

Lab 4: Programming Fundamentals

Loops I

Instructions

- Make your own files like Q1.cpp, Q2.cpp, zip the files with your roll number and upload on the slate. Someone failed to upload the task, will be awarded with zero marks.
- *Apply proper checks and necessary conditions while taking input and calculating a value*
- *Use proper Indentation in your code. Marks will be deducted if proper indentation is missing.*
- Please read the questions carefully, read them twice even thrice to understand them completely.
- In case of any query, please raise your hands and we will be there to solve your query.
- Identify the appropriate data types of variables that you want to use in the program.
- Always print the appropriate messages for the inputs and outputs of program in proper formatted style.
- *You are required to complete all the tasks in lab time. Evaluation will be started 30 minutes before end time.*
- You are advised to delete your code while you are leaving lab, in case of plagiarism you can be awarded with F grade in lab.
- Please concentrate, understand and code. Good Luck :)

Q 1. Write a program that takes a number (n) and a character (c) and displays this character n times e.g.

Input Number: 5

Input Character: *

Output: * * * * *

Q 2. Write a program that takes a number and displays a sequence e.g.

Input number : 10

Output Sequence: 0,1,2,3,4,5,6,7,8,9

Q 3. Write a program that takes a number and displays two sequences e.g.

Input number : 10

Output Sequence1: 1,2,3, 4, 5, 6, 7, 8, 10

Output Sequence2: 0,1,3,6,10,15,21,28, 36, 46

Q 4. Write a program that asks user a number and display factorial of that number.

Q 5. Extend program 4 and display sum of series till that number.

Q 6. Write an input validation loop that asks the user to enter Y, y, N, or n.

Q 7. Write a program that displays a menu allowing the user to select an addition, subtraction, multiplication, or division problem. The final selection on the menu should let the user quit the program. After the user has finished the math problem, the program should display the menu again. This process is repeated until the user chooses to quit the program.

Input Validation: If the user selects an item not on the menu, display an error message and display the menu again.

Q 8. Write a program with a loop that lets the user enter a series of integers. The user should enter

99 to signal the end of the series. After all the numbers have been entered, the program should display the largest and smallest numbers entered.

Q 9. Write the algorithm of program that evaluates the series $5-10+7+15+9-20+11+25+$ up to x terms, where the value of x is taken as input from the user. For example, the sum of the given series Up to 3 terms should give 2 as output ($5-10+7=2$), similarly, the sum of this series up to 4 terms should give 17 as output ($5-10+7+15=17$), etc.

Q 10. Write a program that will select an alphabet (a-z) randomly and an order digit randomly then displays following or previous alphabets depending upon order e.g.

Example 1:

Random Alphabet : s

Random Order: 1

Output: t,u,v,w,x,y,z

Example 2:

Random Alphabet : s

Random Order: 0

Output: r,q,p,o,n,m,l,k,j,i,h,g,f,e,d,c,b,a