23 Vectors STL in C++

Vectors

→ Vector in C++ is a dynamic array that can grow or shrink in size, making it a versatile and efficient datastructure for storing and manipulating sequences of elements.

Static Memory Allocation
e.g →
Normal Array
int arr[5];

Dynamic Memory Allocation

int * arr = new int[n]

Note:
array and dynamic malloc array has limitations with the size.
In vector, it manages by its own if any extra storage is require.

Vector

Declaration
vector<int> v;

Insertion
v.push_back(1);
v.push_back(2);

Size

```
int size = v.size();
```

In vector, capacity increases by double when it gets filled.

To remove

```
V.pop_back()
```

To Access

```
V.at(i)   OR   V[i]
```

To clear

```
v.clear()
```

Vector Initialization Techniques

```
vector<int> arr;
vector<int> arr2(5,-1);
vector<int> arr3={1,2,3,4,5};
vector<int> arr4{1,2,3,4,5};
vector<int> arr5 ={1,2,3,4,5};
vector<int> arr6(arr5);
print(arr6);
```

Front & back Element

```
V.Front()
V.back()
```

Printing vector

```
for(auto it: v) {
    cout<<it <<" ";
}
```