Questions on Programming

Day - 1

1. Write a program to accept a number and determine whether it is a prime number or not.

2. Write a program to accept a number "*n*" from the user; then display the sum of the series $1+1/2+1/3+\ldots\ldots+1/n$.

3. Write a program to accept 2 different numbers from the user and print all the prime numbers between these 2 numbers.

4. Write a program to accept a number "*n*" from the user; then display the sum of the series $1/2^3+1/3^3+1/4^3\ldots\ldots+1/n^3$.

5. Write a program to print the Fibonacci series up to the number **34**.
   (Example: 0,1,1,2,3,5,8,13,… The Fibonacci Series always starts with 0 and 1, the numbers that follow are arrived at by adding the 2 previous numbers.)

6. Write a program to accept a number from the user; then display the reverse of the entered number.
   (Example: Entered number = 12345; Reversed number = 54321)

7. Write a program to accept a number from the user and determine the sum of digits of that number. Repeat the operation until the sum gets to be a single digit number.

8. Write a program to accept 2 numbers "*m*" and "*n*" from the user, and determine the value of m^n without using predefined functions.

9. Write a program to accept a five digit number, increment each digit by 1 and then display the new number formed. Note that digit 9 gets incremented to 0.

   Example:
   Input: 14389
   Output: 25490

10. Write a program to print the following output

    pattern. 1
       121
      12321
     1234321
    123454321

Day-2:

1. Write a method which accepts an array of integers as a parameter and returns the second highest element in the given array. If there are multiple such element, it can be printed just once.

2. Write a method which accepts an array of consecutive integers with just one integer missing as a parameter and returns that missing integer. Consider the following conditions:
   a. The entered integers are in an ascending order.
   b. The entered integers are in a descending order.
   c. The entered integers are not in any particular order.

   Example: Input array is [2,3,4,5,6,8,9] Returned value: 7

3. Learn and implement the following sorting techniques: Bubble Sort, Insertion Sort, Merge Sort.

4. Write a method that accepts two parameters: an integer and an array of integers. Search for the entered integer value in the array of integers, and return "***True***" if present, "***False***" if not present. Use the following search techniques: Linear Search, Binary Search.

5. Write a method that accepts an integer as a parameter and returns the identity matrix of the order as that of the entered integer.
   Note: An identity matrix has equal number of rows and columns, its diagonal elements have a value 1 and all other elements have a value 0.

6. Write a program to find the dates when the value of USD against INR was maximum and minimum over the period shown below.

Date	Open	High	Low
22/01/2019	71.51	71.51	71.14
21/01/2019	71.24	71.535	71.125
20/01/2019	71.255	71.255	71.24
18/01/2019	71.04	71.274	70.987
17/01/2019	71.146	71.416	70.972
16/01/2019	71.11	71.265	70.934
15/01/2019	70.75	71.156	70.723
14/01/2019	70.4	70.95	70.36
13/01/2019	70.38	70.38	70.38
11/01/2019	70.43	70.602	70.356
10/01/2019	70.53	70.655	70.318
09/01/2019	70.11	70.647	70.05
08/01/2019	69.806	70.24	69.765
07/01/2019	69.532	69.953	69.255
06/01/2019	69.535	69.535	69.535
04/01/2019	70.115	70.145	69.55
03/01/2019	70.3	70.531	70.034
02/01/2019	69.531,	70.255,	69.469
01/01/2019	69.635	69.745	69.435

7. Write a program to find the frequency of each word that appears in the string of words input by the user.

8. Write a program to find the number of vowels and consonants in the given string.

9. Write a program to display all the permutations of the given string.

10. Write a program to determine the count of palindromes in the given string.

Day-3:

1. **Write programs to perform the following tasks:**
    a. **Checking for palindrome** – The program should accept an integer as the parameter. If the entered number is a palindrome, the program should return the value "*true*", else it should return the value "*false*".
    b. **GCD of two numbers** – The program should accept two integers as parameters and return their GCD as the output.
    c. **Factorial of a number** – The program should accept an integer as the parameter and return its factorial value.

2. **Write programs to perform the following functions:**
   a. **Biggest element of an array** – The program should accept an integer array as the parameter and return the biggest element of the input array.
   b. **Smallest element of an array** – The program should accept an integer array as the parameter and return the smallest element of the input array.
   c. **Sum of the elements of an array** – The program should accept an integer array as the parameter and return the sum of all the elements of the input array.
   d. **Average of the elements of an array** – The program should accept an integer array as the parameter and return the average of all the elements of the input array.
   e. **Searching for an element in an array** – The program should accept an integer array and an integer as two parameters. It should then search for the entered integer in the integer array. If found, the program should return the value "*true*", else it should return the value "*false*".
   f. **Reversing the elements of an array** – The program should accept an integer array as the parameter. It should then reverse the elements of the input array and display the reversed array.
   g. **Shuffling the elements of an array** – The program should accept an integer array as the parameter. It should then shuffle the elements of the input array and display the shuffled array.

3. **Write a program to generate a fancy number for a new vehicle considering the following restraints:**
    a. The fancy number should have 4-digits.
    b. The sum of these 4-digits should be 12.
    c.   The 3rd digit should be equal to the difference between the 1st and the 2nd digit.
    d.   The 4th digit should be equal to the sum of the 1st and the 3rd digit.

   The program should be able to generate all the possible 4-digit numbers that meet the above listed criteria.

4. **Write a algorithm to accept an integer array (two dimensional) as the parameter and find the min, max, each row, column min and max elements of the given array.**
   Input: [[0
   1 2 3] [3
   4 5 5]

```
    [6 7 8 8]
    [9 0 1 9]]
```

Output:
```
Max : 9
Min : 0
Col Wise Min:   [0 0 1 3]
Col Wise Max: [9 7 8 9]
Row Wise Max: [3 5 8 9]
Row Wise Min: [0 3 6 0]
```

Source :- Lakshman Sir GitHub

Solutions :- Click here