**Assignment No. 1**

**PF(A), Fall 2018**

**Submission Time: Friday 30,2018 till 11:00 pm**

**Q1.**Write a program in C++ to calculate the series (1) + (1+2) + (1+2+3) + (1+2+3+4) + ... + (1+2+3+4+...+n). Print the output as shown below

**Sample Output:**Please enter the value for nth term: 5  
1 = 1   
1+2 = 3   
1+2+3 = 6   
1+2+3+4 = 10   
1+2+3+4+5 = 15   
The sum of the above series is: 35

**Q2.**Write a program in C++ to find the sum of series 1 – X2/2! + X4/4! – X6/6! + .... upto nth term.

**Sample Output:**Please enter the value of X: 3  
Please enter the value for nth term: 4   
term 1 value is: 1   
term 2 value is: -4.5   
term 3 value is: 3.375  
term 4 value is: -1.0125   
The sum of the above series is: -1.1375

**Q3.**Write a program in C++ to display the sum of the series [ 9 + 99 + 999 + 9999 ...] of n terms.

**Sample Output:**Please enter the number of terms: 5  
9 99 999 9999 99999   
The sum of the above series is: 111105

**Q4.**Write a C++ program to find the most occurring element in an array of 20 integers given in a file.

**Sample Output:**Original array: 4 5 9 12 9 22 45 7 9 3 21 12 45 9 9 2 1 5 7 13

Most occurred number: 9

**Q5.**Write a C++ program to separate even and odd numbers of an array of integers. Put all even numbers first, and then odd numbers. (Read the numbers from a file.)

**Sample Output:**Original array: 4 5 9 12 9 22 45 7 9 3 21 12 45

Array after separation: 4 12 22 12 5 9 9 45 21 9 3 7 45

**Q6.** Write a C++ program to find a number which occurs odd number of times in a given array of positive integers. In the said array all other numbers occur even number of times. (Read the numbers from a file.)

**Sample Output:**Original array: 4 5 4 12 9 3 9 12 3 5 12

Number which occurs odd number of times: 12

**Q7.** Write a C++ program to find and print all unique elements of a given array of integers. (Read the numbers from a file.)

**Sample Solution:**

Original array: 1 5 7 5 8 9 11 11 2 5 6

Unique elements of the array: 1 5 7 8 9 11 2 6

**Q8.** Write a C++ program to find the number of pairs of integers in a given array of integers whose sum is equal to a specified number. (Read numbers from array.)

**Sample Solution:**

Original array: 1 5 7 5 8 9 11 12

Please enter the pair sum: 12

1,11

5,7

7,5

Number of pairs whose sum equal to 12: 3