**National University of Sciences & Technology**

**Islamabad**

**Fundamentals of Programming Lab**

**ME 15 B**

**Lab Manual 10 Tasks**

**Muhammad Shahzeb Khan**

**479677**

**submitted to Sir Affan**

**Program 1:**

#include<iostream>

#include<vector>

using namespace std;

int main(){

int num=0;

int i;

cout<<"input the total number of elements for making vector ";

cin>>num;

vector<int>vec1(num);

for( i=0;i<vec1.size();i++){

cin>>vec1[i];

}

cout<<"the required result is"<<endl;

vector<int>::iterator utter;

for(utter=vec1.begin();utter!=vec1.end();utter++){

cout<<\*utter<<'\t';

}

cout<<endl;

vec1.push\_back(5);

for(utter=vec1.begin();utter!=vec1.end();utter++){

cout<<\*utter<<'\t';

}

cout<<endl;

vec1.pop\_back();

for(utter=vec1.begin();utter!=vec1.end();utter++){

cout<<\*utter<<'\t';

}

return 0;

}



**Program2:**

#include<iostream>

#include<vector>

#include<string>

using namespace std;

int main(){

int n;

vector <string> name(n);

vector <int> grade(n);

cout<<"input the number of pairs";

cin>>n;

cout<<endl;

for(int i=0;i<n;i++){

cout<<"input the name of student"<<i+1<<": ";

cin>>name[i];

cout<<endl;

cout<<"input grade of that student "<<i+1<<": ";

cin>>grade[i];

cout<<endl;

}

cout<<endl;

double sum=0,mean;

for(int i=0;i<n;i++){

sum+=grade[i];

}

mean=sum/n;

cout<<"he mean of the grades is "<<mean;

cout<<endl;

cout<<endl;

if(n%2!=0){

int median=n/2;

cout<<"The median of grades is "<<grade[median]<<endl;

}

else{

int median1=n/2;

int median2=(n-2)/2;

cout<<"The median of the grades are "<<grade[median1]<<" and "<<grade[median1]<<endl;

}

int mode,presentnum=1,maxnum=1;

for(int i=0;i<n;i++){

if(grade[i]==grade[i+1]){

presentnum++;

}

else{

if(presentnum==1){

cout<<"There is no mode of the grade"<<endl;

break;

}

}

if(presentnum>maxnum){

maxnum=presentnum;

mode=grade[i];

}

}

if(presentnum!=1){

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

}

cout<<"The names of the students with mode as their grade are: "<<endl;

for(int i=0;i<n;i++){

if(grade[i]==mode){

cout<<name[i]<<" has grade: "<<mode<<endl;

} }

return 0;

}

