# National University of Computer and Emerging Sciences



# Lab Manual # 6

# Programming Fundamentals

# (Section BCS- 1B)

| Course Instructor | Dr. Aamir Wali |
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| Lab Instructor(s) | Ms. Hira Butt<br>Ms. Arfa Masood |
| Section | BCS-1B |
| Semester | Fall 2022 |

Department of Computer Science

FAST-NU, Lahore, Pakistan

# Lab Manual

## Objectives

The objectives of this lab are to cover the following:

- for loop
- Arrays

## Exercise 1:

Write a C++ program in which, take start and end as input from user. Display all perfect numbers (which are sum of its positive divisors except itself) between start and end.

Example:

**Sample Input:**
Enter start value: 1
Enter end value 10
**Sample Output:**
List perfect number 1 to 10 are: 6

//(As, 6 = 1+2+3)

## Exercise 2:

Write a program in C++ that prints first 10 entries of multiplication tables from 1 to 5

```
------ Table of 1 ------
1 x 1    : 1
1 x 2    : 2
1 x 3    : 3
1 x 4    : 4
1 x 5    : 5
1 x 6    : 6
1 x 7    : 7
1 x 8    : 8
1 x 9    : 9
1 x 10   : 10
------ Table of 2 ------
2 x 1    : 2
2 x 2    : 4
2 x 3    : 6
2 x 4    : 8
2 x 5    : 10
2 x 6    : 12
2 x 7    : 14
2 x 8    : 16
2 x 9    : 18
2 x 10   : 20
------ Table of 3 ------
3 x 1    : 3
3 x 2    : 6
3 x 3    : 9
3 x 4    : 12
3 x 5    : 15
3 x 6    : 18
3 x 7    : 21
3 x 8    : 24
3 x 9    : 27
3 x 10   : 30
```

```
------ Table of 4 ------
4 x 1    : 4
4 x 2    : 8
4 x 3    : 12
4 x 4    : 16
4 x 5    : 20
4 x 6    : 24
4 x 7    : 28
4 x 8    : 32
4 x 9    : 36
4 x 10   : 40
------ Table of 5 ------
5 x 1    : 5
5 x 2    : 10
5 x 3    : 15
5 x 4    : 20
5 x 5    : 25
5 x 6    : 30
5 x 7    : 35
5 x 8    : 40
5 x 9    : 45
5 x 10   : 50
Press any key to continue . . .
```

## Exercise 3:

Take Input the total number of lines from the user and then display the following equilateral triangle shape.
For example:

If the user inputs 3, then your program should print:

```
    *
   ***
  *****
```

## Exercise 4:

Take Input the total number of lines from the user and then display the following
equilateral triangle shape.
For example:
If the user inputs 3, then your program should print:

```
  *****
   ***
    *
```

## Exercise 5:

Write a program in C++ that asks the user to enter size and displays a triangle of the required
size e.g. if the the user enters 4 as size then a Triangle of size 4 will be displayed on the screen as
shown below:
```
1
1 2
1 2 3
1 2 3 4
1 2 3
1 2
1
```

## Exercise 6 (Arrays):

Write a program in C++ that declares a static integer array of size 5, then in a loop asks the user
to enter 5 integer values and stores them in the array. Display the values stored in array.