National University of Computer and Emerging Sciences, Lahore Campus

Course:	**Programming Fundamentals**	**Course Code:**	**CS 118**
Program:	**BSE-1A & BCS-1G**	**Semester:**	**Fall 2021**
Due Date	**9-OCT-2021 at 11:59 pm**	**Total Marks:**	**50**
Section:	**1A & 1G**	**Page(s):**	**3**
Type:	**Assignment 1**		

Important Instructions:

1. You have to upload only .cpp file. Assignment in any other format (extension) will not be accepted and will be awarded with zero marks. You have to make a zip file and upload it onto the google classroom submission folder. For question 1, name your solution file with your roll number, i.e., Q1_21L_1111.cpp. Similarly, you can name other questions.
2. You are not allowed to copy solutions from other students. We will check your code for plagiarism using plagiarism checkers. If any sort of cheating is found, negative marks will be given to all students involved.
3. For each passing day after deadline, 20% of the marks will be deducted. Three days after the deadline, no submission will be accepted.

Question 1: [Marks: 5]

Write and run a program that reads a six-digit integer and prints the sum of its six digits.
Sample **Input:** 153426
Sample **output:** 21

Question 2: [Marks: 3]

Write and run a program that reads two integers and then uses the conditional expression operator to print either “multiple” or “not” according to whether one of the integers is a multiple of the other.
Sample **Input:** 12 6
Output: 12 is the multiple of 6 Sample
Input: 12 13
Output: NON

Question 3: [Marks: 3]

Write a program which takes marks of 5 courses as input, of 5 students and output the students who got the highest aggregate. Roll# C1 C2 C3 C4 C5
Sample Input: **1391** 80 70 60 14 88 **1376** 70 80 80 88 89 **1374** 71 82 50 80 79 **1372** 77 90 90 99 100 **1375** 73 83 40 81 69
Sample Output: 1372 has highest Aggregate of 456

Question 4: [Marks: 7]

Write a program which takes as input 3 points and tell whether these points are the coordinates of right angled or scalene triangle.
Sample **Input:** P1 0 0 P2 1 0 P3 1 1
Sample **Output:** Right Angle Triangle

Question 5: [Marks: 7]
Write a C++ program that takes three integer numbers from the user. Your program will first print the integers in ascending order and then in descending order. You cannot use arrays to solve this problem. Assume all numbers are distinct. For example: if the integers given by the user are 67, -5, 3, then the ascending order printing will be: -5, 3, 67 and descending order printing will be 67, 3, -5.

Question 6: [Marks: 3]
Write a C++ program that takes two inputs from user; Weight in Kg and Height in meters and calculates and outputs Body Mass Index(BMI). Formula of BMI in given below.

BMI = weight in Kg /(height in Meters) 2

Question 7: [Marks: 4]
Write a program that takes two integers **A** and **B** from the user and swap their values using a third temporary variable.

Sample Output: Before Swapping: **A = 45** **B = 32**
After Swapping: **A = 32** **B = 45**

BONUS: Solve the same problem, swap the values of two integers **A** and **B** but **you are not allowed to use any extra variable other than A and B.**

Question 8: [Marks: 4]
Write a C++ program to decide whether the given three numbers are pythagorean triple or not. This means you will take three numbers as input from the user and check if any order of the number holds the property $c^2 = a^2 + b^2$.

Question 9: [Marks: 3]
Write a C++ program to check whether a character is an alphabet, digit or special character.

Question 10: [Marks: 5]
Write a simple C++ Calculator.
You will take two numbers from the user as input.
Then the user will be asked to enter the operator. (Operator will be a single character.)
For now operator can only be one of these {'+','-','*','/','%'}.
After taking that operator you will compute the result and output.
Sample **Input:** Enter first number 15
Enter second number 10
Enter the operator *
Output: 15*10 = 150.

Question 11: [Marks: 6]
Write a C++ program to print following patterns using only a single cout statement.

BEST OF LUCK