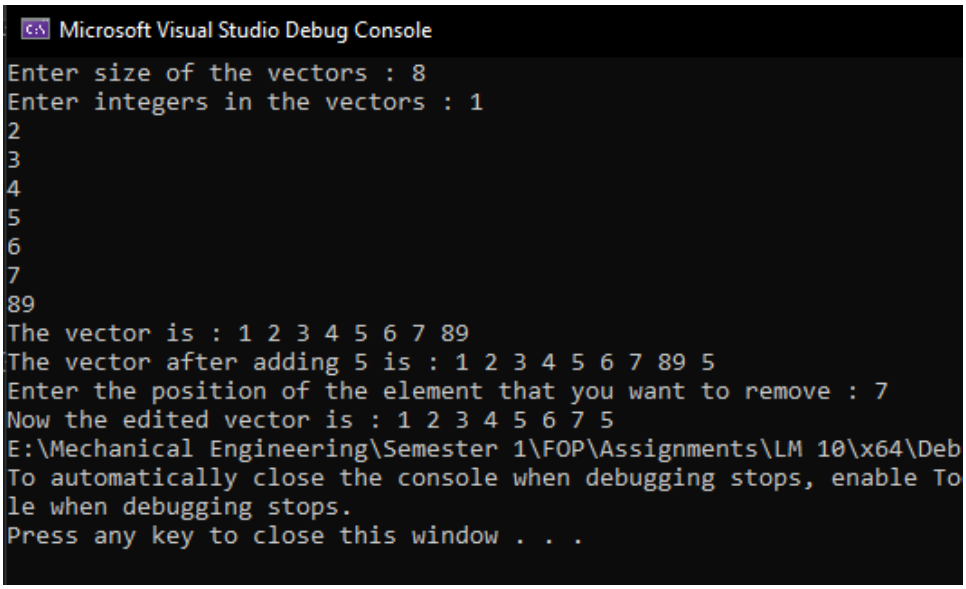
FUNDAMENTALS OF PROGRAMMING

LAB MANUAL # 10

ABDUL MOIZ 464834 SECTION B

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

int main()
{// Task # 1
vector<int>vec1;
int size, integer,ptr;
cout << "Enter size of the vector : ";
cin >> size;
cout << "Enter integers in the vectors: ";
for (int i = 0; i < size; i++)
{
cin >> integer;
vec1.push_back(integer);
}

cout << "The vector is : ";
for (auto i = vec1.begin(); i!= vec1.end(); i++)
{
cout << *i << " ";
}
```

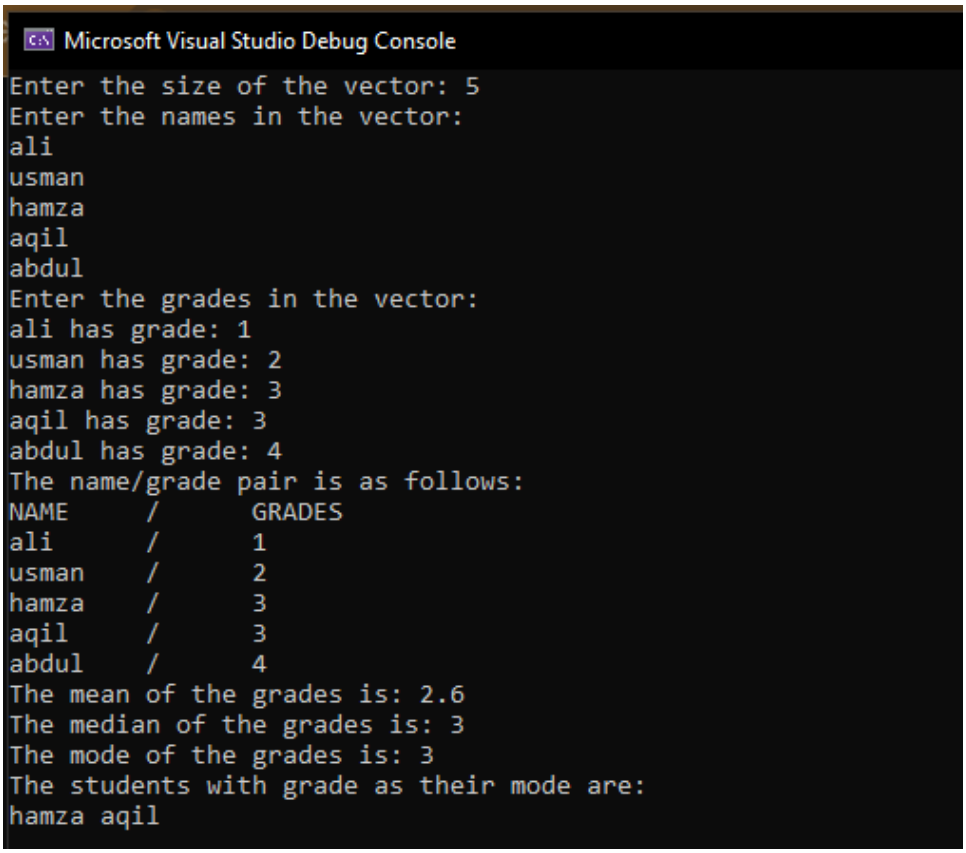
```
cout << endl;
vec1.push_back(5);
cout << "The vector after adding 5 is : ";
for (auto i = vec1.begin(); i != vec1.end(); i++)
{
cout << *i << " ";
}
cout << endl;
cout << "Enter the position of the element that you want to remove : ";
cin >> ptr;
vec1.erase(vec1.begin()+ptr);
cout << "Now the edited vector is : ";
for (auto i = vec1.begin(); i != vec1.end(); i++)
{
cout << *i << " ";
}

return 0;
}
```




```
{// TASK # 2
   vector<string> names;
   vector<int> grades;
   int size, grade, median, x = 0, mode;
   double mean;
   string nam;

   cout << "Enter the size of the vector: ";
   cin >> size;

   cout << "Enter the names in the vector: " << endl;
   for (int i = 0; i < size; i++) {
      cin >> nam;
      names.push_back(nam);
   }

   cout << "Enter the grades in the vector: " << endl;
   for (int i = 0; i < size; i++) {
```

```
    cout << names[i] << " has grade: ";
    cin >> grade;
    grades.push_back(grade);
}

cout << "The name/grade pair is as follows: " << endl;
cout << "NAME" << "\t" << " / " << "\t" << "GRADES" << endl;
for (int i = 0; i < size; i++) {
    cout << names[i] << "\t" << " / " << "\t" << grades[i] << endl;
}

for (int i = 0; i < size; i++) {
    x += grades[i];
}

cout << "The mean of the grades is: ";
mean = static_cast<double>(x) / static_cast<double>(size);
cout << mean << endl;

sort(grades.begin(), grades.end());
median = size / 2;
cout << "The median of the grades is: " << grades[median] << endl;

int maxCount = 0;
for (int i = 0; i < size; i++) {
    int count = std::count(grades.begin(), grades.end(), grades[i]);
    if (count > maxCount) {
```

```
            maxCount = count;
            mode = grades[i];
        }
    }

    cout << "The mode of the grades is: " << mode << endl;

    cout << "The students with grade as their mode are: " << endl;
    for (int i = 0; i < size; i++) {
        if (grades[i] == mode) {
            cout << names[i] << " ";
        }
    }
    cout << endl;

    return 0;
}
```


Microsoft Visual Studio Debug Console
Enter the size of the vector: 5
Enter the names in the vector:
ali
usman
hamza
aqil
abdul
Enter the grades in the vector:
ali has grade: 1
usman has grade: 2
hamza has grade: 3
aqil has grade: 3
abdul has grade: 4
The name/grade pair is as follows:
NAME / GRADES
ali / 1
usman / 2
hamza / 3
aqil / 3
abdul / 4
The mean of the grades is: 2.6
The median of the grades is: 3
The mode of the grades is: 3
The students with grade as their mode are:
hamza aqil