First year First Semester Course (M. Tech. [CS]) [2021-23]:

Introduction to Programming

Assignment-1

Deadline: 24-Dec-2021

Problem-1: **[Marks=5]**

Consider the grading of the students in an academic institution. The grading is according to the following rules.

Average marks (m)	**Grade**
$80 \leq m \leq 100$	A
$60 \leq m < 80$	B
$50 \leq m < 60$	C
$40 \leq m < 50$	D
$0 \leq m < 40$	F

Now, write a C program that takes as input the average marks of any student and prints his/her grade as per the given rule. [Take help of *else if ladder*.]

Problem-2: **[Marks=5]**

Find the Roots of a quadratic equation: $ax^2 + bx + c = 0$

Coefficients (a, b, c) are your inputs.

Problem-3: **[Marks=4]**

Do the task given in Problem-1 using **switch case**.

Problem-4: **[Marks=3+3=6]**

Write a program to print the following outputs using *for* loop

(a)
```
* * * *
* * *
* *
*
```

(b)
```
1
2 2
3 3 3
4 4 4 4
```

Problem-5: **[Marks=4]**

Write a C program to read a matrix of size $m \times n$ and print its transpose. (m *and* n *are inputs from keyboard.*)

Problem-6: **[Marks= 2+4= 6]**

Write a C program to read two matrices A and B and print the following:

(i) $A - B$
(ii) $A \times B$

Problem-7: **[Marks=5]**

The following is a part of Pascal's triangle.

```
1
1       1
1       2       1
1       3       3       1
1       4       6       4       1
1       5       10      10      5       1
1       6       15      20      15      6       1
--      --      --      --      --      --      --
--      --      --      --      --      --      --      --
```

If we denote the rows by i and columns by j, then any element (except the boundary elements) in the triangle is given by $p_{ij} = p_{i-1,j-1} + p_{i-1,j}$

Write a C program to calculate the elements of the Pascal's triangle for 9 rows and print the results as per the pattern shown above.

Problem-8: Write program that compares two files and indicates whether these are equal or not.

[Marks=4]

Problem-9: A file named "IPDATA" contains a series of integer number. Write program to read these numbers and then write all odd number to a file to be called "OPODD" and all even numbers to a file called "OPEVEN". **[Marks=5]**

Problem- 10: Define a structure data type named ***date*** containing three integer members: ***day, month,*** and ***year***. Use this to store date of birth and current date and calculate the age of a person.

[Marks=6]

Submission Process:-

- At the beginning of any submitted program file, please write:

```
/*-----------------------------------
Name:
Roll number:
Date:
Program description:
-----------------------------------*/
```

- Please send the .c files as the attachment to your mail to pdsmtechcs2021@gmail.com. The subject of the mail should be as follows: "Assignment-1: Your Name, Roll No."