National University of Science and technology

(NUST)

CS-114 - Fundamental of Programing

Lab manual 10

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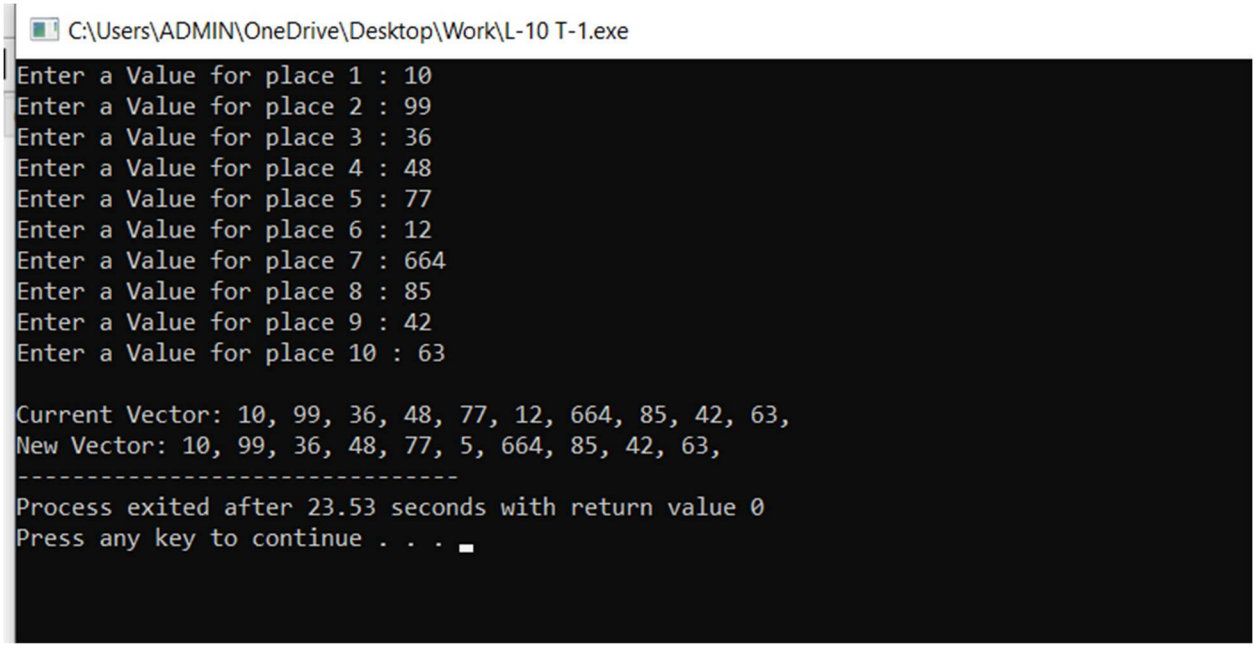
Date: 26/12/2023

Task 1:

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

int main(){
	int in, i;
	vector<int> v;
	for(i=0; i<10; i++){
		cout<<"Enter a Value for place "<<i+1<<" : ";
		cin>>in;
		v.push_back(in);
	}
	cout<<endl<<"Current Vector: ";
	for(i=0; i<10; i++)
	{

	cout<<v.at(i)<<", ";
	}

  v.erase(v.begin()+5);
	v.insert(v.begin()+5, 5);
	cout<<endl<<"New Vector: ";
		for(i=0; i<10; i++)
	{
	cout<<v.at(i)<<", ";
	}
```

}



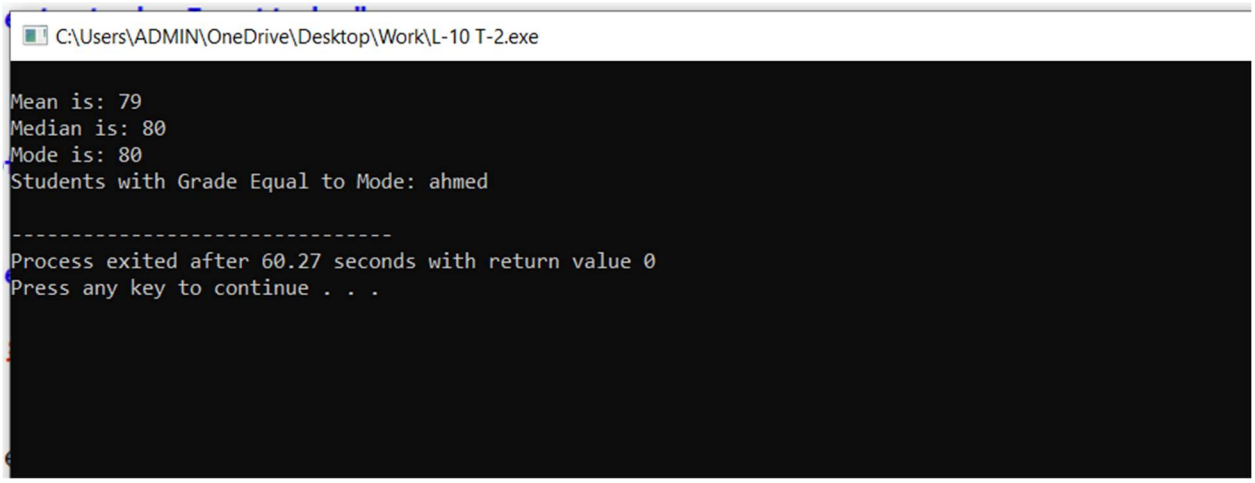
Task2:

```
#include<iostream>
#include<vector>
#include<string>
using namespace std;
int find_mean(vector<int> v){
	int sum=0, size=v.size();
	for(int i=0; i<v.size(); i++){
		sum=v[i]+sum;
	}
	int mean=sum/v.size();

	return mean;
}
int find_median(vector<int> v){
	int i, j, temp, median;
```

```
	for(i=0; i<v.size()-1; i++){
		for(j=0; j<v.size()-1; j++){
			if(v[j]>v[j+1]){
				temp=v[j];
				v[j]=v[j+1];
				v[j+1]=temp;
			}
		}
	}
	int n=v.size();
	if(n%2 == 0){
		median=((n/2)+((n/2)+1))/2;
	}
	else{
		median=(n+1)/2;

	}

	return v[median-1]	;
}

int find_mode(vector<int> v){
	int repetition=0, maxrep=0, mostrepeated;
	for(int i=0; i<v.size(); i++){
		repetition=0;
		for(int j=0; j<v.size(); j++){
			if(v[i]==v[j]){
				repetition++;
			}
```

```
                }
                if(repetition>maxrep){
                        maxrep=repetition;
                        mostrepeated=v[i];
                }
        }
        return mostrepeated;
}

void students_mode(vector<string> v, vector<int> g, int mode){
        int i=0;
        cout<<"Students with Grade Equal to Mode: ";
        for(i=0; i<v.size(); i++){
                if(g[i]==mode){
                        cout<<v[i]<<endl;
                }
        }
}
int main(){
        vector<string> names;
        vector<int> grades;
        int i,j,input, num;
        string name;
        cout<<"Enter Number of Students to be Inputted: ";
        cin>>num;
        for(i=0; i<num; i++){
                system("cls");
                cout<<"Enter the Name of Student: ";
                cin>>name;
```

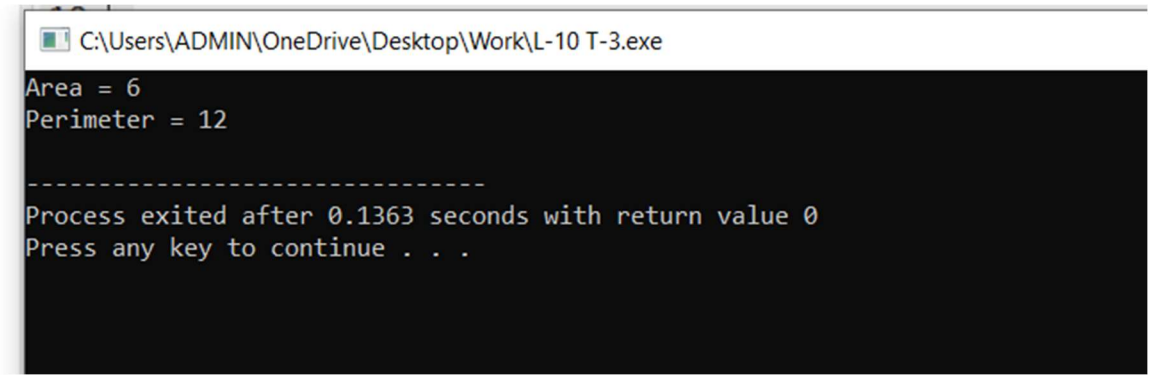
```
names.push_back(name);
cout<<endl<<"Enter Grade of Student in Percentage: ";
cin>>input;
grades.push_back(input);
}
system("cls");
int mean=find_mean(grades);
cout<<endl<<"Mean is: "<<mean<<endl;
int median=find_median(grades);
cout<<"Median is: "<<median<<endl;
int mode=find_mode(grades);
cout<<"Mode is: "<<mode<<endl;
students_mode(names, grades, mode);

}
```



Task3:

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

```
class triangle{
	public:
		int length1=3;
		int length2=4;
		int length3=5;

	int perimeter(){
		return length1+length2+length3;

	}
	double area(){
		int area,s;
		s=perimeter()/2;
		return sqrt(s * (s - length1) * (s - length2) * (s - length3));
	}
};

int main(){
	triangle task3;
	int perimeter;
	double area;
	perimeter=task3.perimeter();
	area=task3.area();

	cout<<"Area = "<<area<<endl;
	cout<<"Perimeter = "<<perimeter<<endl;

}
```



Task4:

```
#include <iostream>
#include <string>

using namespace std;

struct Employee {
    string name;
    double salary;
    int hoursWorkedPerDay;
};

int main() {
    const int numEmployees = 10;
    Employee employees[numEmployees];

    for (int i = 0; i < numEmployees; ++i) {
        cout << "Enter name for employee " << i + 1 << ": ";
        cin >> employees[i].name;

        cout << "Enter salary for employee " << i + 1 << ": ";
```

```
        cin >> employees[i].salary;

        cout << "Enter hours of work per day for employee " << i + 1 << ": ";
        cin >> employees[i].hoursWorkedPerDay;

        cout << endl;
    }

    for (int i = 0; i < numEmployees; ++i) {
        if (employees[i].hoursWorkedPerDay >= 12) {
            employees[i].salary += 150;
        } else if (employees[i].hoursWorkedPerDay >= 10) {
            employees[i].salary += 100;
        } else if (employees[i].hoursWorkedPerDay >= 8) {
            employees[i].salary += 50;
        }
    }

    cout << "Employee Details:" << endl;
    for (int i = 0; i < numEmployees; ++i) {
        cout << "Name: " << employees[i].name << ", Final Salary: $" << employees[i].salary << endl;
    }

}
```

C:\Users\ADMIN\OneDrive\Desktop\Work\L-10 T-4.exe

```
Enter hours of work per day for employee 6: 7

Enter name for employee 7: Gwen
Enter salary for employee 7: 650
Enter hours of work per day for employee 7: 9

Enter name for employee 8: Kai
Enter salary for employee 8: 658
Enter hours of work per day for employee 8: 11

Enter name for employee 9: Chris
Enter salary for employee 9: 400
Enter hours of work per day for employee 9: 4

Enter name for employee 10: David
Enter salary for employee 10: 660
Enter hours of work per day for employee 10: 8

Employee Details:
Name: Tom, Final Salary: $450
Name: Ben, Final Salary: $500
Name: Jerry, Final Salary: $600
Name: Naruto, Final Salary: $10150
Name: Kevin, Final Salary: $700
Name: Max, Final Salary: $600
Name: Gwen, Final Salary: $700
Name: Kai, Final Salary: $758
Name: Chris, Final Salary: $400
Name: David, Final Salary: $710
```