Some basic functions for vector

clear() :

Using the **clear()** function we can clear all elements of a vector and can make the vector empty. For example:

```
#include<vector>
#include<iostream>
using namespace std;

int main()
{
   vector<int> v = {1, 2, 3, 4};
   v.clear();
   cout << v.size() << endl; // 0
}
```

Look we have cleared all elements of the vector and the size of the vector became 0.

empty():

Using the **empty()** function we can check if a vector is empty or not. If the vector is empty the **empty()** function will return 1 otherwise, it will return 0. For example :

```
#include<vector>
#include<iostream>
using namespace std;

int main()
{
   vector<int> v = {1, 2, 3, 4};
   cout << v.empty() << endl; // prints 0
   v.clear();
   cout << v.empty() << endl; // prints 1
}
```

resize():

resize() function resizes a vector. If you have a vector with 5 elements you can resize it to 8 by using **resize()** function. **resize()** function will push 3 0's in the back of the vector. And if you have a vector with 5 elements you can resize it to 3 by using **resize()** function. **resize()** function will erase 2 elements from the back of the vector. For example:

```
#include<vector>
#include<iostream>
using namespace std;

int main()
{
   vector<int> v = {1, 2, 3, 4};
   cout << v.size() << endl;
   for ( int i = 0; i < v.size(); i++ ) cout << v[i] << " "; // 1 2 3 4
   cout << endl;

   v.resize( 6 );
   cout << v.size() << endl;
   for ( int i = 0; i < v.size(); i++ ) cout << v[i] << " "; // 1 2 3 4 0
0
   cout << endl;

   v.resize( 3 );
   cout << v.size() << endl;
   for ( int i = 0; i < v.size(); i++ ) cout << v[i] << " "; // 1 2 3
   cout << endl;


}
```

Look first we have declared a vector of size 4. Then we resized it to 6 using the **resize()** function. **resize()** function added 2 0's in the back of our vector and the vector became like this **v = { 1, 2, 3, 4, 0, 0 }**. After that we again resized the vector using **resize()**. Now the **resize()** function has removed 3 elements from the back of the vector and made it size 3. Now the vector look like this **v = { 1, 2, 3 }**

front():

The **front()** function returns the front element or 0 indexed element of the vector.

```
#include<vector>
```

```
#include<iostream>
using namespace std;

int main()
{
   vector<int> v = {5, 2, 3, 4};
   cout << v.front() << endl; // prints 5
}
```

back():

The **back()** function returns the last value of the vector.

```
#include<vector>
#include<iostream>
using namespace std;

int main()
{
   vector<int> v = {5, 2, 3, 4};
   cout << v.back() << endl; // prints 4
}
```

pop_back():

The **pop_back()** function removes the last element of the vector.

```
#include<vector>
#include<iostream>
using namespace std;

int main()
{
   vector<int> v = {5, 2, 3, 4};

   cout << v.size() << endl;
   for ( int i = 0; i < v.size(); i++ ) cout << v[i] << " "; // 5 2 3 4
   cout << endl;

   v.pop_back();
```

```
    cout << v.size() << endl;
    for ( int i = 0; i < v.size(); i++ ) cout << v[i] << " "; // 5 2 3
    cout << endl;
}
```

Look initially vector **v** has 4 values **v = { 5, 2, 3, 4 }**. Then we popped or removed the last element of the vector using **v.pop_back().** Then last element 4 is removed and vector became like this
v = { 5, 2, 3 }

swap():

Using **swap()** function we can swap two variables of the same data type. So we can swap 2 vectors of same data type:

```
#include<vector>
#include<iostream>
using namespace std;

int main()
{
    vector<int> v1 = {1, 2, 3, 4};
    vector<int> v2 = {5, 6, 7, 8, 9};

    swap(v1, v2);

    cout << v1.size() << endl;
    for ( int i = 0; i < v1.size(); i++ ) cout << v1[i] << " ";//5 6 7 8 9
    cout << endl;

    cout << v2.size() << endl;
    for ( int i = 0; i < v2.size(); i++ ) cout << v2[i] << " ";// 1 2 3 4
    cout << endl;
}
```

Look initially vector **v1 = { 1, 2, 3, 4 }** and vector **v2 = { 5, 6, 7, 8, 9 }**. After swapping elements in v1 and v2, **v1 = { 5, 6, 7, 8, 9 }** and **v2 = { 1, 2, 3, 4 }.**

So from today's lesson we have learnt:

- **clear()** function to clear all data from vector
- **empty()** function to check is a vector is empty or not
- **resize()** function to resize a vector
- **front()** function to get the front or 0 indexed value of a vector
- **back()** function to get the last element of a vector
- **pop_back()** function to remove last element of a vector
- **swap()** function to swap elements of two vectors of same data type

Ok that’s all for today's lesson. Hope you enjoyed the lesson. See you in the next lesson.