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**Assignment 6**

**Problem Statement**: Create a class template to represent a generic vector. Include following member

functions:

i. To create the vector.

ii. To modify the value of a given element

iii. To multiply by a scalar value

iv. To display the vector in the form (10,20,30,...)

**Aim of the Assignment:** To understand the concepts of templates, vectors , iterators and use the pushback() function of the vector in C++.

**Algorithm**:

1.START

2. Define vector as array

3. Define iterator as a function of vector

4. Initialize variables and take input for elements using v.pushback( ) .

5. Perform delete ,modify and multiply using iterators .

6. In main function, use switch case to perform desired operations.

7. STOP

**Concept Used**:

1. Vector: - Vectors are same as dynamic arrays with the ability to resize itself automatically when an element is inserted or deleted, with their storage being handled automatically by the container. Vector elements are placed in contiguous storage so that they can be accessed and traversed using iterators. In vectors, data is inserted at the end. Inserting at the end takes differential time, as sometimes there may be a need of extending the array. Removing the last element takes only constant time because no resizing happens. Inserting and erasing at the beginning or in the middle is linear in time

Functions in vector-

1. [begin()](https://www.geeksforgeeks.org/vectorbegin-vectorend-c-stl/) – Returns an iterator pointing to the first element in the vector
2. [size()](https://www.geeksforgeeks.org/vectorempty-vectorsize-c-stl/) – Returns the number of elements in the vector.
3. [at(g)](https://www.geeksforgeeks.org/vectorat-vectorswap-c-stl/) – Returns a reference to the element at position ‘g’ in the vector
4. push\_back()- function is used to push elements into a vector from the back. The new value is inserted into the vector at the end, after the current last element and the container size is increased by 1.
5. Iterator:- Iterators are used to point at the memory addresses of [STL](http://quiz.geeksforgeeks.org/the-c-standard-template-library-stl/) containers. They are primarily used in sequence of numbers, characters etc. They reduce the complexity and execution time of program

**Conclusion :**Thus by using the concepts of Vectors and Iterators , we created a generic array , modified it and multiplied it by a scalar quantity.