

National University of Computer and Emerging Sciences



Lab Manual # 5

Programming Fundamentals

(Section BSE- IA)

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Lab Manual

Objectives

The objectives of this lab are to cover the following:

- while loop (page 249 of textbook)
- for loop (page 273 of textbook)

Exercise 1 (while loop):

Write a C++ program that keep taking input numbers from user and terminate the program when user enters -1. Your task is to add all those numbers before -1.

Sample Run

Enter your numbers:

2
5
7
1
5
-1

Output

Sum is 20

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Exercise 2 (for loop):

Write a C++ program that calculates the Product of two numbers WITHOUT using the * operator. Your program must also do input validation and should display an error message in case of negative numbers being input.

Exercise 3 (while):

The greatest common divisor (GCD) of two integers is the largest integer that evenly divides each of the numbers. Write a C++ program that gives the greatest common divisor of two positive integers. Take these two numbers from the user.

Remember that the GCD of two numbers can be computed using Euclidean Algorithm as follows

Euclidean Algorithm Demo:

$$\begin{array}{r} 2 \\ 252 \overline{) 735} \\ \underline{504} \\ 231 \end{array} \rightarrow \begin{array}{r} 1 \\ 231 \overline{) 252} \\ \underline{231} \\ 21 \end{array} \rightarrow \begin{array}{r} 11 \\ 21 \overline{) 231} \\ \underline{21} \\ 21 \\ \underline{21} \\ 0 \end{array}$$

$$\text{GCD}(252, 735) = 21$$

Sample Run:

Input num1: 252

Input num2: 735

Output

GCD: 21

Exercise 4 (for loop):

Write a program in C++ to display the input number in reverse order

Sample Output:

Input a number: 12345

The number in reverse order is: 54321