

# Structure and Union in C

## Structure

### Introduction

If we want to write a program to store Student information, which will have Student's rollno, name, branch, address, etc, which included string values, integer values etc. how I can use arrays for this problem, I will require something which can hold data of different types together. So we can use the concept Structure in c language.

**Defintion:** Structure is a user-defined data type, which allows you to combine data items of different kinds. To define a structure use struct keyword.

### Defining a Structure

#### Syntax

```
struct structure_name
{
    datatype member1;
    datatype member2;
    datatype member3;
    datatype member4;
    .
    .
    datatype memberN;
};
```

#### Example

```
struct student
{
    int rollno;
    char sname[20];
    float ptage;
};
```

### Declaring Structure Variable

The way we can declare variable and array before using it in program. Similarly we can declare structure variable before using it. Structure variable is the runtime entity of structure. There are two way we can declare structure variable.

#### 1) At the time of Structure Definition

Example:

```
struct student
{
    int rollno;
    char sname[20];
    float ptage;
}s1,s2;
```

#### 2) After the Structure Definition

Example:

```
struct student s1, s2;
```

## Accessing Structure Members

Structure members can be accessed and assigned values in a number of ways. Structure members have no meaning individually without the structure. In order to assign a value to any structure member, the member name must be linked with the structure variable using a dot (.) operator also called period or member access operator.

Example:

- 1) Initialization of structure variable at the time of declaration

Example:

```
struct student s1={13,"Manoj",99.99};
```

- 2) Initialization of structure variable after the declaration

Example

```
s1.rollno=13;
```

```
strcpy (s1.sname,"Manoj");
```

```
s1.m1=60;
```

```
s1.m2=70;
```

```
s1.m3=80;
```

Write a program to read 2 student details and print it along with total and average

## Array of Structures

We can create array of structure means it is possible to create array of structure's object in the same way as we have created array for primitive data type. The benefit of creating array of structure is that we can store multiple records of similar type.

Write a program to read n student details and print it along with total and average

Nested Structures