

C Structures

Topics : [C](#)

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In C programming language, a structure is a composite data type that groups together related data items of different data types under a single name. Structures are defined using the `struct` keyword, which defines a new type that can be used to declare variables of that type.

Here's the syntax for defining a structure:

```
struct <structure_name> {  
    <data_type_1> <member_name_1>;  
    <data_type_2> <member_name_2>;  
    // ...  
};
```

For example, let's define a `Person` structure that represents a person's name, age, and address:

```
struct Person {  
    char name[50];  
    int age;  
    char address[100];  
};
```

Once a structure is defined, you can declare variables of that type:

```
struct Person p1;
```

You can also initialize a structure variable at the time of declaration:

```
struct Person p2 = {"John Doe", 30, "123 Main St"};
```

You can access individual members of a structure using the dot (`.`) operator:

```
p1.age = 25;  
printf("Name: %s\nAge: %d\nAddress: %s\n", p2.name, p2.age, p2.address);
```

You can also use pointers to structures, which are declared using the `struct` keyword followed by a pointer variable name:

```
struct Person *ptr = &p1;
ptr->age = 40;
```

Here's an example program that demonstrates the use of structures in C:

```
#include <stdio.h>

struct Person {
    char name[50];
    int age;
    char address[100];
};

int main() {
    struct Person p1;
    struct Person p2 = {"John Doe", 30, "123 Main St"};

    p1.age = 25;
    printf("Name: %s\nAge: %d\nAddress: %s\n", p2.name, p2.age, p2.address);

    struct Person *ptr = &p1;
    ptr->age = 40;
    printf("Name: %s\nAge: %d\nAddress: %s\n", p1.name, p1.age, p1.address);

    return 0;
}
```

This program declares two Person structures p1 and p2, initializes p2 with some values, updates p1's age using a pointer, and prints out the values of the members for both structures.

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