

Introduction to Structures

Structures: Declaring a struct type and Struct variable

- Structure is a collection of variables of different data types under a single name. A structure is a datatype that is an aggregate means it contains other data type which are grouped together in a single user-defined type.

- Syntax:

```
    ■ struct structure-name
    {
    data-type  fieldname1;
    data-type  fieldname2;
    .....
    };
int main()
{ structure-name identifier;
}
```

- Declaring a structure introduces a new type of variable into your program, struct variables.
- Variables of this type can be defined just like int , char, or float is defined.

Structure Details:

- Its like an array but array is homogeneous and structures are heterogeneous.
- Structure make sense when two or more datatypes are grouped together.
- Structures are made up of member variable.
- Structure allocates storage space for variables.
- When a structure is created, no memory is allocated. The structure definition is only the blueprint for the creating of variables. It as a datatype.

Structure: Declaring a struct type and Struct variable

- An example of a structure is student record, where roll no., marks, average, grade are combined in structure as shown below:

■ struct student

```
{  
  int rollNo, marks;  
  float avg;  
  char grade;  
};  
int main()  
{ student s1;  
}
```

Structure name

keyword

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Element, Members, or Field
Of Structure.

Remember !

Structures are used to
define new datatypes
that contain diff type
of data.

Structure :Accessing Member of Struct

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Accessing struct is by using the member access operator, a period (a dot) placed between a struct variable and a member name for that struct type.

Syntax:

```
struct-name.fieldname;
```

E.g.

```
student.rollno;
```

```
student.grade;
```

```
student. avg;
```

Example :

structure.cpp

```
1  #include<iostream>
2  using namespace std;
3  struct student
4  {
5      int rollno, marks;
6      float avg;
7      char grade;
8  };
9  int main()
10 {
11     student s;
12     cout<<"\nEnter Rollno. : ";
13     cin>>s.rollno;
14     cout<<"\nEnter marks: ";
15     cin>>s.marks;
16     cout<<"\nEnter average: ";
17     cin>>s.avg;
18     cout<<"\nEnter Grade: ";
19     cin>>s.grade;
20     cout<<"\nFollowing details is entered by user: ";
21     cout<<"\nRollNo.: "<<s.rollno;
22     cout<<"\nMarks : "<<s.marks;
23     cout<<"\nAverage : "<<s.avg;
24     cout<<"\nGrade : "<<s.grade;
25     return 0;
26 }
27 }
```

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E:\Programming-Lectures\structure.exe

```
Enter Rollno. : 2
Enter marks: 69
Enter average: 69.0
Enter Grade: b

Following details is entered by user:
RollNo.: 2
Marks : 69
Average : 69
Grade : b
-----
Process exited after 12.09 seconds with return value 0
Press any key to continue . . .
```