Standard Template Library (STL)

How to declear a vector ?

```
int arr[10000];
vector <datatype> v; <- name
vector <float> v;
```

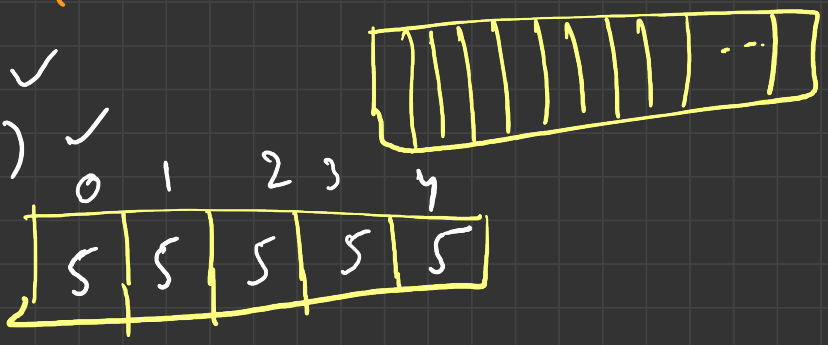
How to insert value in vector?

vector <int> v (size of vector, initialize)

vector <int> v (40)

vector <int> v (5) ✓

vector (int) v(5,5) ✓

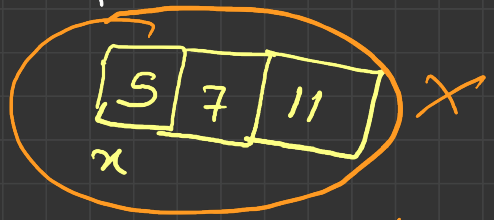


vector <int> x ;

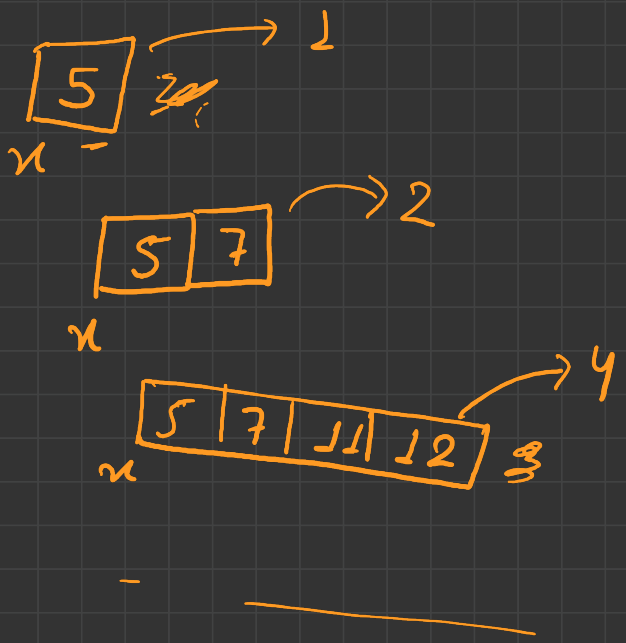
x.push_back (5)

x.push_back (7)

x.push_back (11);



```
vector<int> x;
x.push_back(5);
x.push_back(7);
x.push_back(11);
x.push_back(12);
x.push_back(13);
```



vector <int> y = {4, 7, 8, 11, 13}

```
{ int n;
  cin >> n;
{ vector <int> z(n); ==
  for (i=0; i<n; i++)
    cin >> z[i];
}
```

==

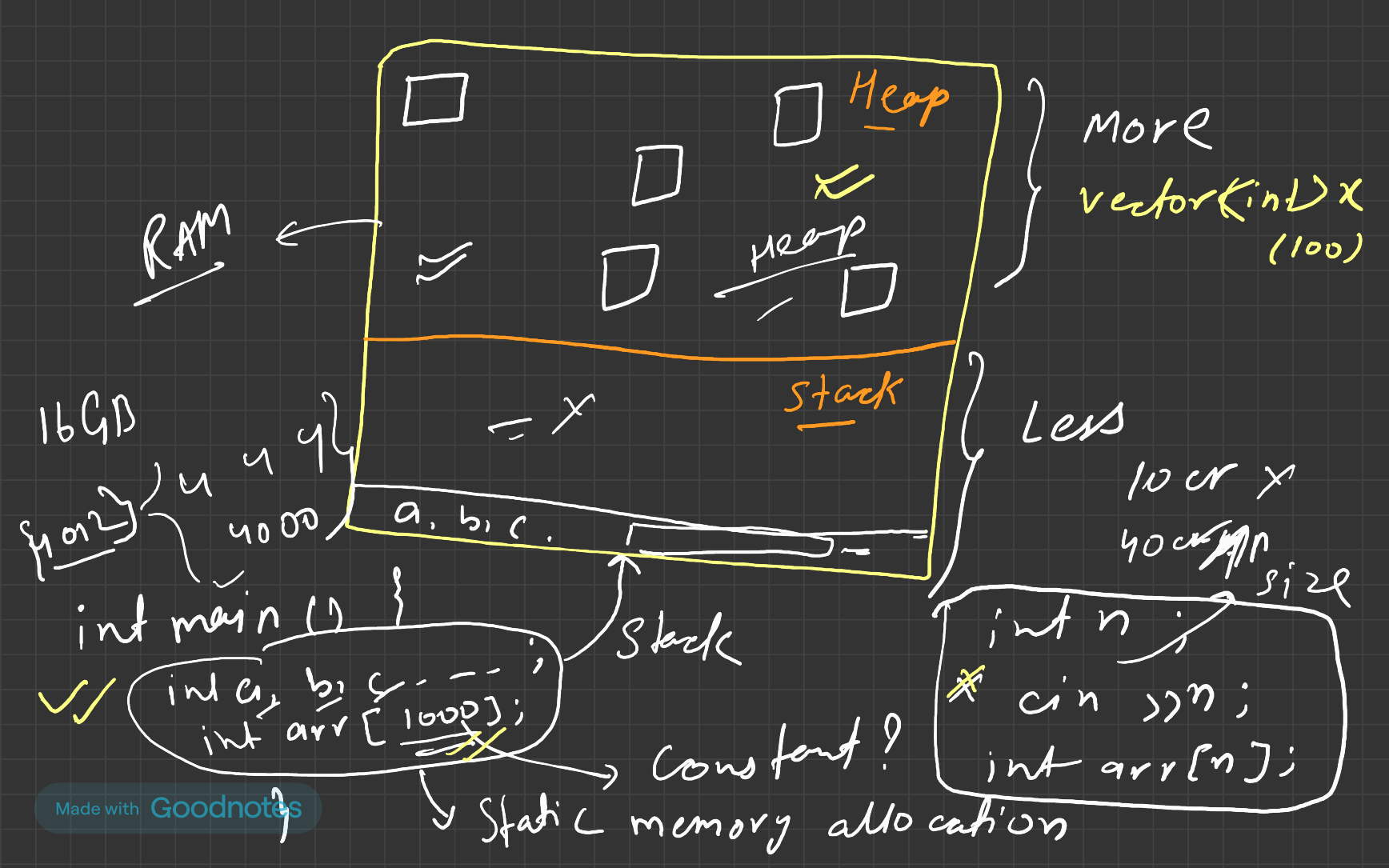
y

4	7	8	11	13

0	1	2	3	4
3	6	8	9	12

int arr[100000] ✗

```
int n;
cin >> n;
int arr[n] ✗
```



vector<int> x;

x.push_back(4)

x.push_back(2)

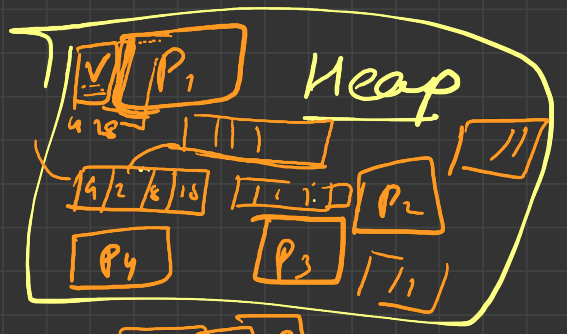
x.push_back(8)

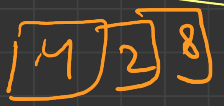
x.push_back(18)

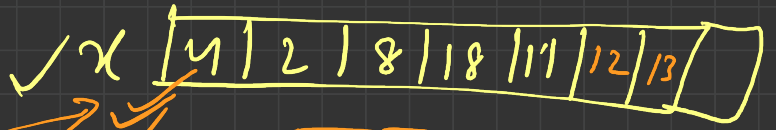
x.push_back(11)

x.push_back(12)

x.push_back(13)

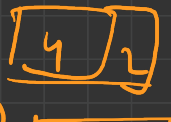




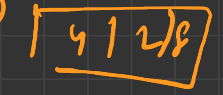


Push_back

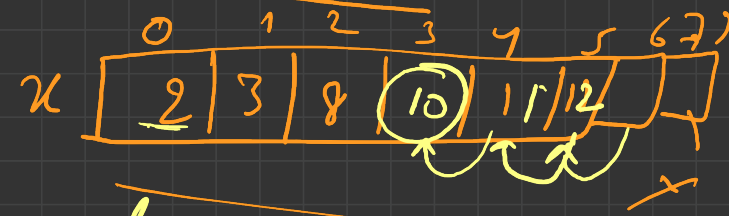
Avg O(1)



O(n)



remove value from vector



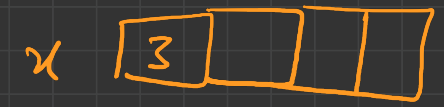
x.pop_back() O(1)

x.clear(); ? H.W comment

x.erase(x.begin()+3); O(n)

Size & capacity

```
vector<int> x;
x.push_back(3)
x.----(2)
x.----(12)
x.pop_back()
x.
```



Size = 1
Capacity = 4

front , back , at , empty

H.W

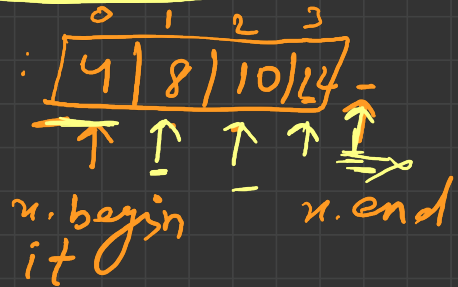
x :

```
cout << x.front();   1
cout << x.back();    4
cout << x.empty();   1
```

iterator in a vector

x.begin()
x.end()

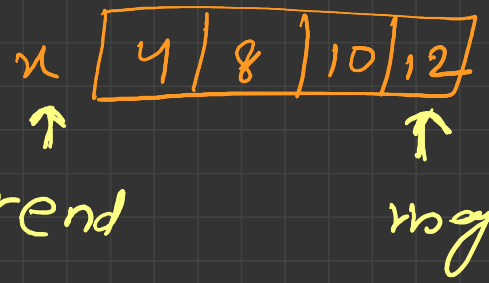
auto i = 10.12345

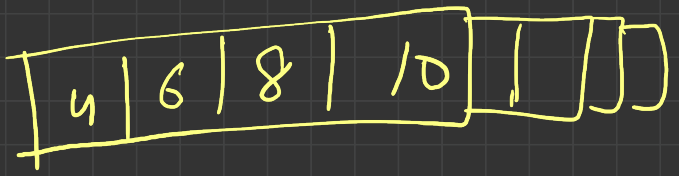



```
for (auto it = x.begin(); it != x.end(); it++)
    cout << *it << " ";
```

29

x.rbegin();
x.rend();





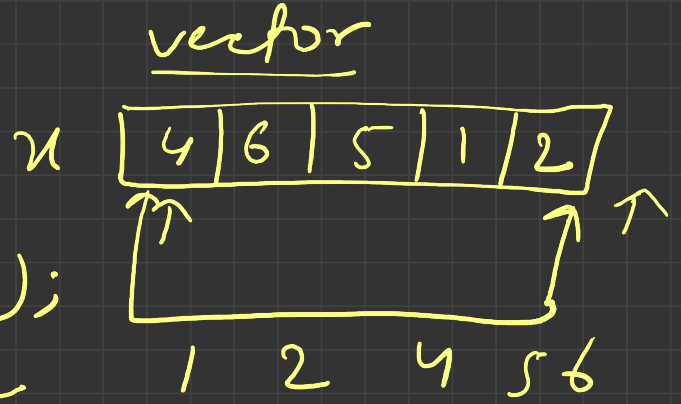

```
for( i=0; i<x.size() ;i++)
        cout << v[i];
```

4

x.size = 4

x.capacity = 8

Sorting



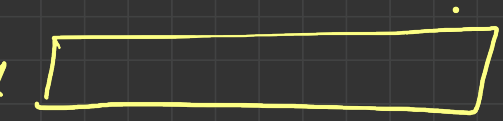

```
sort(x.begin(), x.end());
```

```
sort(x.begin(), x.end(), greater<int>());
```

6 5 4 2 1

Search vector

Count, max, min



Lower & Upper Bound