Introduction to C/C++

Comp 295

Spring 2023

Department of Computer Science

Forman Christian College University

Lab 8
Classes and File Handling

Question #	Total Marks
Question 1	-
Question 2	-

In Lab Problem

Question 1. Multiplication Table

Write a C++ program that reads a positive integer **n** from the keyboard and then creates a new file named **multiplicationTable.txt** that contains the following information

1 2 3 .... n
2 4 6 .... 2n
3 6 9 .... 3n
.
.
.
n 2n 3n ... n^2

Note that you are not allowed to declare any array here.

Question 2. Class List

Consider a file similar to ClassList.txt. Write a C++ program that reads the file and prints the top student (i.e. maximum total marks). Your program must print the full name, the marks, and the letter grade of the top student only. Again, you are not allowed to use any array to answer this question.

John Walter	20	19	45
Sara Gill	16	15	35
Mark Black	23	24	50
Jess Paul	10	20	25
Joe Nash	14	18	44
⋮			

Question 2. Student Class

Create a program that reads data from a text file containing information about students of a school. Each line of the file should contain the following data about a student: name, roll number, department, and GPA. The program should create an object of a class called "Student" for each student and store the objects in an array.

The "Student" class should have the following private member variables: name, roll number, department, and GPA. It should also have public member functions to set and get the values of these variables.

Once all the student data is read from the file and stored in the array of objects, the program should perform the following tasks:

- Print the details of all students whose GPA is greater than a certain amount (entered by the user).
- Print the average GPA of all students.
- Write the details of all students with grades to a new text file called "output.txt".
  3.6+ -> A+
  3.3-3.6 -> A
  3 - 3.3 -> B
  2.7-3.0-> B-
  2.3-2.7 - > C+
  2.0-2.3 -> C
  0-2.0 -> F

sample input content

John Doe 123 CS 3.5
Jane Smith 234 EE 3.8
Bob Johnson 345 ME 2.9
Alice Williams 456 CS 4.0