Array

Arrays –

- **Definition –** An array is a collection of similar items stored in contiguous memory locations. In programming, sometimes a simple variable is not enough to hold all the data.

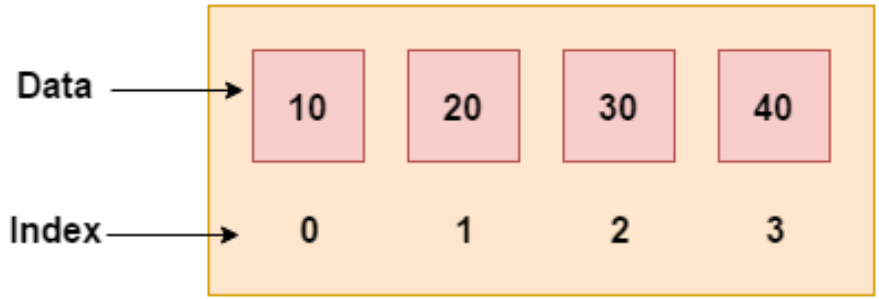
Note - *A C++ array has a fixed-size*.

- **Why do we need arrays?**

Arrays are very important in any programming language. They provide a more convenient way of storing variables or a collection of data of a similar data type together instead of storing them separately. Each value of the array will be accessed separately.

- **Advantages of Array –**
  1. Array elements can be traversed easily.
  2. Easy to manipulate array data.
  3. Array elements can be accessed randomly.
  4. Arrays facilitate code optimization.
  5. Easy to sort array data.

- **Disadvantages of Array –**
  1. An array has a fixed size.
  2. Allocating more memory than the requirement leads to wastage memory space, and less allocation of memory can create a problem.
  3. The number of elements to be stored in an array must be known in advance.



- **Types of Array –** There are two types of array, such as –
  1. 1-D array (One Dimensional Array)
  2. 2-D array (Multi Dimensional Array)

- **Declare an Array in C++ -** **type array-Name [array-Size];**

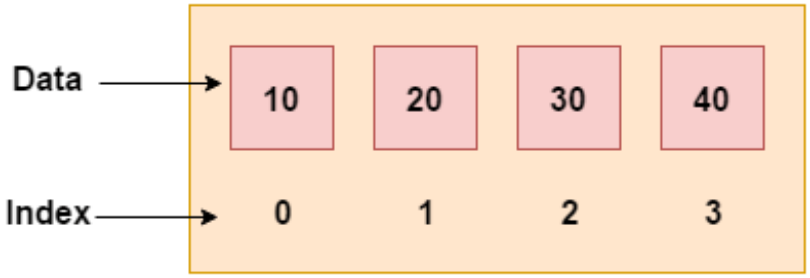
- **Array Declaration -** **int arr[10];**

- **Array Initialization -** **int age[5] = {19, 18, 21, 20, 17};** *both are same*
  int age[] = {19, 18, 21, 20, 17};

- **Array Initialization –**

arr[0] = 19;
arr[1] = 18;
arr[2] = 21;
etc…

▪ One Dimensional Array –



This is an array in which the data items are arranged linearly in one dimension only. It is commonly called a 1-D array.

Syntax - datatype array-name[size];

```
#include<iostream.h>
#include<conio.h>

void main()
{
        int i, arr[5] = {10,20,30,40,50};

        cout<<"\nArray elements are: ";
        for(i=0;i<5;i++)
        {
                cout<<" "<<arr[i];
        }
}
```

- **User Input from array -**

```
#include<iostream.h>
#include<conio.h>

void main()
{
        int i, arr[5];

        cout<<"\nEnter Array elements are: ";
        for(i=0;i<5;i++)
        {
                cin>>arr[i];
        }
        cout<<"\nArray elements are: ";
        for(i=0;i<5;i++)
        {
                cout<<" "<<arr[i];
        }
}
```

```
//Sum of Array Elements

#include<iostream.h>
#include<conio.h>
void main()
{
        int arr[6],i,sum=0;
        cout<<"\nEnter the array elements:\n";
        for(i=0;i<6;i++)
        {
                cin>>arr[i];
        }
        for(i=0;i<6;i++)
        {
                sum = sum + arr[i];
        }
        cout<<"\nSum of Array elements are: "<<sum;
}
```

```
//Find the odd elements in an array

#include<iostream.h>
#include<conio.h>

void main()
{
        int arr[6],i,sum=0;

        cout<<"\nEnter the array elements:\n";
        for(i=0;i<6;i++)
        {
                cin>>arr[i];
        }
                                                        for(i=0;i<6;i++)
                                                        {
                                                                if(arr[i]%2!=0)
                                                                {
                                                                        cout<<" "<<arr[i];
                                                                }
                                                        }
                                                }
```

//Array in Class

```
#include<iostream.h>
#include<conio.h>

class arrExecution
{
        public:
        int arr[6],i,sum;

        arrExecution()
        {
                sum = 0;
        }
        void getdata()
        {
                cout<<"\nEnter the array elements:\n";
                for(i=0;i<6;i++)
                {
                        cin>>arr[i];
                }
        }
        void putdata()
        {
                for(i=0;i<6;i++)
                {
                        cout<<" "<<arr[i];
                }
        }
};

void main()
{
        arrExecution obj;
        obj.getdata();
        obj.putdata();
}
```