National University of Computer and Emerging Sciences



Lab Manual

for

Programming Fundamentals

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| Section | BDS-1B1, 1B2 |
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## Objectives

After performing this lab, students will be able to:

* Write C++ Code for the problems involving For loop (Without nesting).
* Break Statement

## Instructions

## For each problem, your filename should be “q Number”.cpp. e.g For Problem 1, create “q1.cpp”.

## Zip all files in a folder and your submission zip filename must be your rollno. e.g “21L1234.zip”. Note your zip file shall contain all the .cpp files for the problems you solved.

## Submit the zip folder on Google classroom.

## Plagiarism is strictly prohibited.

## Good Luck.

## Problems

**Write C++ Code of the following Problems using For Loop.**

**Problem#1**

Write a program that prompts the user to enter a number and prints odd number from 1 to that number and also display their sum.

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| Input | **Output** |
| 10 | **1,3,5,7,9**  **Sum:23** |

**Problem#2**

Write a program to multiply two non-negative numbers without using multiplication operator using For loop.

**Problem#3**

Write a program that prompts the user to enter a number n and prints average of n squared natural number.

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| Input | **Output** |
| 5 | **1,4,9,16,25**  **Avg=11** |

**Problem#4**

Write a program that takes an input and returns the answer for following equation.

(1 + 2 + ... + n)2 – (12+ 22 + ... + n2)

For Example

Enter a number: 5

(1 + 2 + ... + 5)2 – (12+ 22 + ... + 52) =225-55=170

|  |  |
| --- | --- |
| Input | **Output** |
| 6 | **441-36=405** |

**Problem#5**

Write a program that prompts the user to enter a number and print its factors.

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| --- | --- |
| Input | **Output** |
| Input a Number: 16 | **Factors: 1,2,4,8,16** |