National Institute of Technology Calicut
Department of Computer Science and Engineering
B. Tech. (CSE) – First Semester
CS1091E: Programming Laboratory
Problem Set – 5

Submission deadline (on or before):

- 26/09/23, 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: $PS05\_BxxyyyyCS\_LAXMAN\_1.c$). 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) for the three programs. The name of this file must be $PS < PROBLEM\_SET\_NUMBER > \_ < ROLLNO > \_ < FIRST - NAME > .zip$ (For example: $PS05\_BxxyyyyCS\_LAXMAN.zip$). 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, 2, and 3 as a single .zip file through the submission link in Eduserver**.

QUESTIONS

1. Write a C program that reads the marks (**int** type) of n (n>0 is an integer) students and assigns a character grade for each student based on the grading criteria given below:

   80 -100 : A

   60-79 : B

   50-59 : P

   0-49 : F

   The program should print for each grade, the number of students who scored that particular grade. The value of n is entered by the user. Use **for** loop for iteration and nested **if-else** and logical operators for deciding the grade.

   Sample input and output:

   - Input:

     Enter the number of students = 3
     Marks of Student 1 = 89
     Marks of Student 2 = 91
     Marks of Student 3 = 55

   - Output:

     The total number of students with A grade = 2
     The total number of students with B grade = 0
     The total number of students with P grade = 1
     The total number of students with F grade = 0

2. Change program **1** to accommodate the following. The number of students is not given. Rather, the termination of input (students' marks) is indicated by **-1**. Use **do-while** loop for this program but do not use **break** statement.

   Sample input and output:

   - Input:

     Marks of Student 1 = 82
     Marks of Student 2 = 58
     Marks of Student 3 = 21
     Marks of Student 4 = 53
     Marks of Student 5 = 65
     Marks of Student 6 = -1

- Output:

  The total number of students with A grade = 1
  The total number of students with B grade = 1
  The total number of students with P grade = 2
  The total number of students with F grade = 1

3. Write a C program to compute the total price for a list of products sold. Use **while** loop. Enter product code **0** to terminate iteration(use **break** statement). The price per unit is to be determined using a **switch** statement based on the following table:

Product code	Unit price
1	10
2	15
3	5
4	3
5	12

   If the code entered is not valid (not in the range **1-5**), the program should print an appropriate message and continue iteration (use **continue** statement). This checking, and checking for end of input should be done before entering the **switch** statement.

   Sample input and output:

   - Input :

     Enter product code between 1 to 5. To terminate enter 0 = 2
     Quantity = 11.7

Product code	Unit price	Quantity	Price
2	15	11.700000	175.500000

     Enter product code between 1 to 5. To terminate enter 0 = 9
     Please enter a valid product code.
     Enter product code between 1 to 5. To terminate enter 0 = 4
     Quantity = 6.92

Product code	Unit price	Quantity	Price
4	3	6.920000	20.760000

     Enter product code between 1 to 5. To terminate enter 0 = 3
     Quantity = 3.89

Product code	Unit price	Quantity	Price
3	5	3.890000	19.450000

     Enter product code between 1 to 5. To terminate enter 0 = 0
     Total Price = 215.710000