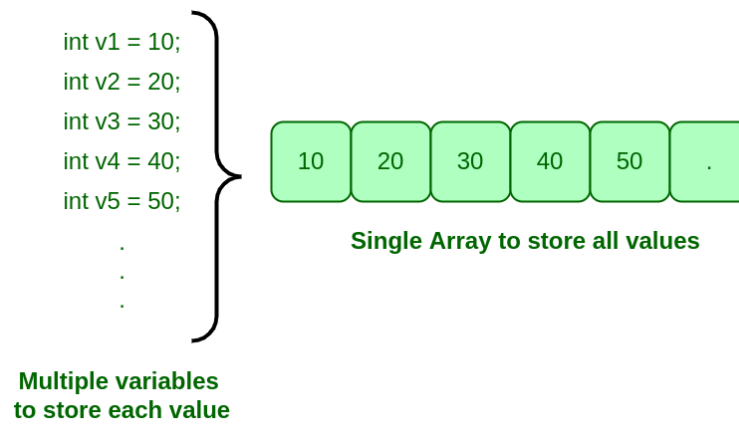# Introduction to Arrays in C++

Array

1. It is a group of variables of similar data types referred to by a single element.

2. Its elements are stored in a contiguous memory location.

3. The size of the array should be mentioned while declaring it.

4. Array elements are always counted from zero (0) onward.

5. Array elements can be accessed using the position of the element in the array.

6. The array can have one or more dimensions.

An array in C++ a collection of similar data items stored at contiguous memory locations and elements can be accessed randomly using indices of an array. They can be used to store the collection of primitive data types such as int, float, double, char, etc of any particular type. To add to it, an array in C++ can store derived data types such as structures, pointers etc. Given below is the picture representation of an array.
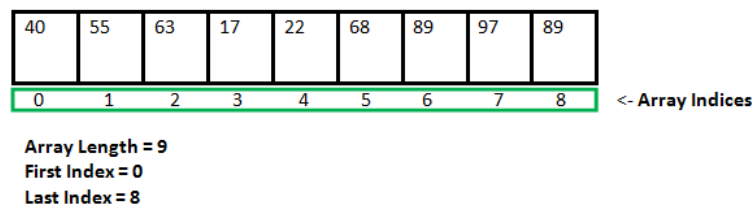
Why do we need arrays?

We can use normal variables (v1, v2, v3, ..) when we have a small number of objects, but if we want to store a large number of instances, it becomes difficult to manage them with normal variables. The idea of an array is to represent many instances in one variable.

```
int v1 = 10;
int v2 = 20;
int v3 = 30;
int v4 = 40;
int v5 = 50;
.
.
.
```

| 10 | 20 | 30 | 40 | 50 | . |

Single Array to store all values

**Multiple variables
to store each value**

Advantages:-

- Code Optimization: we can retrieve or sort the data efficiently.

- Random access: We can get any data located at an index position.

Disadvantages:-

- Size Limit: We can store only the fixed size of elements in the array. It doesn't grow its size at runtime.