National Institute of Technology Calicut
Department of Computer Science and Engineering
B. Tech. (CSE) – First Semester
CS1091E: Programming Laboratory
Problem Set – 8

Submission deadline (on or before):

- 14/11/23, 5:00 PM

Policies for Submission and Evaluation:

- You must submit your programs in the moodle (Eduserver) course page, on or before the submission deadline. Also, ensure that your programs compile and execute without errors in the linux platform. During evaluation, failure to execute programs without compilation errors may lead to zero marks for that program. Detection of ANY malpractice can lead to awarding an F grade in the course.

Naming Conventions for Individual Program

- $PS < PROBLEM\_SET\_NUMBER > \_ < ROLLNO > \_ < FIRST - NAME > \_ < PROGRAM - NUMBER > . < extension >$ (For example: $PS08\_BxxyyyyCS\_LAXMAN\_1.c$). Please make sure that you follow the naming conventions correctly.

Naming Conventions for Submission

- Submit a single ZIP (.zip) file (do not submit in any other archived formats like .rar, .tar, .gz) containing the source code (.c file). The name of this file must be $PS < PROBLEM\_SET\_NUMBER > \_ < ROLLNO > \_ < FIRST - NAME > .zip$ (For example: $PS08\_BxxyyyyCS\_LAXMAN.zip$). DO NOT add any other files (like temporary files, input files, etc.) except your source code, into the zip archive.

Standard of Conduct

- Violations of academic integrity will be severely penalized. Each student is expected to adhere to high standards of ethical conduct, especially those related to cheating and plagiarism. Any submitted work MUST BE an individual effort. Any academic dishonesty will result in zero marks in the corresponding exam or evaluation and will be reported to the department council for record keeping and for permission to assign F grade in the course.

General Instructions

- Programs should be written in C language and compiled using C compiler in Linux platform. Sample inputs are just indicative. **Submit the**

solutions to questions 1 and 2 as a single .zip file through the submission link in Eduserver.

QUESTIONS

1. Read the rollnumber (**string**) and marks (**int**) of n (1 <= n <= 100 is an integer) students and assign a character grade to each student based on the grading criteria given below:

Marks	Grade
80 -100	A
60 -79	B
50 -59	P
0 -49	F

The value of n is entered by the user. Use a one dimensional **array of structures**, M for storing the rollnumber, marks and grade. Define the functions whose prototypes are given below:

char marksToGrade(int); //given marks, returns the corresponding grade

void printResult(int); //prints the rollnumber, marks and grade
//of students, given the number of students

void printStudent(struct student); //prints the members in the given struct
//in a single line with a single space
//separation between members

The *main()* function, after creating the array M (by reading in the marks), should compute and store the grade for each student by invoking *marksToGrade()*. Then *main()* should invoke *printResult()* which in turn should invoke *printStudent()* for each student.

2. Read the rollnumber (**string**) and marks (**int**) of n (1 <= n <= 100 is an integer) students in a particular course. The course is a core course for

B.Tech students and a Pass/Fail elective for M.Tech students. For B.Tech students, the marks are to be stored and for M.Tech students, the marks are to be converted to a letter grade (P/F) and this grade is to be stored. The grading criteria is given below:

Marks	Grade
50-100	P
0-50	F

The value of n is entered by the user. Use a one dimensional **array of structures**, M for storing the rollnumber, and marks or grade (use union). Define and use the function whose prototype is given below:

```
void printResult(void); //prints the rollnumber and marks for B.Tech
                        //students and rollnumber and grade for M.Tech
                        //students. The details of each student is to be
                        //printed in separate line with a single space
                        //separation between the members.
```

Note: The rollnumber of M.Tech students starts with **'M'**. (e.g. MCS23010)