CSE 102 : Structured Programming Lab
Lab Mid Examination

Total Marks: 30

***All questions contain equal marks.**
***Tip**: Read all the problems first and then try to solve the problem you think you can solve first.

Task 1

Take the **height** and **width** of a triangle as inputs. Print the **area** of the triangle. The formula for the area of the triangle is: half $\times$ base $\times$ height.

Sample Input: 12 4
Sample Output: 24

Task 2

Write a C program that takes an integer n as input from the user and prints the Fibonacci series up to n term. In the Fibonacci series, the first two numbers are 0 and 1. The remaining numbers are the sum of the previous two. **Format the output exactly like the example shown below.**

Sample Input: 5
Sample Output: 0 1 1 2 3

Task 3

Write a C program that takes two integers m and n as inputs, and prints the number of prime numbers between these two numbers (inclusive).

Sample Input: m = 10, n = 20
Sample Output: 4
Explanation: Between 10 to 20 there are 4 prime numbers, 11, 13, 17 and 19.

Task 4

An internet service provider offers different data plans with varying rates per GB. The breakdown is as follows:

- Up to 5 GB: BDT 100 per GB
- 6 GB to 10 GB: BDT 80 per GB
- 11 GB to 20 GB: BDT 60 per GB
- Over 20 GB: BDT 50 per GB
- There is an additional service charge of BDT 50 for all plans

Write a C program that takes the number of GB used as input and prints the total bill for that user.

Case 1:
Sample Input: 10
Sample Output: 800
Explanation: 10 GB at 80 BDT per GB equals 800 BDT in total.

Case 2:
Sample Input: 15
Sample Output: 900
Explanation: 15 GB at 60 BDT per GB equals 900 BDT in total.

Task 5

Write a C program that reads 20 numbers from the user and prints the largest and smallest numbers entered. **Format the output exactly like the example shown below.**

Sample Input: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Sample Output: Smallest: 1, Largest: 20