an error message if the dimensions do not satisfy this condition.