National University of Computer and Emerging Sciences (FAST-NU), Lahore

BDS-1D1 – Programming Fundamentals

Fall 2021

While Loops

Instructions

- For each problem, your filename should be "rollno-qProblemNumber".cpp. e.g For Problem 1, create "l120012-q1.cpp".
- Zip all files in a folder and your submission zip filename must be your rollno. e.g "l210001.zip". Note your zip file shall contain all the .cpp files for the problems you solved. Submit the zip file on google classroom.
- Plagiarism is strictly prohibited.
- Good Luck :)

Exercise

Note: Write all the codes in the C++ language using while loops.

Problem 1: Write a program that prompts the user to input a positive integer. Print numbers from 0 to that number.
Input:
Enter Number: 4
Output:

0 1 2 3 4

Problem 2: Write a program that prompts the user to input a positive integer. It should then print the multiplication table of that number.
Input:
Enter Number: 3
Output

3 * 1 = 3
3 * 2 = 6
3 * 3 = 9
3 * 4 = 12
3 * 5 = 15
3 * 6 = 18

3 * 7 = 21
3 * 8 =24
3 * 9 = 27
3* 10 = 30

Problem 3: Write a program that prompts the user to input a positive number and its power. Compute the number raised to the power. **Note**: Power will always be in range (1, 20)
Input:
Enter Number: 2
Enter Power: 8
Output
2 raised to the power 8 : 256

Problem 4: In this task, you would ask the user to enter how many numbers he wants to type. You will take all the inputs from the user and print the average and sum of the numbers.
Input:
Enter Length: 3
Enter Number 1: 2
Enter Number 2: 4
Enter Number 3: 3
Output
Sum : 9
Average : 3

Problem 5: In mathematics, the factorial of a positive integer n, denoted by n!, is the product of all positive integers less than or equal to n. For Example 5! = 5 * 4 * 3 * 2 *1 Write a program to compute factorial to an integer that is entered by the user. If the number is less than zero display "invalid Input" Note : 0! = 1
Input:
Enter Number: 4
Output:
Factorial : 24

Problem 6: Write a program to calculate the sum of the following series where n is input by user.

1 + 1/2 + 1/3 + 1/4 + 1/5 +……1/n

Input:
Enter N: 3
Output:
Answer: 1.833

Problem 7: Write a program to solve the given sequence till n where n is input by the user.

2 6 12 20 30 42…

Input:
Enter N: 5
Output:
Answer: 2 6 12 20 30

Problem 8: Write a program to solve the given sequence till n where n is input by the user.
Hint: (Number * Number + 5)

6 9 14 21 30 …

Input:
Enter N: 3
Output:
Answer: 6 9 14

Problem 9: Write a program that prompts the user to input a positive number and sum its individual bits. (You have to take only one input) **Hint:** Use modulus operator.
Input:
Enter Number: 549
Output:
Answer: 9 + 4 + 5 = 18

Problem 10: Write a program to print Fibonacci series of n terms where n is input by user. **Note:** Input will always be greater than 3 :

0 1 1 2 3 5 8 13 21 …..

Input:
Enter N: 4
Output:
0 1 1 2