

## STRUCTURES

Definition, Declaration, accessing structures, initialization, operations on structures, structures containing arrays, structures containing pointers, nested structures, self-referential structures, arrays of structures, structures and functions, structures and pointers.

### Sample Program 01: Demo on Nested Structure with Functions.

```
#include <stdio.h>
struct college
{
    char cname[20];
    int code;
};
struct student    // Structure Defination
{
    int reg_no;
    char name[50];    // Structure Members
    float m1,m2,m3;
    struct college c;
};
int max(struct student s)    //max function has the structure as the parameter
{
    int big;
    big=(s.m1>s.m2)?s.m1:s.m2;
    big=(big>s.m3)?big:s.m3;
    return big;
}
int main()
{
    struct student s;    //Structure Variable Declaration

    printf("Enter the Student Details: Reg_no, Name and Marks in three Exams ,
college name and code");
    scanf("%d",&s.reg_no);                //Accessing Structure Members using . operator
    scanf("%s",s.name);
    scanf("%f%f%f",&s.m1,&s.m2,&s.m3);
    scanf("%s",s.c.cname);
    scanf("%d",&s.c.code);
    /*s.reg_no=234;
    strcpy(s.name,"Araya");
    s.m1=10;
    s.m2=20;
    s.m3=15;*/

    printf("The Students Details are:\n");
    printf("Student Reg. No: %d\n",s.reg_no);
    printf("Student Name: %s\n",s.name);
    printf("Student nMarks_Exam1:%f\nMarks_Exam2:%f\nMarks_Exam3:%f\n",
s.m1,s.m2,s.m3);
```

```
printf("College Name: %s\n",s.c.cname);
printf("College Code: %d\n",s.c.code);
printf("Max Marks out of three is %d\n",max(s));
return 0;
}
```

## Sample Program 02: Demo on Structure variable as an array.

```
#include <stdio.h>
struct student    // Structure Defination
{
    int reg_no;
    char name[50];    // Structure Members
    float m1,m2,m3;
};
int main()
{
    struct student s[10];    //Structure Variable Declaration
    int n,i;
    printf("Enter the no of students\n");
    scanf("%d",&n);
    for(i=0;i<n;i++)
    {
        printf("Enter the Student Details: Reg_no, Name and Marks in three Exams");
        scanf("%d",&s[i].reg_no);    //Accessing Structure Members using .
operator
        scanf("%s",s[i].name);
        scanf("%f%f%f",&s[i].m1,&s[i].m2,&s[i].m3);
    }

    for(i=0;i<n;i++)
    {
        printf("The Students Details are:\n");
        printf("Student Reg. No: %d\n",s[i].reg_no);
        printf("Student Name: %s\n",s[i].name);
        printf("Student
\nMarks_Exam1:%f\nMarks_Exam2:%f\nMarks_Exam3:%f\n",s[i].m1,s[i].m2,s[i].m3);
    }
    return 0;
}
```