GROUP 7

Group Details :-

K.A.S.Sekhar 1601-14-733-091

Dasaradh Ram Reddy 1601-14-733-092

Eshwar 1601-14-733-093

Harsha Vardhan 1601-14-733-094

G.S.Harsha Anirudh 1601-14-733-095

TEAM LEADER:- Mr. Sekhar Karedla 1601-14-733-091

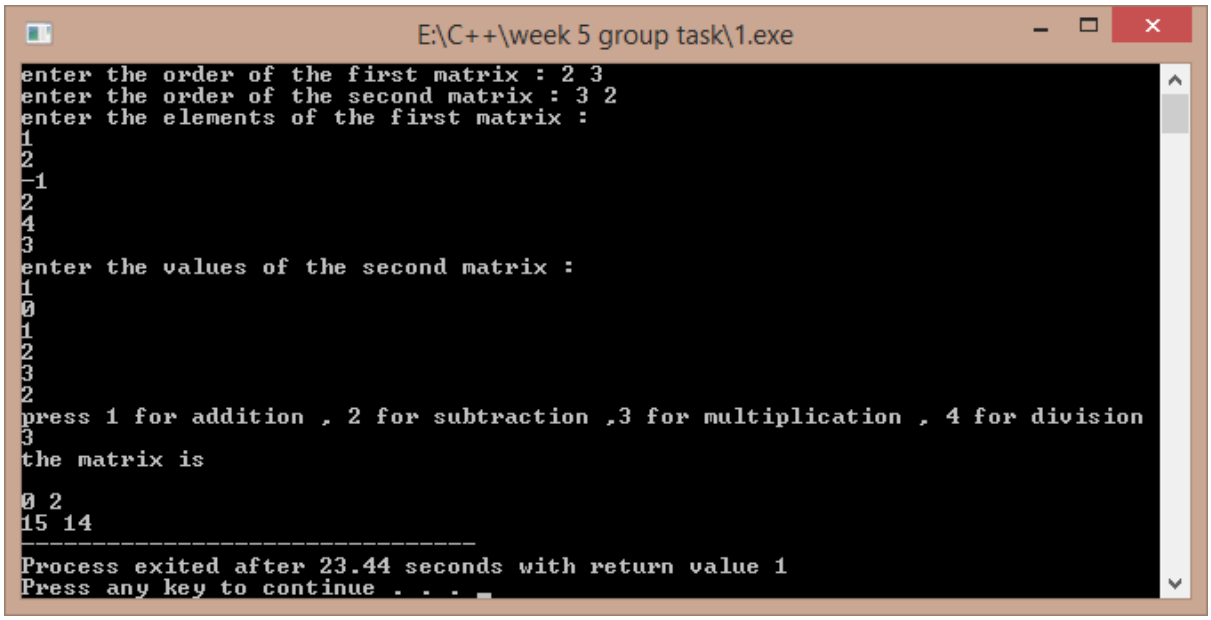
Program 1:-

```
//a program to implement the matrix operations.
/*Solution to this program is developed by BE ¼ CSE-2 Group-7(Sekhar,
Dasaradh, Eshwar, Harsha and Harshavardhan)*/
#include<iostream>
#include<stdlib.h>
using namespace std;
class matrix
{
	int m,n,p,q,**a,**b,m1,n1,**c; // using pointer to pointers for 2d array
	public:
		void getdata();
		void display();
		void add();
		void subtract();
		void multiply();
};
void matrix::getdata()
{
	cout<<"enter the order of the first matrix : ";
	cin>>m>>n;
	cout<<"enter the order of the second matrix : ";
	cin>>p>>q;
	a = new int *[m];   //allocating memory for 2-D array dynamically
```

```
        for(int i = 0; i < m; ++i)
        a[i] = new int[n];
        b = new int*[p];
        for(int i = 0; i < p; ++i)
        b[i] = new int[q];
        int i,j;
        cout<<"enter the elements of the first matrix : \n";
        for(i=0;i<m;i++)
        for(j=0;j<n;j++)
        cin>>a[i][j];
        cout<<"enter the values of the second matrix : \n";
        for(i=0;i<p;i++)
        for(j=0;j<q;j++)
        cin>>b[i][j];
}
void matrix::display()
{
        int i,j;
        cout<<"the matrix is \n";
        for(i=0;i<m1;i++)
        {
        cout<<endl;
        for(j=0;j<n1;j++)
        cout<<c[i][j]<<" ";
        }
}
void matrix::add()
{
        if(m!=p||n!=q)
        {
        cout<<"wrong order : ";
        exit(-1);
        }
        int i,j;
        m1=m;n1=n;
        c = new int*[m1];
        for(int i = 0; i < m1; ++i)
        c[i] = new int[n1];
        for(i=0;i<m1;i++)
        for(j=0;j<n1;j++)
        c[i][j]=a[i][j]+b[i][j];
}
void matrix::subtract()
```

```
{
	if(m!=p||n!=q)	//exceptions
	{
	cout<<"wrong order : ";
	exit(-1);
	}
	int i,j;
	m1=m;n1=n;
	c = new int*[m1];
	for(int i = 0; i < m1; ++i)
	c[i] = new int[n1];
	for(i=0;i<m1;i++)
	for(j=0;j<n1;j++)
	c[i][j]=a[i][j]-b[i][j];
}
void matrix::multiply()
{
	if(n!=p)	//exception for multiplication
	{
	cout<<"wrong order : ";
	exit(-1);
	}
	int i,j,k;
	m1=m;n1=q;
	c = new int*[m1];
	for(int i = 0; i < m1; ++i)
	c[i] = new int[n1];
	for(i=0;i<m1;i++)
	{
		for(j=0;j<n1;j++)
		{
			c[i][j]=0;
			for(k=0;k<n;k++)
			c[i][j]+=a[i][k]*b[k][j];
		}
	}
}
int main()
{
	matrix s;
	s.getdata();
	int ch;
```

```
	cout<<"press 1 for addition , 2 for subtraction ,3 for multiplication , 4 for
division ";
	cin>>ch;
	switch(ch) //using the switch case for menu purpose
	{
		case 1: s.add();s.display();break;
		case 2: s.subtract();s.display();break;
		case 3:s.multiply();s.display();break;
		default:cout<<"wrong choice ...";
	}
return 1;
}
```

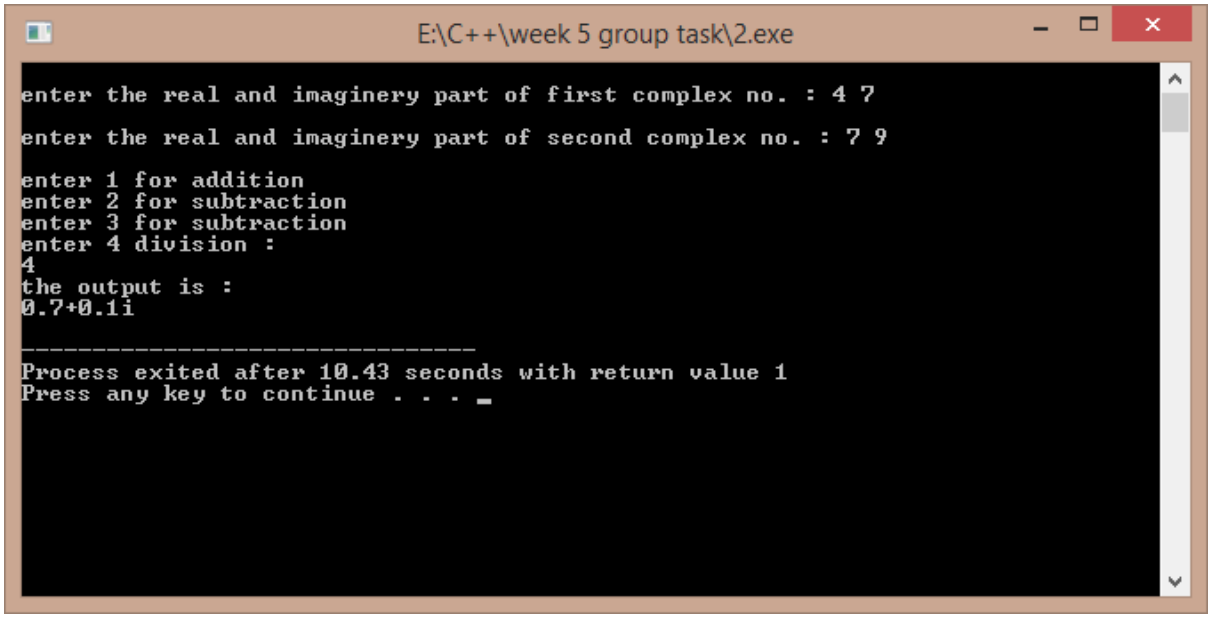


Program 2:-

```
//a program to implement operations on complex numbers
/*Solution to this program is developed by BE ¼ CSE-2 Group-7(Sekhar,
Dasaradh, Eshwar, Harsha and Harshavardhan)*/
#include<iostream>
using namespace std;
class complex
{
private:
	float real;
	float imag;
```

```
        public:
        void add(complex,complex);
        void sub(complex,complex);
        void mul(complex,complex);
        void divide(complex,complex);
        void display();
        void getdata(float,float);
};
void complex::add(complex x, complex y)
{
  this->real=x.real+y.real;   //using this pointer to point towards its own member
  this->imag=x.imag+y.imag;
}
void complex::sub(complex x, complex y)
{
  this->real=x.real-y.real;
  this->imag=x.imag-y.imag;
}
void complex::mul(complex x, complex y)
{
  this->real=(x.real*y.real)-(x.imag)*(y.imag);
  this->imag=(x.real*y.imag)+(y.real*x.imag);
}
void complex::divide(complex x, complex y)
{
  this-
>real=((x.real*y.real)+(x.imag)*(y.imag))/((y.real*y.real)+(y.imag*y.imag));
  this->imag=((y.real*x.imag)-
(x.real*y.imag))/((y.real*y.real)+(y.imag*y.imag));
}
void complex::display()
{
        if(imag>0)
        cout<<real<<"+"<<imag<<"i\n";
        else
        cout<<real<<"-"<<imag<<"i\n";
}
void complex::getdata(float r,float i)
{
        real=r;
        imag=i;
}
int main()
```

```
{
	complex c1,c2,c3;  //two complex numbers for storing the data
	float m,n;		//c3 for storing the result
	cout<<"\nenter the real and imaginery part of first complex no. : ";
	cin>>m>>n;
	c1.getdata(m,n);
	cout<<"\nenter the real and imaginery part of second complex no. : ";
	cin>>m>>n;
	c2.getdata(m,n);
	int ch;
	cout<<"\nenter 1 for addition\nenter 2 for subtraction\nenter 3 for
subtraction\nenter 4 division :\n";
	cin>>ch;
	switch(ch)		//switch case for the menu
	{
		case 1:
			{
				c3.add(c1,c2);
			}break;
		case 2:
			{
				c3.sub(c1,c2);
			}break;
		case 3:
			{
				c3.mul(c1,c2);
			}break;
		case 4:
			{
				c3.divide(c1,c2);
			}break;
		default:cout<<"wrong choice ....";
	}
	cout<<"the output is : \n";
	c3.display();
	return 1;
}
```



Program 3:-

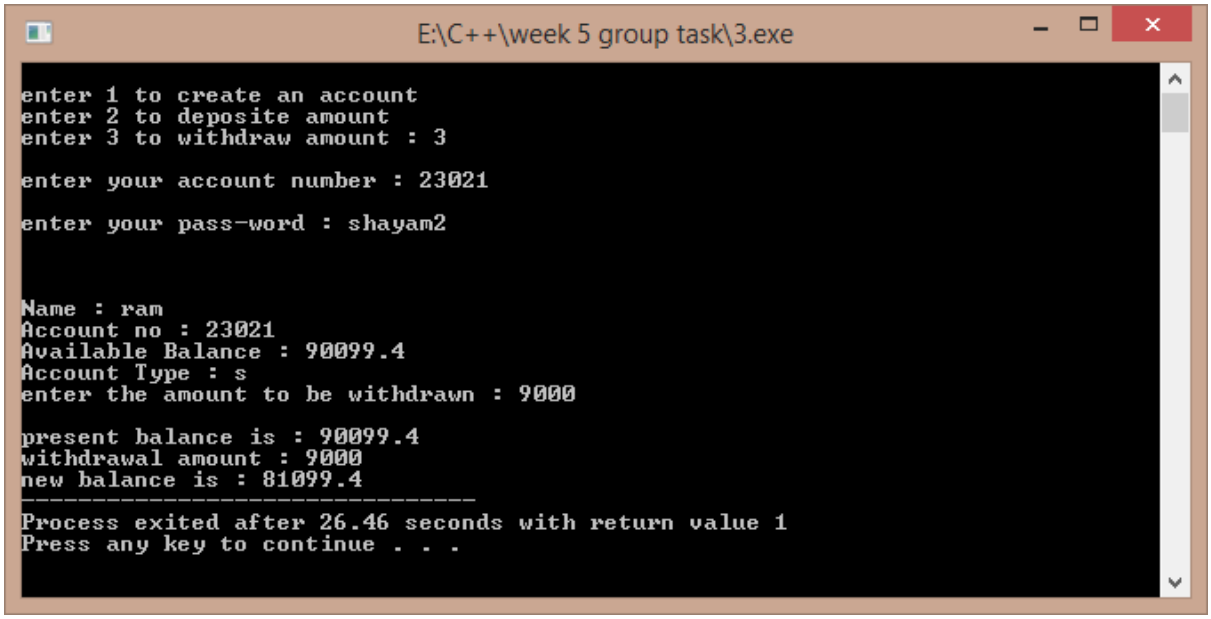
```
//a sample program to show the working of a bank program
/*Solution to this program is developed by BE ¼ CSE-2 Group-7(Sekhar,
Dasaradh, Eshwar, Harsha and Harshavardhan)*/
#include<iostream>
#include<string.h>
#include<stdlib.h>
using namespace std;
class bank
{
        long int ac;
        float bal;
        char t,name[100],pass[100];
        public:
        void withdraw(float);
        void deposite(float);
        void display();
        void create();
        friend void assign(bank []);     //two friend functions to access the
        friend int check(bank [],char [],long int); // private data of objects
};
void bank::display()   // a function to display the record
{
        cout<<"\n\n\nName : "<<name;
        cout<<"\nAccount no : "<<ac;
```

```
        cout<<"\nAvailable Balance : "<<bal;
        cout<<"\nAccount Type : "<<t;
}
void bank::create()  //a function to create a new account
{
        cout<<"\nenter you name : ";
        cin>>name;
        cout<<"\nenter your account number : ";
        cin>>ac;
        cout<<"\nenter the balance : ";
        cin>>bal;
        cout<<"\ncreate a new password : ";
        cin>>pass;
        while(bal<1000)
        {
                cout<<"\nminimum amount should be 1000 , please re- enter
amount ...";
                cin>>bal;
        }
        cout<<"\nenter the type of account : ";
        cin>>t;
}
void bank::withdraw(float w)
{
        if(w>bal)
        {
                cout<<"\nnot enough balance..."; //exception if there is not enough
                exit(-1);                                       //balance
        }
        cout<<"\npresent balance is : "<<bal;
        cout<<"\nwithdrawal amount : "<<w;
        cout<<"\nnew balance is : "<<bal-w;
        bal=bal-w;
}
void bank::deposite(float w)
{
        cout<<"\npresent balance : "<<bal;
        cout<<"\ndeposite amount : "<<w;
        cout<<"\nnew amount : "<<bal+w;
        bal=bal+w;
}
void assign(bank b[])  //a function to assign some existing accounts to objects
{
```

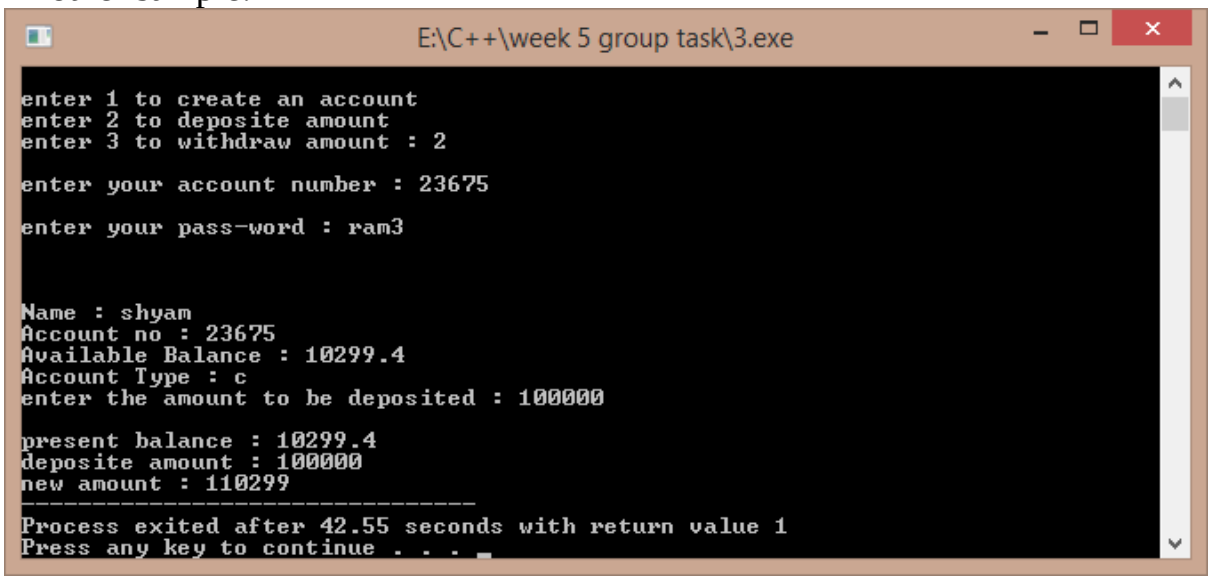
```
	strcpy(b[0].name,"sekhar");
	b[0].ac=23095;
	b[0].bal=9023099.4326;
	b[0].t='s';
	strcpy(b[0].pass,"karedla1");
	strcpy(b[1].name,"ram");
	b[1].ac=23021;
	b[1].bal=90099.4326;
	b[1].t='s';
	strcpy(b[1].pass,"shayam2");
	strcpy(b[2].name,"shyam");
	b[2].ac=23675;
	b[2].bal=10299.426;
	b[2].t='c';
	strcpy(b[2].pass,"ram3");
}
int check(bank b[],char p[],long int z)
{		//a friend function to check acc no . and its corresponding password
	int i;
	for(i=0;i<3;i++)
	{
		if(strcmp(b[i].pass,p)==0&&(b[i].ac==z))
		return i;
	}
	return -1;
}
int main()
{
	bank b[3];
	assign(b);
	int ch;
	cout<<"\nenter 1 to create an account\nenter 2 to deposite amount\nenter
3 to withdraw amount : ";
	cin>>ch;
	switch(ch)    //a menu to create , with draw , create new account
	{
		case 1:
			{
				bank s;
				s.create();
			}break;
		case 2:
			{
```

```
                char p[100];int k;long int z;
                cout<<"\nenter your account number : ";
                cin>>z;
                cout<<"\nenter your pass-word : ";
                cin>>p;
                k=check(b,p,z);
                if(k>=0)
                {
                        b[k].display();
                }
                else
                {
                cout<<"no matching profile ...";
                exit(-1);
                }
                cout<<"\nenter the amount to be deposited : ";
                float w;
                cin>>w;
                b[k].deposite(w);
        }break;
case 3:
        {
                char p[100];int k;long int z;
                cout<<"\nenter your account number : ";
                cin>>z;
                cout<<"\nenter your pass-word : ";
                cin>>p;
                k=check(b,p,z);
                if(k>=0)
                {
                        b[k].display();
                }
                else
                {
                cout<<"no matching profile ...";
                exit(-1);
                }
                cout<<"\nenter the amount to be withdrawn : ";
                float w;
                cin>>w;
                b[k].withdraw(w);
        }break;
default : cout<<"wrong option entry ....";
```

```
        }
return 1;
}
```



Another sample:-

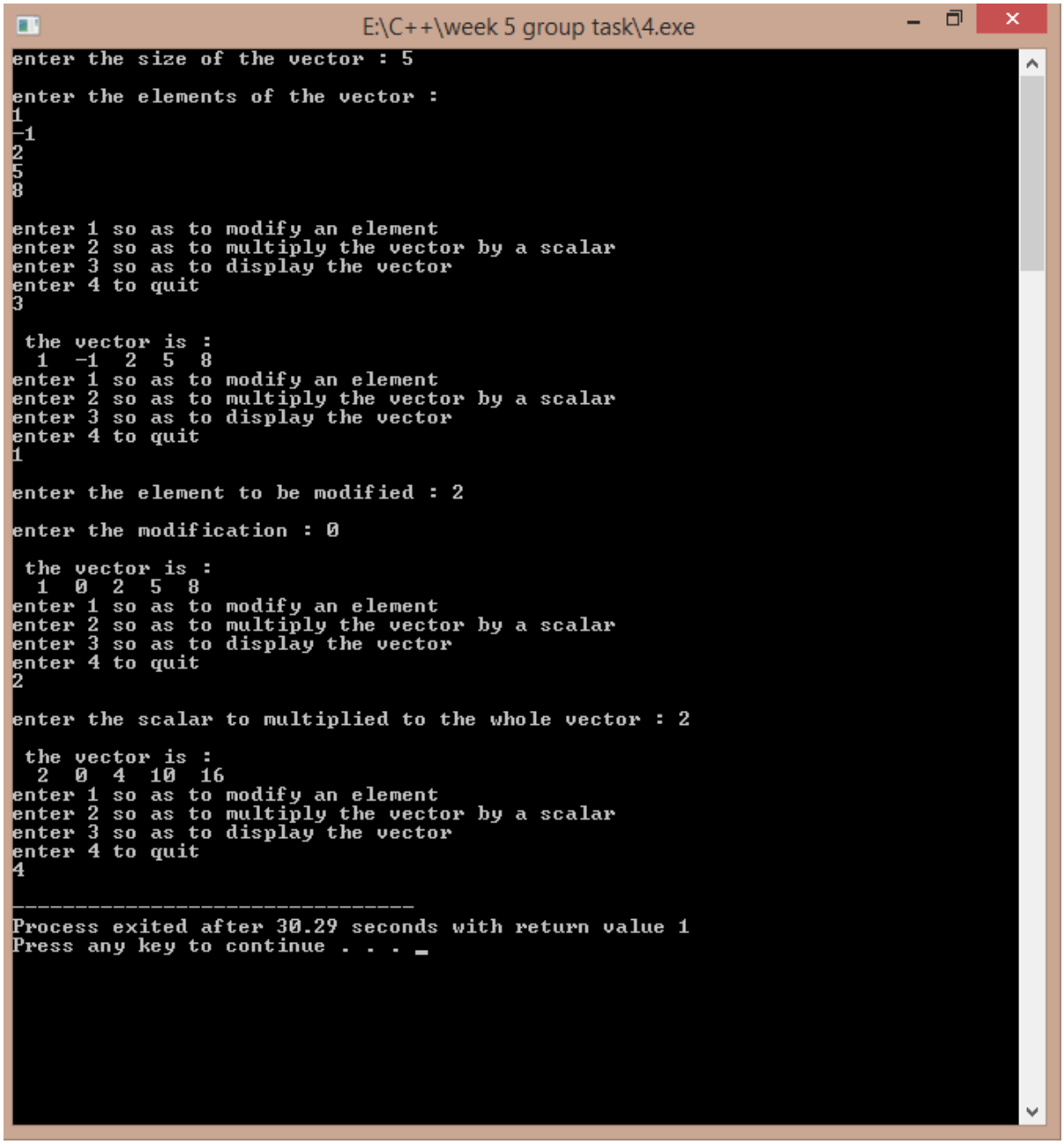


Program 4:-

```
//a sample program to demonstrate operations on vectors
/*Solution to this program is developed by BE ¼ CSE-2 Group-7(Sekhar,
Dasaradh, Eshwar, Harsha and Harshavardhan)*/
#include<iostream>
using namespace std;
```

```
class vector1
{
	int *v,n;
	public:
		void create();
		void modify();
		void multiply();
		void display();
};
void vector1::create() //creating a vector of required size
{
	int i;
	cout<<"enter the size of the vector : ";
	cin>>n;
	v=new int[n];
	cout<<"\nenter the elements of the vector : \n";
	for(i=0;i<n;i++)
	cin>>v[i];
}
void vector1::modify() // modifying its elements
{
	int p,ch;
	cout<<"\nenter the element to be modified : ";
	cin>>p;
	if(p>n) //the program terminates if this exception occurs
	{
		cout<<"element number out of bounds ...";
		exit(-1);
	}
	cout<<"\nenter the modification : ";
	cin>>ch;
	v[p-1]=ch;
}
void vector1::multiply() // multiplying its elements with a scalar
{
	int s,i;
	cout<<"\nenter the scalar to multiplied to the whole vector : ";
	cin>>s;
	for(i=0;i<n;i++)
	v[i]=v[i]*s;
}
void vector1::display() // display the vector
{
```

```
        int i;
        cout<<"\n the vector is : \n";
        for(i=0;i<n;i++)
        cout<<"  "<<v[i];
}
int main()
{
        vector1 m;
        m.create();
        int flag=0;
        do
        {
                cout<<"\nenter 1 so as to modify an element \nenter 2 so as to multiply the vector by a scalar\nenter 3 so as to display the vector\nenter 4 to quit\n";
                int ch;
                cin>>ch;
                switch(ch)
                {
                        case 1:m.modify();m.display();break;
                        case 2:m.multiply();m.display();break;
                        case 3:m.display();break;
                        default : flag=1;
                }
        }while(flag==0);
return 1;
}
```



Program 6:-

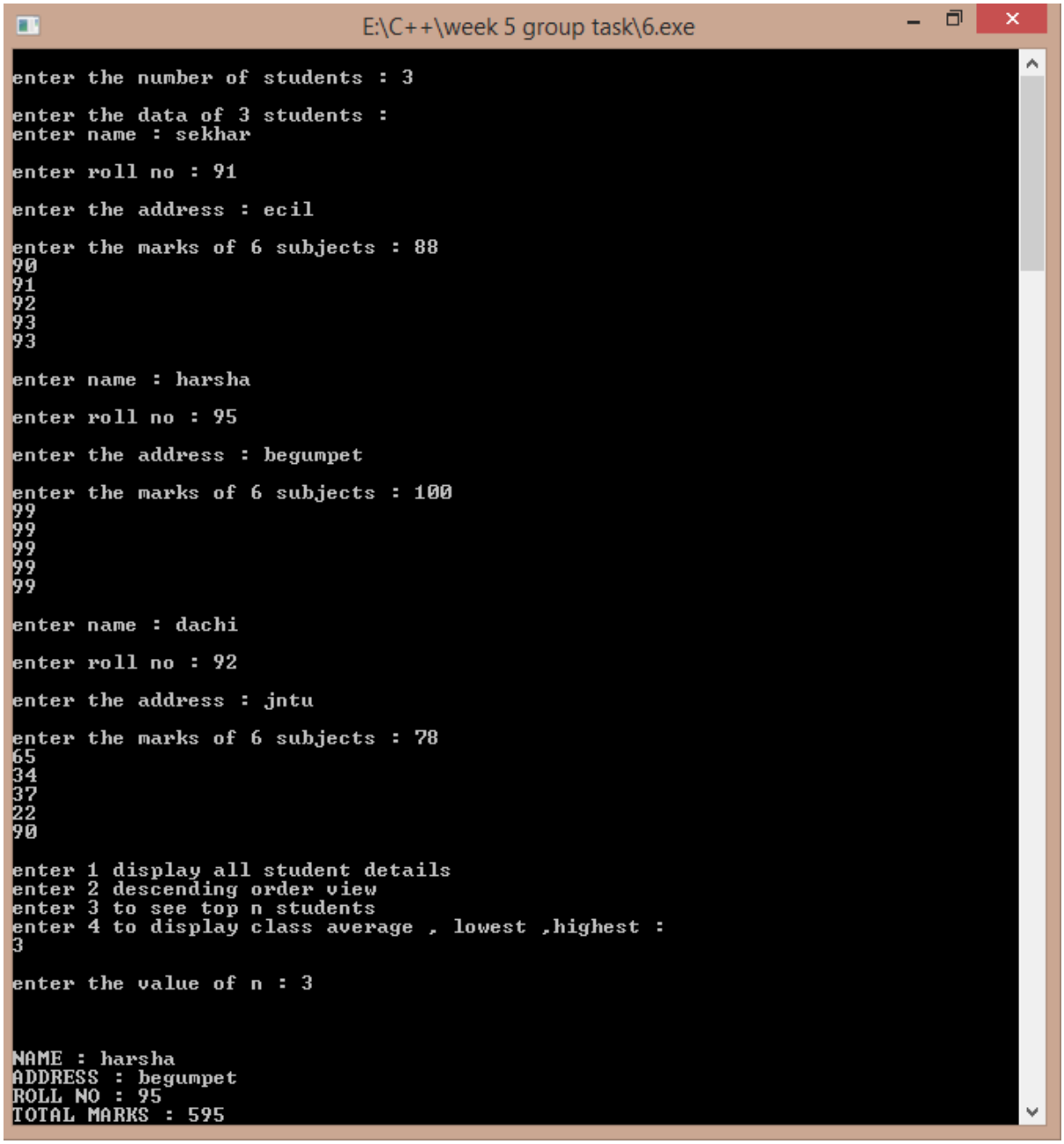
```
//a program to  implement the displaying the marks of the students
/*Solution to this program is developed by BE ¼ CSE-2 Group-7(Sekhar, Dasaradh, Eshwar, Harsha and Harshavardhan)*/
#include<iostream>
using namespace std;
int m1,m2;
class student
{
        char name[80],add[100];
        int rno,t;
```

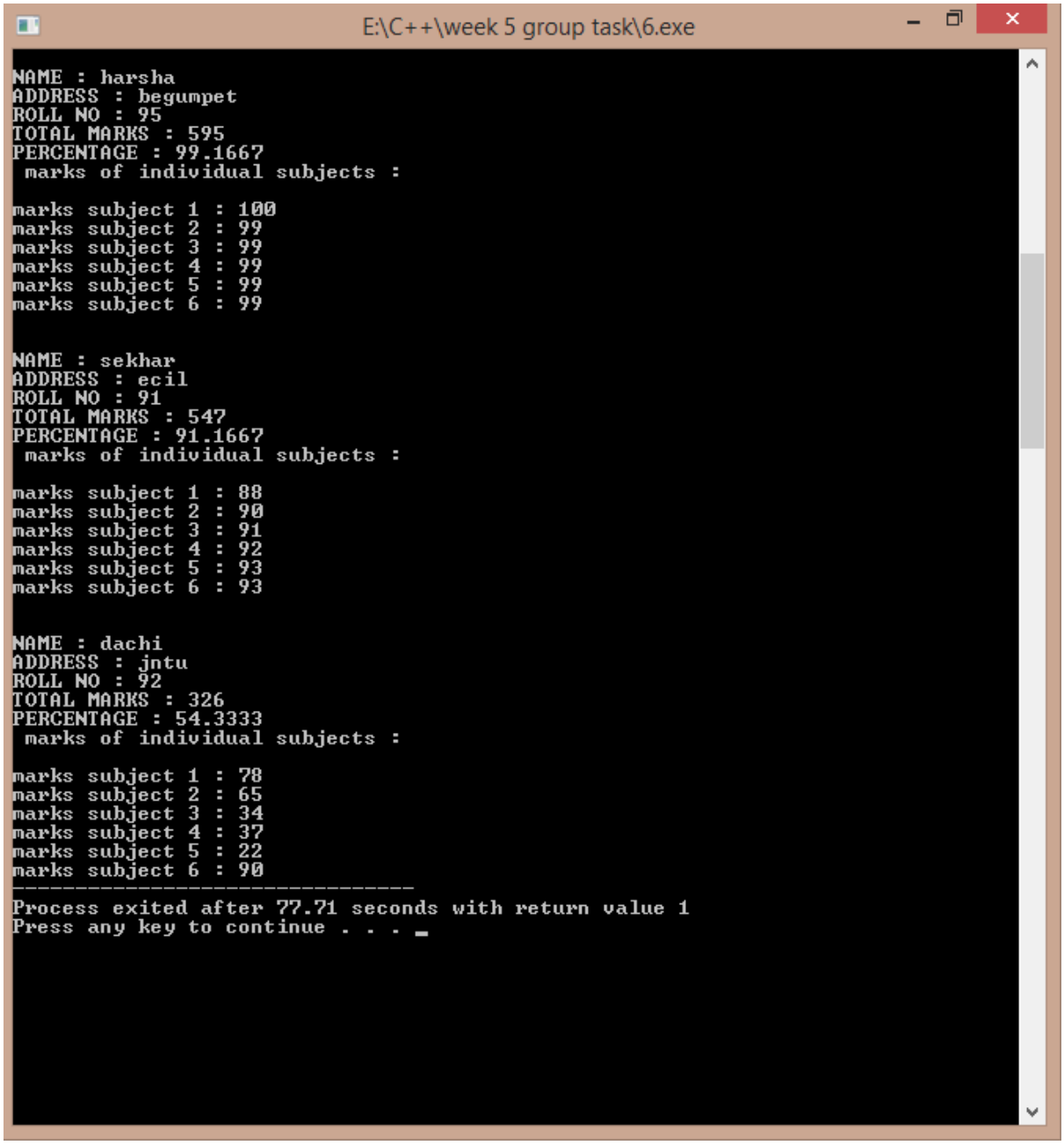
```
float avg;

int m[6];
public:
        student()
        {
        avg=0;t=0;
        }
        void readata()
        {
                int i;
                cout<<"\nenter name : ";
                cin>>name;
                cout<<"\nenter roll no : ";
                cin>>rno;
                cout<<"\nenter the address : ";
                cin>>add;
                cout<<"\nenter the marks of 6 subjects : ";
                for(i=0;i<6;i++)
                cin>>m[i];
        }
        void percent()
        {
                int i;
                for(i=0;i<6;i++)
                t+=m[i];
                avg=t/6.0;
        }
        void display()
        {
                int i;
                cout<<"\n\n\nNAME : "<<name;
                cout<<"\nADDRESS : "<<add;
                cout<<"\nROLL NO : "<<rno;
                cout<<"\nTOTAL MARKS : "<<t;
                cout<<"\nPERCENTAGE : "<<avg;
                cout<<"\n marks of individual subjects : \n";
                for(i=0;i<6;i++)
                {
                        cout<<"\nmarks subject "<<i+1<<" : "<<m[i];
                }
        }
        friend void class_average(student s[],int n)
```

```
{m1=0;float cavg,t;   // a friend function to to calculate class
        for(int i=0;i<n;i++) // highest and lowest
        {
                if(m1<s[i].avg)
                m1=s[i].avg;
        }
        m2=m1;
        for(int i=0;i<n;i++)
        {
                if(m2>s[i].avg)
                m2=s[i].avg;
        }t=0;
        for(int i=0;i<n;i++)
        t+=s[i].avg;
        cavg=float(t/n);
        cout<<"\nthe minimum is : "<<m2;
        cout<<"\nthe maximum is : "<<m1;
        cout<<"\nclass average is : "<<cavg;
}
friend void decending(student s[],int n)
{
        float *avg1=new float[n];
        for(int i=0;i<n;i++)          //to display the student
        avg1[i]=s[i].avg;             //record in descending order
        int i,j,k1=0,f=0;
        for(j=0;j<n;j++)
        {m1=0;
                for(i=0;i<n;i++)
                {
                if(m1<s[i].avg)
                {
                k1=i;
                m1=s[i].avg;
                }
                }
                s[k1].display();
                s[k1].avg=0;
}
        for(int i=0;i<n;i++)
        s[i].avg=avg1[i];
/*      student temp;
        int i,j;
        for(i=0;i<n;i++)
```

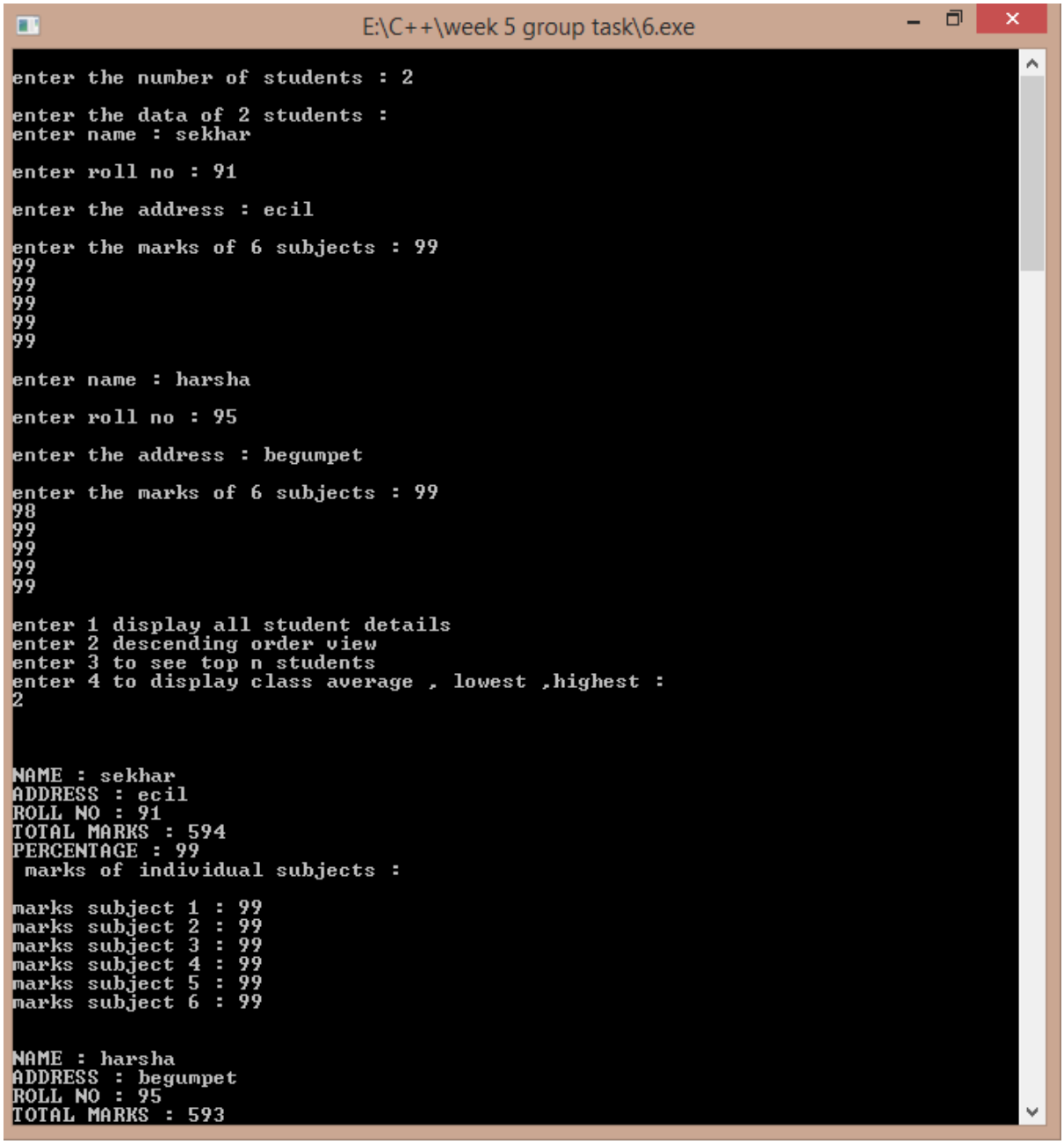
```
                {
                        for(j=0;j<n-1-i;j++)
                        {
                                if(s[j].avg<s[j+1].avg)
                                {
                                        temp=s[j];
                                        s[j]=s[j+1];
                                        s[j+1]=temp;
                                }
                        }
                }*/

        }
        friend void topn(student s[],int n,int p)
        {
                float *avg1=new float[n];
                for(int i=0;i<n;i++)        //a function to display the top n
                avg1[i]=s[i].avg;           //students only
                int i,j,k1=0,f=0;
                for(j=0;j<n;j++)
                {m1=0;
                        for(i=0;i<n;i++)
                        {
                        if(m1<s[i].avg)
                        {
                        k1=i;
                        m1=s[i].avg;
                        }
                        }
                        if(f<=p)
                        {
                        s[k1].display();
                        s[k1].avg=0;f++;
                        }
                        else
                        break;
        }
                for(int i=0;i<n;i++)
                s[i].avg=avg1[i];
        }
};
int main()
{
```

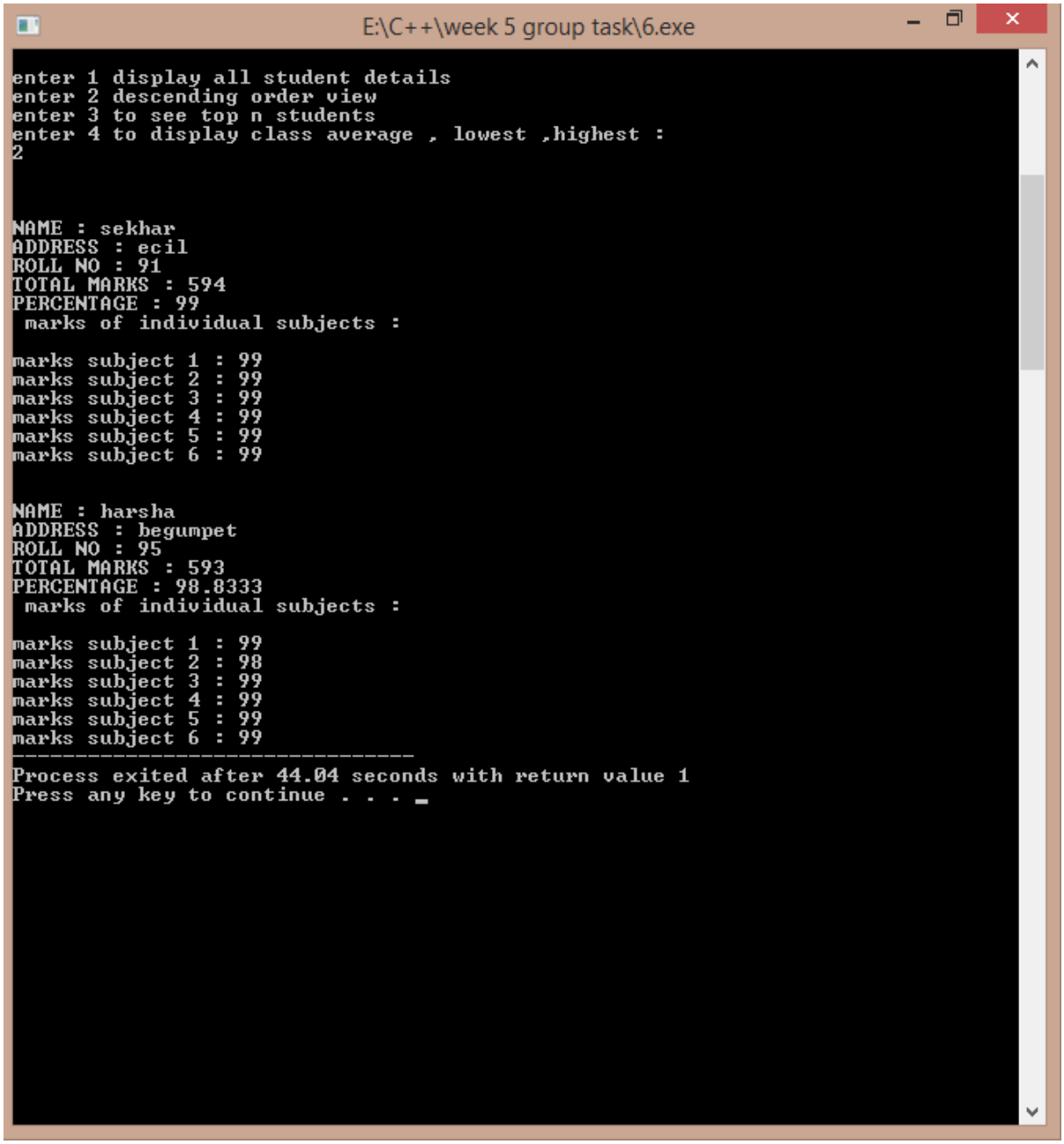
```
	int n;
	cout<<"\nenter the number of students : ";
	cin>>n;
	student *s=new student[n];
	cout<<"\nenter the data of "<<n<<" students : ";
	int i;
	for(i=0;i<n;i++)
	{
		s[i].readata();
		s[i].percent();
	}
	int ch;
	cout<<"\nenter 1 display all student details \nenter 2 descending order
view \nenter 3 to see top n students \nenter 4 to display class average , lowest
,highest : \n";
	cin>>ch;
	switch(ch)
	{
		case 1:
			{
				for(i=0;i<n;i++)
				s[i].display();
			}break;
		case 2:
			{
				decending(s,n);
			}break;
		case 3:
			{
				int p;
				cout<<"\nenter the value of n : ";
				cin>>p;
				topn(s,n,p);
			}break;
		case 4:
			{
				class_average(s,n);
			}break;
		default:cout<<"wrong choice .....";
	}
return 1;
}
```


E:\C++\week 5 group task\6.exe
enter the number of students : 3
enter the data of 3 students :
enter name : sekhar
enter roll no : 91
enter the address : ecil
enter the marks of 6 subjects : 88
90
91
92
93
93
enter name : harsha
enter roll no : 95
enter the address : begumpet
enter the marks of 6 subjects : 100
99
99
99
99
99
enter name : dachi
enter roll no : 92
enter the address : jntu
enter the marks of 6 subjects : 78
65
34
37
22
90
enter 1 display all student details
enter 2 descending order view
enter 3 to see top n students
enter 4 to display class average , lowest ,highest :
3
enter the value of n : 3
NAME : harsha
ADDRESS : begumpet
ROLL NO : 95
TOTAL MARKS : 595



Another sample:-


E:\C++\week 5 group task\6.exe
enter the number of students : 2
enter the data of 2 students :
enter name : sekhar
enter roll no : 91
enter the address : ecil
enter the marks of 6 subjects : 99
99
99
99
99
99
enter name : harsha
enter roll no : 95
enter the address : begumpet
enter the marks of 6 subjects : 99
98
99
99
99
99
enter 1 display all student details
enter 2 descending order view
enter 3 to see top n students
enter 4 to display class average , lowest ,highest :
2
NAME : sekhar
ADDRESS : ecil
ROLL NO : 91
TOTAL MARKS : 594
PERCENTAGE : 99
marks of individual subjects :
marks subject 1 : 99
marks subject 2 : 99
marks subject 3 : 99
marks subject 4 : 99
marks subject 5 : 99
marks subject 6 : 99
NAME : harsha
ADDRESS : begumpet
ROLL NO : 95
TOTAL MARKS : 593


E:\C++\week 5 group task\6.exe
enter 1 display all student details
enter 2 descending order view
enter 3 to see top n students
enter 4 to display class average , lowest ,highest :
2
NAME : sekhar
ADDRESS : ecil
ROLL NO : 91
TOTAL MARKS : 594
PERCENTAGE : 99
marks of individual subjects :
marks subject 1 : 99
marks subject 2 : 99
marks subject 3 : 99
marks subject 4 : 99
marks subject 5 : 99
marks subject 6 : 99
NAME : harsha
ADDRESS : begumpet
ROLL NO : 95
TOTAL MARKS : 593
PERCENTAGE : 98.8333
marks of individual subjects :
marks subject 1 : 99
marks subject 2 : 98
marks subject 3 : 99
marks subject 4 : 99
marks subject 5 : 99
marks subject 6 : 99
Process exited after 44.04 seconds with return value 1
Press any key to continue . . .