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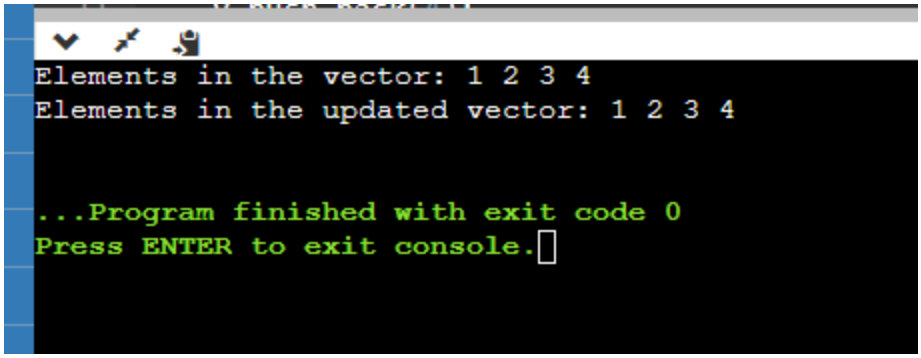
Course :FOP.

Task no.1

- **Iterate Through Vector Using Iterators and print all pushed elements. Next you need to push integer 5 and remove element at that position.**

```
#include <iostream>
#include <vector>

using namespace std;

int main() {
    vector<int> v;
    v.push_back(1);
    v.push_back(2);
    v.push_back(3);
    v.push_back(4);

    cout << "Elements in the vector: ";
    for (auto it = v.begin(); it != v.end(); ++it) {
        cout << *it << " ";
    }
    cout << endl;

    v.push_back(5);

    v.erase(v.begin() + 4);

    cout << "Elements in the updated vector: ";
    for (auto it = v.begin(); it != v.end(); ++it) {
        cout << *it << " ";
    }
    cout << endl;

    return 0;
}
```



Task no.2

```
#include <iostream>
#include <vector>
#include <algorithm>
#include <map>

using namespace std;

int main() {
    vector<string> names;
    vector<int> grades;
    int n;

    cout << "Enter the number of name/grade pairs: ";
    cin >> n;

    for (int i = 0; i < n; i++) {
        string name;
        int grade;
        cout << "Enter name #" << i + 1 << ": ";
        cin >> name;
        cout << "Enter grade #" << i + 1 << ": ";
        cin >> grade;
        names.push_back(name);
        grades.push_back(grade);
    }
```

```
 //Display mean of grades.
 double sum = 0;
 for (int i = 0; i < n; i++) {
     sum += grades[i];



}
 double mean = sum / n;
 cout << "Mean of the grades: " << mean << endl;

 // Display the median of grades.
 sort(grades.begin(), grades.end());
 double median;
 if (n % 2 == 0) {
    median = (grades[n / 2 - 1] + grades[n / 2]) / 2.0;
 } else {
    median = grades[n / 2];
 }
 cout << "Median of the grades: " << median << endl;

 // Display the mode of the grades
 map<int, int> freq;
 for (int i = 0; i < n; i++) {
    freq[grades[i]]++;
 }
 int mode = -1;
 int max_freq = 0;
 for (auto it = freq.begin(); it != freq.end(); ++it) {
    if (it->second > max_freq) {
        max_freq = it->second;
        mode = it->first;
    }
 }
 cout << "Mode of the grades: " << mode << endl;

 // Display the names of students with mode in form of grade
 cout << "Names of the students with the mode as their grade: ";
 for (int i = 0; i < n; i++) {
    if (grades[i] == mode) {
        cout << names[i] << " ";
    }
 }
```

```
    cout << endl;

    return 0;
}
```