

Hands-On Activities – Milestone 1

Activity 1:

Design an algorithm to accept 25 integer elements for an array then find the maximum number in the set and display it.

Activity 2:

Design an algorithm to accept 10 integer elements for an array and then find the number of times the number with the maximum value occurs in the array.

For Example –

If input elements are: 1, 2, 5, 6, 8, 9, 9, 3, 4, and 2

Output must be 2

Reason: The number with the highest value in the array is 9. It occurs 2 times in the array.

Activity 3:

Design an algorithm to print a pyramid based on level entered by the user.

Sample output is shown below.

Enter the level of pyramid: 10

The pyramid is -

```
      1
     232
    45654
   7890987
  123454321
 67890109876
2345678765432
901234565432109
78901234543210987
6789012345432109876
```

Activity 4:

Design an algorithm to calculate the factorial of a number N. The value of N is provided as an input by the user.

Activity 5:

Design an algorithm which accepts 10 integer values, calculates the average and prints it.

Activity 6:

Design an algorithm to accept a given string from the user. The algorithm must then remove characters from the string which appear more than once.

For Example –

If input string is – malayalam

The output must be – maly

Activity 7:

A train running at the speed of x km/hr crosses a pole in y seconds. Design an algorithm to accept x and y as inputs from the user and then calculate the length of the train.

Note: values of x and y must be positive and non-zero.

Activity 8:

A train X m long passes a man, running at 5 km/hr in the same direction in which the train is going, in Y seconds. Design an algorithm to accept the values of X and Y as input from the user and then calculate the speed of the train.

Note: values of X and Y must be positive and non-zero.

Activity 9:

In an election between two candidates, one got 55% of the total valid votes, 20% of the votes were invalid. The total number of votes was X (value greater than 5000), design an algorithm to accept a value for X from the user and calculate the number of valid votes that the other candidate got.

Activity 10:

Design an algorithm to find the least perfect square, which is divisible by each of 21, 36 and 66.

Activity 11:

Ravi and Kumar are working on an assignment. Ravi takes 6 hours to type 32 pages on a computer, while Kumar takes 5 hours to type 40 pages. Design an algorithm to calculate how

much time they will take, working together on two different computers to type an assignment of 110 pages.

Activity 12:

Design an algorithm to accept a number from the user and check if it a prime number or not.

Activity 13:

The difference between the length and breadth of a rectangle is 23 m. If its perimeter is 206 m, design an algorithm to calculate its area.

Activity 14:

Design an algorithm to find the greatest number that will divide 43, 91 and 183 so as to leave the same remainder in each case.

Activity 15:

The difference between a two-digit number and the number obtained by interchanging the positions of its digits is 36. Design an algorithm to find the difference between the two digits of that number.