National University of Computer and Emerging Sciences

Lab Manual # 06

Programming Fundamentals

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Section	BSE B
Semester	Fall 2022

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Instructions:

Objectives:

In this lab, students will study:

- Control Structures
- 'while' loop
- do-while loop
- for loop
- nested loops

Task 1: Write a program that gets two numbers from the user and displays the result of first number raise to the power of second number using do-while loop.

Task 2: Write a program that gets starting and ending point from the user and displays all odd numbers in the given range using do-while loop.

Task 3: Write a program that inputs table number and length of table and then displays the table using for loop.

Task 4: Write a program that displays the following using do-while loop.

4 4 4 4
3 3 3
2 2
1

Task 5: Write a program that finds the sum of the squares of integers from 1 to n. Where n is a positive value entered by the user

i.e., $1^2 + 2^2 + 3^2 + \ldots\ldots + n^2$.

Task 6: Write a program to calculate and display the sum of the following series using for loop, N must be provided by user.

Ask The user if he wants to enter another number using Do while loop.

Task 7: Write a program to display the following output using nested for loop:

```
= = = = ==  = = = = ==  = = = = ==
=                                =
=                                =
=                                =
=                                =
=                                =
=                                =
=                                =
= = = = ==  = = = = ==  = = = = ==
```

Task 8: Write a program to display multiplication table from 1 to 10.

```
              Table From 1 to 10
   1    2    3    4    5    6    7    8    9    10
   2    4    6    8    10   12   14   16   18   20
   3    6    9    12   15   18   21   24   27   30
   4    8    12   16   20   24   28   32   36   40
   5    10   15   20   25   30   35   40   45   50
   6    12   18   24   30   36   42   48   54   60
   7    14   21   28   35   42   49   56   63   70
   8    16   24   32   40   48   56   64   72   80
   9    18   27   36   45   54   63   72   81   90
   10   20   30   40   50   60   70   80   90   100
```

Task 9: Write a program that receives a user number and tells you if it is a perfect number or not. Search Google for a perfect number.

Task 10: Write a program to print the following output using loop:

```
-   -   -   -   -   *   -   -   -   -   -
-   -   -   -   *   -   *   -   -   -   -
-   -   -   *   -   -   -   *   -   -   -
-   -   *   -   -   -   -   -   *   -   -
-   *   -   -   -   -   -   -   -   *   -
*   -   -   -   -   -   -   -   -   -   *
```

Bonus Question: Write a program that uses nested loops to display the following pattern:

```
==========================
==========    ==========
=========      =========
========        ========
=======          =======
======            ======
=====              =====
====                ====
===                  ===
==                    ==
=                      =
==                    ==
===                  ===
====                ====
=====              =====
======            ======
=======          =======
========        ========
=========      =========
 ==========  ==========
==========================
```