**What are vectors**

Vectors are dynamic arrays that stores values. The size of the vector can be changed during runtime. It is not necessary to mention the size at the start as we do in arrays. Elements from the middle, start, and end can be accessed in any vector. Vectors provide flexibility to the program and are static. Their order is not fixed and via iterators, we can access the elements.

While writing a code it is important to include the "#include<vector>" library in the header file.

**Syntax:** vector<data type> variable\_name

**Effect on time:**

When the data is inserted at the end of the vector differential time is used. while inserting an element at the start or middle takes linear time.

When to use vectors?

When the data is not defined

when the data is continuously changing

when the data is not known

**Member functions under vectors:**

**Modifiers**

These are used to modify data and assign new elements.

Some of the modifiers are:

pop\_back()-> This pushes the element at the back

push\_back-> This pops or delete the last element

insert()-> It inserts the element at a particular specified location

swap()-> Using this we can swap the elements even of different sizes

erase()->It will remove the data or element specified at a particular position

clear()-> It will erase all the elements from the vector

assign()-> It replaces the old value with a new one

**Iterators**

It is like a pointer that points to a particular value. It can be used to assign or replace values in the vector container.

Some of the iterators are:

begin()->This function returns the iterator pointing to the start element

end()-> This function returns the iterator pointing to the end element

There are also rbegin(), rend(), which reveres the iterator

cbegin(),cend() which returns constant iterator and

crbegin(),crend() which returns the reverse of constant iterator

**Capacity**

It is the space occupied by the vector container. It is the amount of space occupied by the vector.

Some of the capacity functions are:

size()-> This returns the number of elements in the vector container

resize()-> Changes its size to allocate space to other elements

max\_size()-> this returns the vector with maximum size

empty()-> Using this we can test whether the vector is empty or not

reserve()->It ensures that the vector size is capable to fit n number of elements

capacity()-> It returns the size of storage space allocated to the vector container

**Advantages of Vectors:**

1. Dynamic
2. Easy to insert and delete elements
3. Multiple objects can be stored
4. Easy to copy them by the assignment operator

**Disadvantages of Vectors:**

1. More consumption of memory than arrays
2. They are not indexed
3. Stored at separate memory locations