vector stl

STL -> Standard template library

↓

Provide a collection of template classes & f(n) that offer common DSA to make programing more efficient & convinient

→ Vector in C++ is a dynamic array that can grow or shrink in size, making it a versatile & efficient data structure for storing & manipulating sequence of elements.

Vector → Dynamic array

Difference :- If vector full then they double their size & copy all elements to new

Shrink & fit possible

```
#include <vector>

vector<int> v;   ⇒ size 0
```

size → current element
Capacity → memory allocate total

```
capacity();

v.push_back(1);  → adding element
  "  "  "  (2);
  "  "  "  (3);   (now capacity having 4)
                  size = 3

v.at(2);
v.front();
v.back();

v.pop_back();  remove element from last

v.clear();  in this case, size = 0 but capacity not zero bcoz it will the memory allocated to that
```

vector<int> a(5, 1);

type → int

name → a

5 → no. of elements

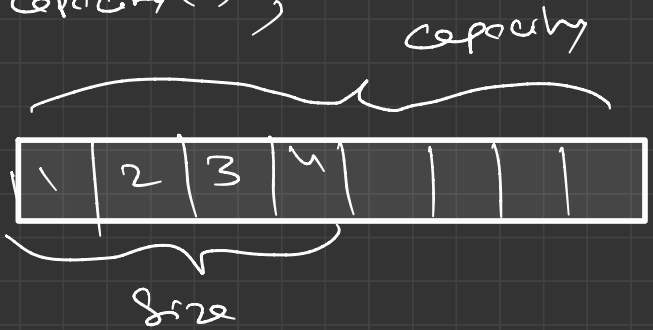
1 → initialise all with 1

vector<int> b(a);

Copy all elements of vector a in b

v.empty();

v.capacity();



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2 → D

initialize value of col

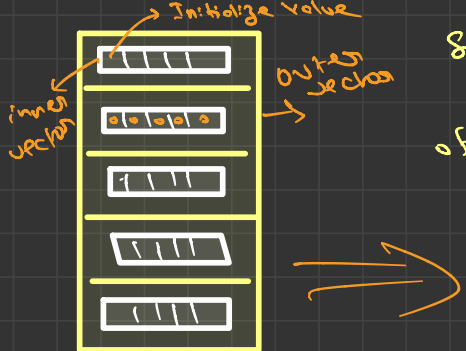
vector<vector<int>> arr(row, vector<int>(col, 0));

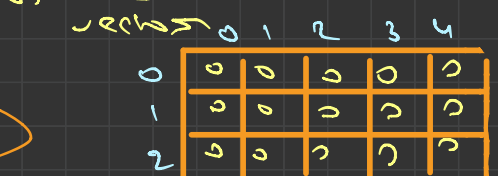
2 → D array of int

size of row → size of outer vector

size of inner vector

initialize with zero as our only other value





new way to iterate vector | array

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

for each loop