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.

- *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 loop that displays all of the odd numbers, 1 through 49.

Q 2. Write a loop that displays every fifth number, zero through 100.

Q 3. Write a program that will take an alphabet (a-z — A-Z) as input and a input for order and displays following or previous alphabets depending upon order e.g.
Example1:
Alphabet : s
Order: 1
Output: t,u,v,w,x,y,z

   Example2:
Alphabet : s
Order: 0
Output: r,q,p,o,n,m,l,k,j,i,h,g,f,e,d,c,b,a
Same for alphabets from A-Z

Q 4. Write a program that takes a number and displays a sequence e.g.
Input number : 10
Output Sequence: 9,8,7,6,5,4,3,2,1,0

Q 5. Write the algorithm of program that evaluates the series 5-10+7+15+9-20+11+25+ up tox terms, where the valueofx is takenas input from the user. For example, the sum of thegiven series Up to 3 terms should give 2 as output (5-10+7=2),similarly, the sumof this series up to4 termsshould give17asoutput (5-+10+7+15=17), etc.

Q 6. 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 , 9 , 10
Output Sequence2: 0,1,1,2,3,5,8, 13, 21, 34

Q 7.   Writethe algorithm ofaprogram thatasks the user to enter todays sales for five stores (rounded to nearest $100). The program should then displaya bargraph comparingeachstores sales.Create each bar in the bar graph by displaying a row ofasterisks. Eachasteriskshould represent $100 ofsales. Here is an example of the programs output.
Enter todays sales forstore1: 1000 [Enter]
Enter todays sales forstore2: 1200[Enter]
Enter today'ssales for store3: 1800[Enter]
Enter today's sales for store4: 800 [Enter]
Enter today's sales forstore 5: 1900[Enter]
SALES BAR CHART (Each *=$100)
Store1: **********
Store2: ************
Store 3: *****************
Store4: ********
Store5: *******************

Q 8.   Write a program that generates a random number and asks the user to guess what the number is. If the users guess is higher than the random number, the program should display Too high, try again. If the users guess is lower than the random number, the program should display Too low, try again. The program should use a loop that repeats until the user correctly guesses the random number.

Q 9.   Enhance the program that you wrote question 9 so it keeps a count of the number of guesses that the user makes. When the user correctly guesses the random number, the program should display the number of guesses.

Q 10.   Write a program that can be used as a math tutor for a student. The program should display two random numbers (between 0-999) and a random operation (-,+,*,/,%) that is to be evaluated, such as:

$$247$$
$$+ 129$$
$$\overline{}$$
$$=$$

    The program should take answer of above expression as input from student. If the answer is correct, a message of congratulations should be printed and program will display next random expression. If the answer is incorrect, a message should be printed Answer is Wrong: Try Again and program will give one more chance to student to give correct answer and it will show above expression and wait for answer from student if again answer is wrong program print message that You did not know x(one of these -,+,*,/,%) operation. Program will only exit when each operation (-,+,*,/,%) is one time tested.