Structure

Aim – Write a program to store the name, roll number and marks in 3 subjects of n students using Structure. Generate a merit list with respect to total marks secured. Display the output in tabular form starting from max total marks to minimum total marks.

Theory –

Structures in C group different data types under one name. They allow storing related information together, improving data organization and program readability.

A1.

```c
#include<stdio.h>
#include<string.h>
struct student
{
    char name[20];
    int roll_no;
    int physics;
    int chemistry;
    int math;
    int total;
};
void main()
{
    int length;
    printf("Enter the Number of students: ");
    scanf("%d", &length);
    struct student s1[length];
    for(int i = 0; i<length; i++){
        getchar();
        printf("Enter the student name: ");
        gets(s1[i].name);
        printf("Enter the student roll no: ");
        scanf("%d", &s1[i].roll_no);
        printf("Enter the student physics: ");
        scanf("%d", &s1[i].physics);
```

```c
        printf("Enter the student chemistry: ");

        scanf("%d", &s1[i].chemistry);

        printf("Enter the student math: ");

        scanf("%d", &s1[i].math);

        s1[i].total = s1[i].physics + s1[i].chemistry + s1[i].math;

    }

    for (int i = 0; i<length-1;i++){

        for(int j = 0;j<length-1;j++){

            if(s1[j].total<s1[j+1].total){

                struct student temp = s1[j];

                s1[j] = s1[j+1];

                s1[j+1] = temp;

            }

        }

    }

    printf("The student details are as follows:\n");

    printf("Sr. No\tName\tRoll Number\tPhysics\tChemistry\tMaths\n");

    for(int i = 0; i<length; i++){

        printf("%d.\t%s\t%d\t\t%d\t%d\t\t%d\n",(i+1),s1[i].name, s1[i].roll_no, s1[i].physics, s1[i].chemistry,
s1[i].math);

    }

}
```

```
Enter the Number of students: 3
Enter the student name: Aarav
Enter the student roll no: 1
Enter the student physics: 12
Enter the student chemistry: 13
Enter the student math: 14
Enter the student name: Vedant
Enter the student roll no: 2
Enter the student physics: 13
Enter the student chemistry: 14
Enter the student math: 15
Enter the student name: Vishnu
Enter the student roll no: 6
Enter the student physics: 15
Enter the student chemistry: 16
Enter the student math: 17
The student details are as follows:
Sr. No  Name    Roll Number     Physics Chemistry       Maths
1.      Vishnu  6               15      16              17
2.      Vedant  2               13      14              15
3.      Aarav   1               12      13              14

Process returned 3 (0x3)   execution time : 38.592 s
Press any key to continue.
```

Conclusion

This program uses structures to store student details and arrays to handle multiple records. Input is taken and total marks are calculated for each student. Bubble sort is used to arrange students in descending order of total marks. Finally, output is displayed.