



STL Series-1

C++ STL



Introduction

STL is an acronym for standard template library

It is a set of C++ templates that provides generic classes and functions that can be used to implement Data Structures and Algorithms



Composed of

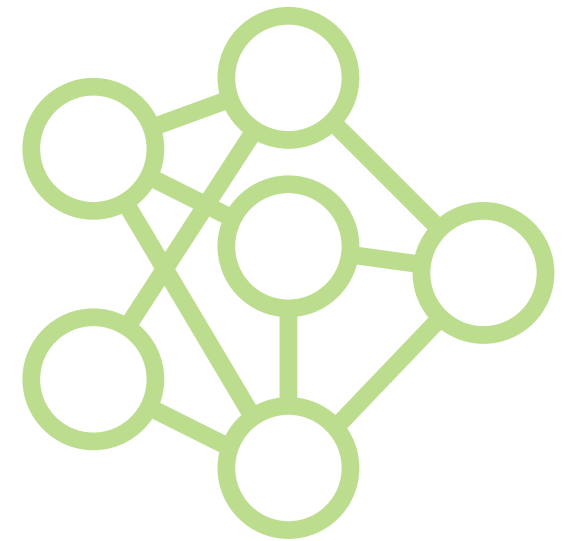
Algorithms

Functions

Container

Iterator





Algorithms

The Algorithm defines a set of functions designed to be applied to a wide range of elements. The functions act on containers and perform operations.

Eg :- `reverse()` , `sort()` etc.



```
int a[] = { 1, 5, 8, 9, 6, 7, 3, 4, 2, 0 };
```

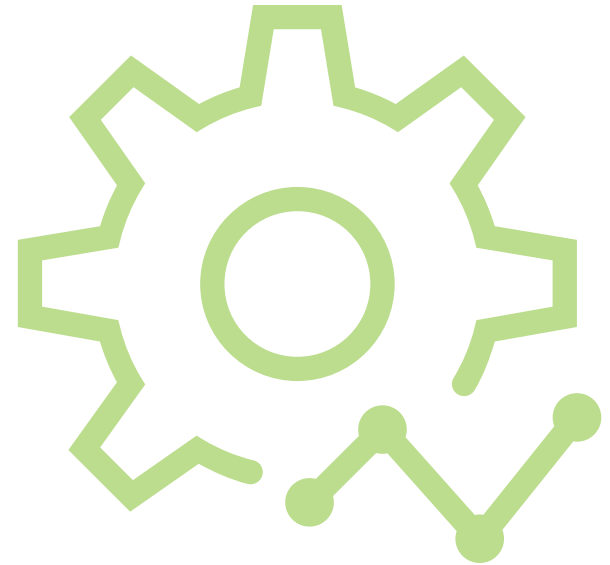
```
sort(a, a + asize);
```

```
//After Sorting the array will look like this
```

```
0 1 2 3 4 5 6 7 8 9
```



Functions



The STL includes classes that overload the function call operator. Instances of such classes are called function objects or functors

Eg:- `transform ()` etc .



```
int multiply(int x) { return (x*2); }

int main()
{
    int arr[] = {1, 2, 3, 4, 5};
    int n = sizeof(arr)/sizeof(arr[0]);

    // Apply multiply to all elements of
    // arr[] and store the modified elements
    // back in arr[]
    transform(arr, arr+n, arr, multiply);

    for (int i=0; i<n; i++)
        cout << arr[i] <<" ";

    return 0;
}
```

OUTPUT:-

2 4 6 8 10



Containers



Containers are used to create data structures like Arrays, Linked List etc.

Eg:- vector, queue, stack etc.





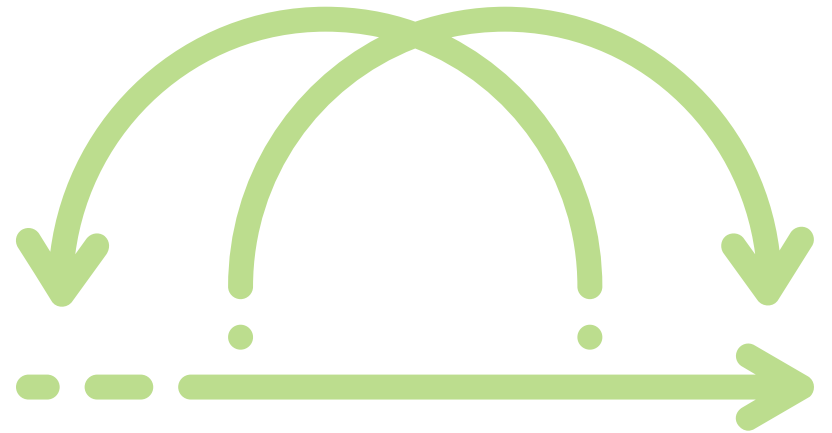
```
int main()  
{  
    vector<int> vec;  
  
    for(int i=0;i<5;i++)  
    {  
        vec.push_back(i);  
    }  
  
    for (int i=0; i<vec.size(); i++)  
        cout << vec[i] <<" ";  
  
    return 0;  
}
```

OUTPUT:-

0 1 2 3 4



Iterators



Iterators are used to point the containers. They are primarily used in the sequence of numbers, character etc.

Eg:- `begin()` , `end()` etc.



```
int main()
{
    vector<int> vec;

    for(int i=0;i<5;i++)
    {
        vec.push_back(i);
    }

    vector<int>::iterator ptr;

    for (ptr = vec.begin(); ptr < vec.end(); ptr++)
        cout << *ptr << " ";

    return 0;
}
```

OUTPUT:-

0 1 2 3 4



Application



Eg: – We don't have to define the sort function every time we write a new program instead we can just use generic containers and algorithms in STL.

It saves a lot of time, code and effort during programming.



Stay Tuned !!

STL Series-2

