

Arrays

What is an Array?

- Array is a data structure which stores a collection of homogeneous items (that homogeneous items can be of any data type like array of integers, array of char, array of bool etc)
- It has contiguous memory (data or processes are stored in adjacent or sequential memory locations, without any gaps or breaks)

Syntax for Array Declaration

```
datatype array_name [array_size]
```

For e.g.

```
int array[5]; // declaring an array of size 5
```

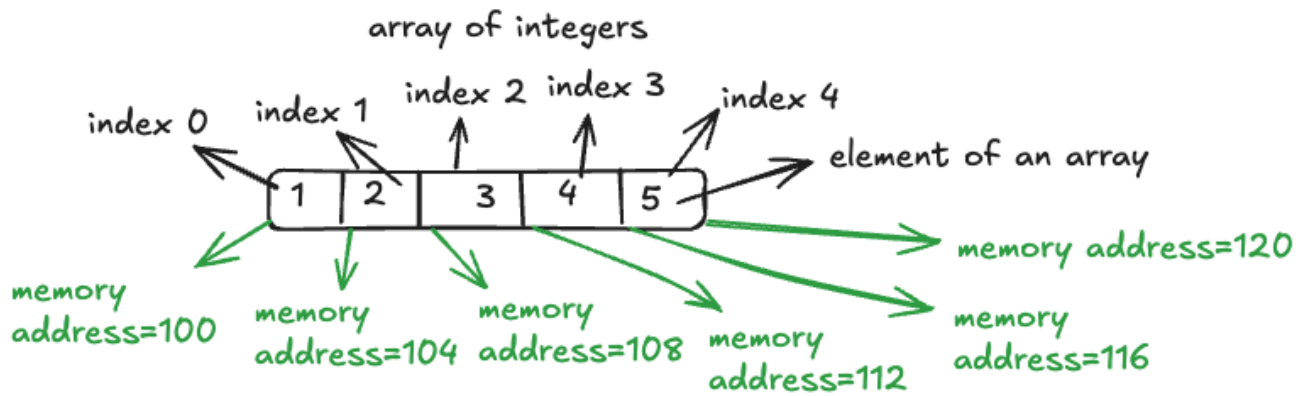
To specify elements in the array

```
// this is how we declare an array  
int array[] = {1, 2, 3, 4, 5}
```

NOTE: In the above example, if we are initialising the array then there is no need for stating the size of array.

Memory Allocation in Arrays

```
int array[5];
```



length of array = 5
int = 4 bytes
length = 5
size = 5 * 4 = 20 bytes

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

// accessing the element of array
array[0] // which has value 1
array[1] // which has value 2
array[2] // which has value 3
array[3] // which has value 4
array[4] // which has value 5
```

Assigning the elements in array

```
int array[5];

array[0] = 2; // for the 0th index, element 2 is stored
```

Size operation in Arrays

To know the size of array, we use `sizeof()` .

To know the length of array we use `sizeof(array)/sizeof(array[0])`