*“In the name of Allah*, most gracious and most merciful"

**“By time, indeed, mankind is in loss, Except for those who have believed and done righteous deeds and advised each other to truth and advised each other to patience”.**

**(Al-Quran -103)**

**“Don’t quit suffer now and live the rest of your life as a champion”.**

**(Muhammad Ali)**

**Programming Fundamentals (Fall 2019)**

Assignment No. 03

**Deadline: 18th November, 2019**

**Submission: Online (.rar file)**

**Marks: 25**

**Design following programs in C++:**

**After completing all your questions in this assignment; merge all these questions into a single program asking user to enter a number and then performing the execution of that question (You can use switch and a loop for this purpose). It is user’s decision if s/he wants to run question 01 first or question 05 first. Your solution should provide and cater for this requirement.**

**(05 Marks)**

**Question # 1**

Write a program that lets the user enter the total rainfall for each of 12 months into an array of double. The program should calculate and display the total rainfall for the year, the average monthly rainfall, and the months with the highest and lowest amounts. (05 Marks)

**Question # 2**

Write a program that lets a maker of chips and salsa keep track of sales for five different types of salsa: mild, medium, sweet, hot and zesty. The program should use two parallel 5-elements array: an array of strings that holds the five salsa names and an array of integers that holds the number of jars sold during the past month for each salsa type. The salsa names should be stored using an initialization list at the time the array is created. The program should prompt the user to enter the number of jars sold for each type. Once this sales data has been entered, the program should produce a report that displays sales for each salsa type, total sales, and the names of the highest selling and lower selling products. (05 Marks)

**Question # 3**

Write a program that lets the user enter a string into a character array. The program should then convert all the lowercase letters to uppercase. If a character is already uppercase, or not is a letter, it should be left alone. (05 Marks)

**Question # 4**

Write a program that uses the following arrays:

**empId**: an array of seven long integers to hold employee identification numbers. The array should be initialized with the following numbers:

5658845 4520125 7895122 8777541

8451277 1302850 7580489

**hours**: an array of seven integers to hold the number of hours worked by each employee.

**payRate**: an array of seven doubles to hold each employee’s hourly pay rate

**wages**: an array of seven doubles to hold each employee’s gross wages.

The program should relate the data in each array through the subscripts. For example the number in element 0 of the hours array should be the number of hours worked by the employee whose identification number is stored in element 0 of the payRate array.

The program should display each employee number and ask the user to enter that employee’s hours and pay rate. It should than calculate the gross wages for that employee (hours’ time pay rate) and store them in wages array. After the data has been entered for all the employees, the program should display each employee’s identification number and gross wages. (05 Marks)