Assignment #02

Weightage: 5
Total marks: 10

Due Date: 25th November , 2019

A note of warning: Start work on assignments as soon as they are given. Do not underestimate the demanding nature of this course. Expect the system to crash the night before your program is due. Aim to have it done the day before.

Submit the assignment on **slate**. Do not email me assignments after due date. It will not be accepted in any case. Students are required to submit actual content written in MS word or Pdf. Hand written/ Scanned assignments will not be accepted.

Note: Name of the file should start with your Roll number followed by your Name and at the end assignment number (**p190001NameAssign02)**

(Marks:2)

1. Write a program that reads a file consisting of students' test scores in the range 0–200. It should then determine the number of students having scores in each of the following ranges: 0–24, 25–49, 50–74, 75–99, 100–124, 125–149, 150–174, and 175–200. Output the score ranges and the number of students. (Run your program with the following input data: 76, 89, 150, 135, 200, 76, 12, 100, 150, 28, 178, 189, 167, 200, 175, 150, 87, 99, 129, 149, 176, 200, 87, 35, 157, 189.)

(Marks:2)

2. The history teacher at your school needs help in grading a True/False test. The students' IDs and test answers are stored in a file. The first entry in the file contains answers to the test in the form:
   TFFTFFTTTTFFTFTFTFTT
   Every other entry in the file is the student ID, followed by a blank, followed by the student's responses. For example, the entry: ABC54301 TFTFTFTT TFTFTFFTTFT indicates that the student ID is ABC54301 and the answer to question 1 is True, the answer to question 2 is False, and so on. This student did not answer question 9. The exam has 20 questions, and the class has more than 150 students. Each correct answer is awarded two points, each wrong answer gets one point deducted, and no answer gets zero points. Write a program that processes the test data. The output should be the student's ID, followed by the answers, followed by the test score, followed by the test grade. Assume the following grade scale: 90%–

100%, A; 80%–89.99%, B; 70%–79.99%, C; 60%–69.99%, D; and 0%–59.99%, F.

(Marks:2)

3. Write a program that allows the user to enter the last names of five candidates in a local election and the number of votes received by each candidate. The program should then output each candidate's name, the number of votes received, and the percentage of the total votes received by the candidate.
Your program should also output the winner of the election. A sample output is: output should be on console and file both

```
Candidate          Votes Received        % of Total Votes

Johnson                  5000                  25.91
Miller                   4000                  20.73
Duffy                    6000                  31.09
Robinson                 2500                  12.95
Ashtony                  1800                   9.33
Total                   19300

The Winner of the Election is Duffy.
```

(Marks:4)

4. Consider the following function main:

```
int main()
{
int inStock[10][4];
int alpha[20];
int beta[20];
int gamma[4] = {11, 13, 15, 17};
int delta[10] = {3, 5, 2, 6, 10, 9, 7, 11, 1, 8};
.
.
.}
```

   a. Write the definition of the function setZero that initializes any array of type int to 0.
   b. Write the definition of the function inputArray that prompts the user to input 20 numbers and stores the numbers into alpha.
   c. Write the definition of the function doubleArray that initializes the elements of beta to two times the corresponding elements in alpha.

Make sure that you prevent the function from modifying the elements of alpha.

d. Write the definition of the function copyGamma that sets the elements of the first row of inStock to gamma and the remaining rows of inStock to three times the previous row of inStock. Make sure that you prevent the function from modifying the elements of gamma.
e. Write the definition of the function copyAlphaBeta that stores alpha into the first five rows of inStock and beta into the last five rows of inStock. Make sure that you prevent the function from modifying the elements of alpha and beta.
f. Write the definition of the function printArray that prints any array of type int. Print 15 elements per line.
g. Write the definition of the function setInStock that prompts the user to input the elements for the first column of inStock. The function should then set the elements in the remaining columns to two times the corresponding element in the previous column, minus the corresponding element in delta.
h. Write C++ statements that call each of the functions in parts a through g.
i. Write a C++ program that tests the function main and the functions discussed in parts a through g. (Add additional functions, such as printing a two-dimensional array, as needed.)