

# C Arrays

**Topics :** [C](#)

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In C programming language, an array is a collection of elements of the same data type, stored in contiguous memory locations. Arrays are used to store and manipulate multiple values of the same data type, such as a list of numbers or a sequence of characters.

To declare an array in C, you need to specify the data type of the elements and the number of elements in the array. The basic syntax for declaring an array is as follows:

```
data_type array_name[array_size];
```

Here, `data_type` is the data type of the elements in the array, `array_name` is the name of the array, and `array_size` is the number of elements in the array. For example, to declare an array of 5 integers, you would use the following code:

```
int numbers[5];
```

This declares an array named `numbers` that can hold 5 integers. The elements of the array are numbered from 0 to 4, so you can access individual elements of the array using their index, which is an integer value between 0 and `array_size - 1`. For example, to set the value of the first element of the array to 10, you would use the following code:

```
numbers[0] = 10;
```

You can also initialize an array with a list of values. For example, to initialize the `numbers` array with the values 1, 2, 3, 4, and 5, you would use the following code:

**Syntax :**

```
int numbers[] = {1, 2, 3, 4, 5};
```

This automatically sets the values of the elements of the `numbers` array to the corresponding values in the list.

You can access and modify individual elements of an array using their index. For example, to print the third element of the `numbers` array, you would use the following code:

```
printf("%d\n", numbers[2]);
```

This prints the value of the third element of the `numbers` array, which is 3.

You can also use loops to iterate over the elements of an array. For example, to calculate the sum of the elements of the `numbers` array, you would use the following code:

```
int sum = 0;
for (int i = 0; i < 5; i++) {
    sum += numbers[i];
}
printf("Sum = %d\n", sum);
```

This initializes a variable named `sum` to 0, and then uses a `for` loop to iterate over the elements of the `numbers` array and add their values to the `sum` variable. Finally, it prints the value of the `sum` variable.

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