C++Practical File

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Class:12th A

Roll No.:

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1. Write menu driven program to find to

i) Find the row sum and column sum of a given matrix.

ii) Transpose of the matrix.

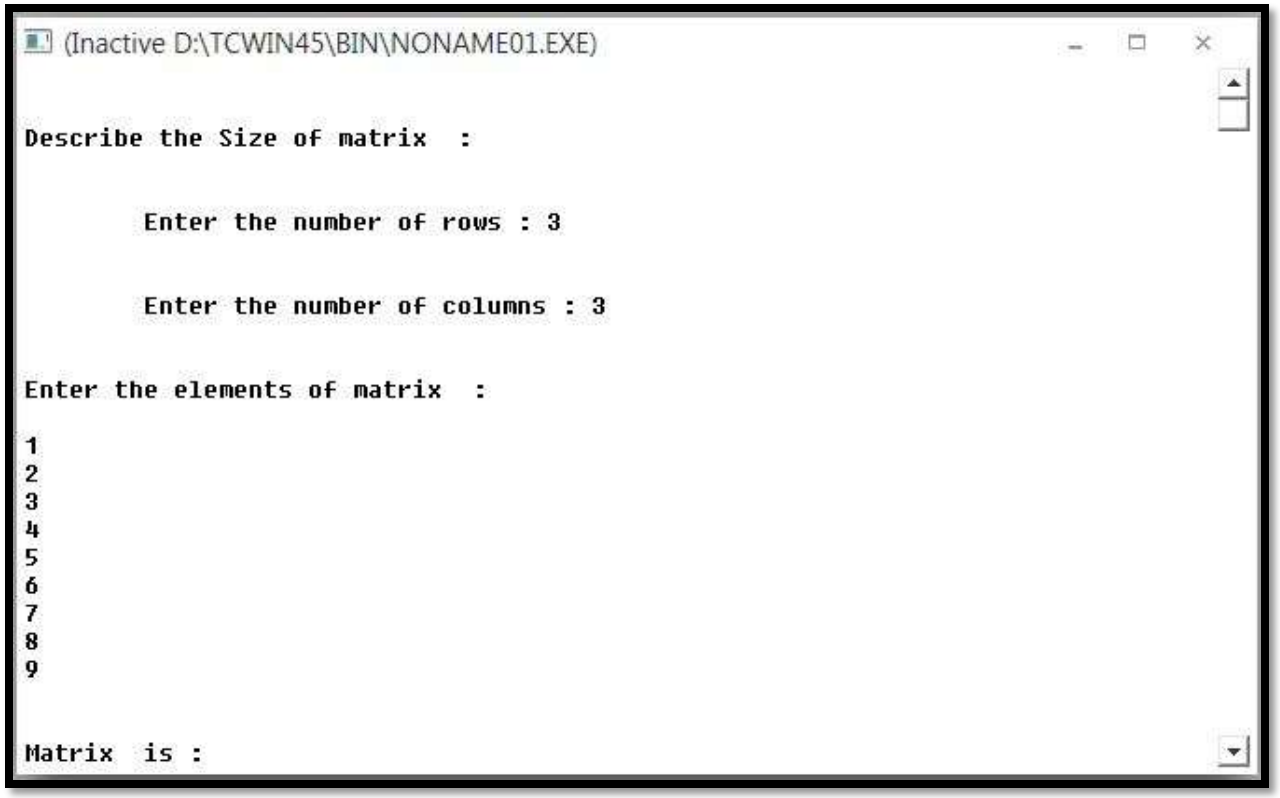
```
#include<iostream.h>
#include<process.h>
#include<conio.h>

int a[80][80];
int i=0, j=0;
int m, n;                          // Matrix 1 : m= no. of Rows , n=no. of Columns
int sum=0;
 // Function Declarations

voidrow_sum(int a[80][80]);
voidcolumn_sum(int a[80][80]);
void transpose(int a[80][80]);


int  main()  // main body
{clrscr();
char choice;
        cout<<"\n\nDescribe the Size of matrix  : ";
        cout<<"\n\n\n\tEnter the number of rows : ";
        cin>>m;
        cout<<"\n\n\tEnter the number of columns : ";
        cin>>n;
cout<<"\n\nEnter the elements of matrix  : \n\n";
for(i=0; i<m; i++)
for(j=0; j<n; j++)
cin>>a[i][j];


cout<<"\n\nMatrix  is : \n\n";
for(i=0; i<m; i++)
{
                for(j=0; j<n; j++)
          {
                cout<<a[i][j]<<"  ";
```

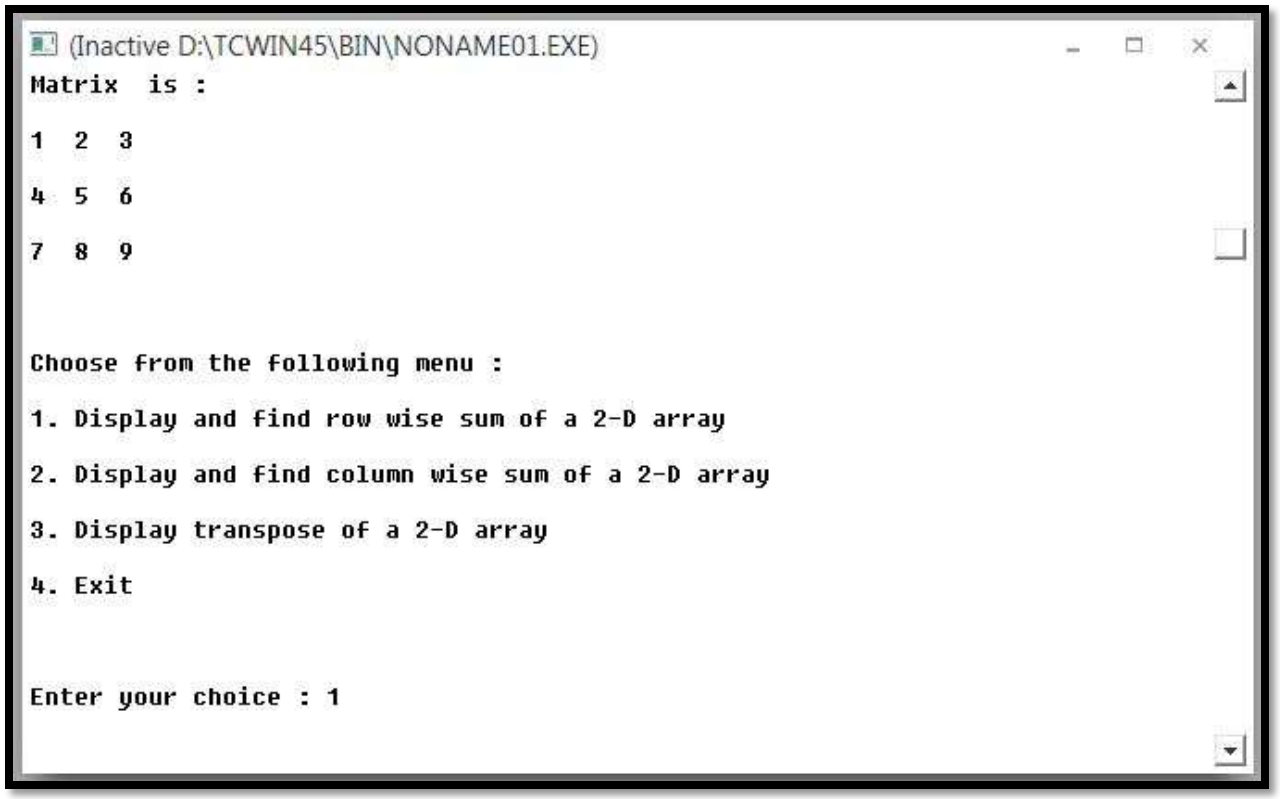
```
            }
          cout<<"\n\n";
}
intch;
choice='y';

do
{
cout<<"\n\nChoose from the following menu : ";
cout<<"\n\n1. Display and find row wise sum of a 2-D array ";
cout<<"\n\n2. Display and find column wise sum of a 2-D array ";
cout<<"\n\n3. Display transpose of a 2-D array";
cout<<"\n\n4. Exit ";
cout<<"\n\n\n\nEnter your choice : ";
cin>>ch;
switch(ch)
{


case 1:cout<<"\n\n\t Display and find row wise sum of a  matrix : \n\n";
                    row_sum(a);
                    break;



case 2:cout<<"\n\n\t Display and find column wise sum of a  matrix  : \n\n";
                    column_sum(a);
                    break;

case 3:cout<<"\n\n\t Display transpose of a matrix : \n\n";
                    transpose(a);
                    break;

case 4 :break;


}
cout<<"\n\n\nWant to choose again => ";
cin>>choice;
}while(choice=='y');
```

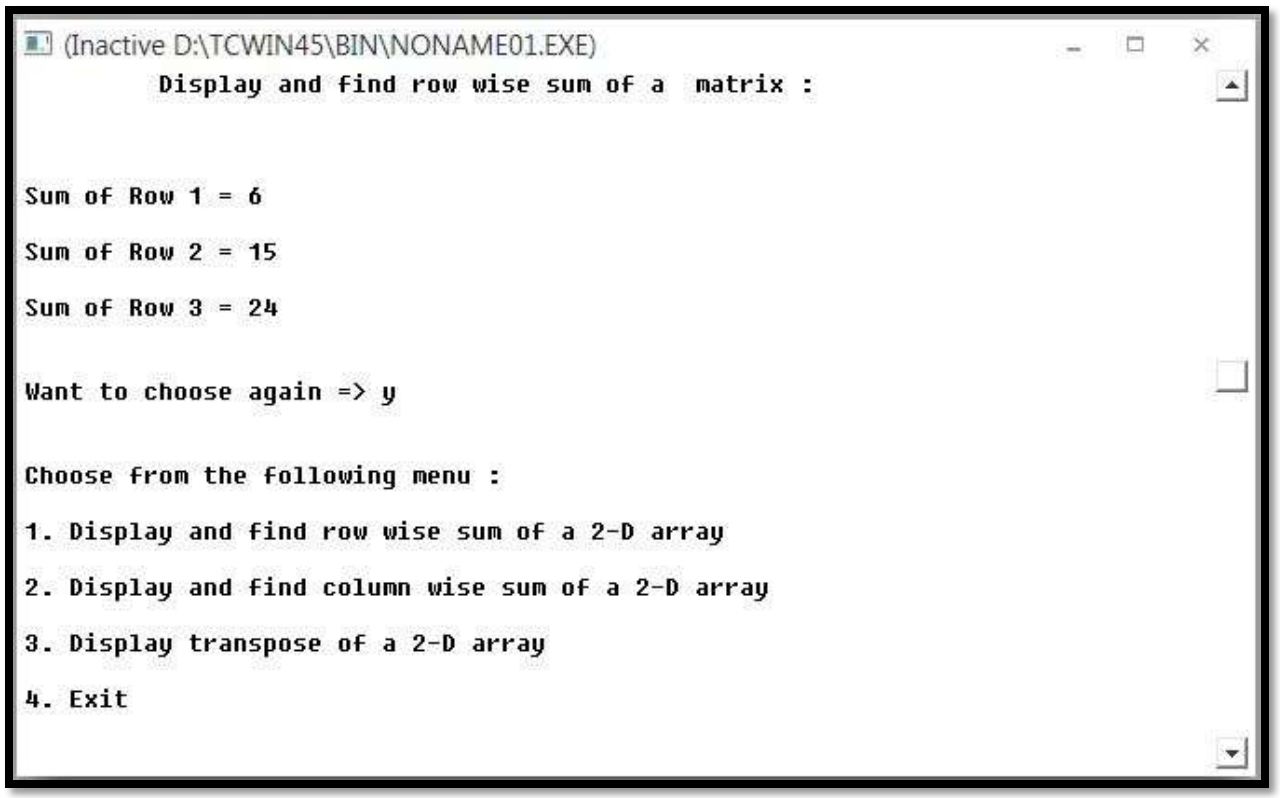
```
getch();
return 0;
}



//---------------------------------------------------- Function Definitions ----------------------------------------
--------

voidrow_sum(int a[80][80])
{
intv,u;

                        v=m;
                        u=m;

for(i=0; i<v; i++)
 {
sum=0;
            for(j=0; j<u; j++)
            {
            sum=sum+a[i][j];
            }
            cout<<"\n\nSum of Row "<<i+1<<" = "<<sum;
 }

}


voidcolumn_sum(int a[80][80])
{intv,u;
                        v=m;
                        u=m;
for(j=0; j<v; j++)
 {
sum=0;
            for(i=0; i<u; i++)
            {
            sum=sum+a[i][j];
            }
            cout<<"\n\nSum of Column "<<j+1<<" = "<<sum;
 }
```

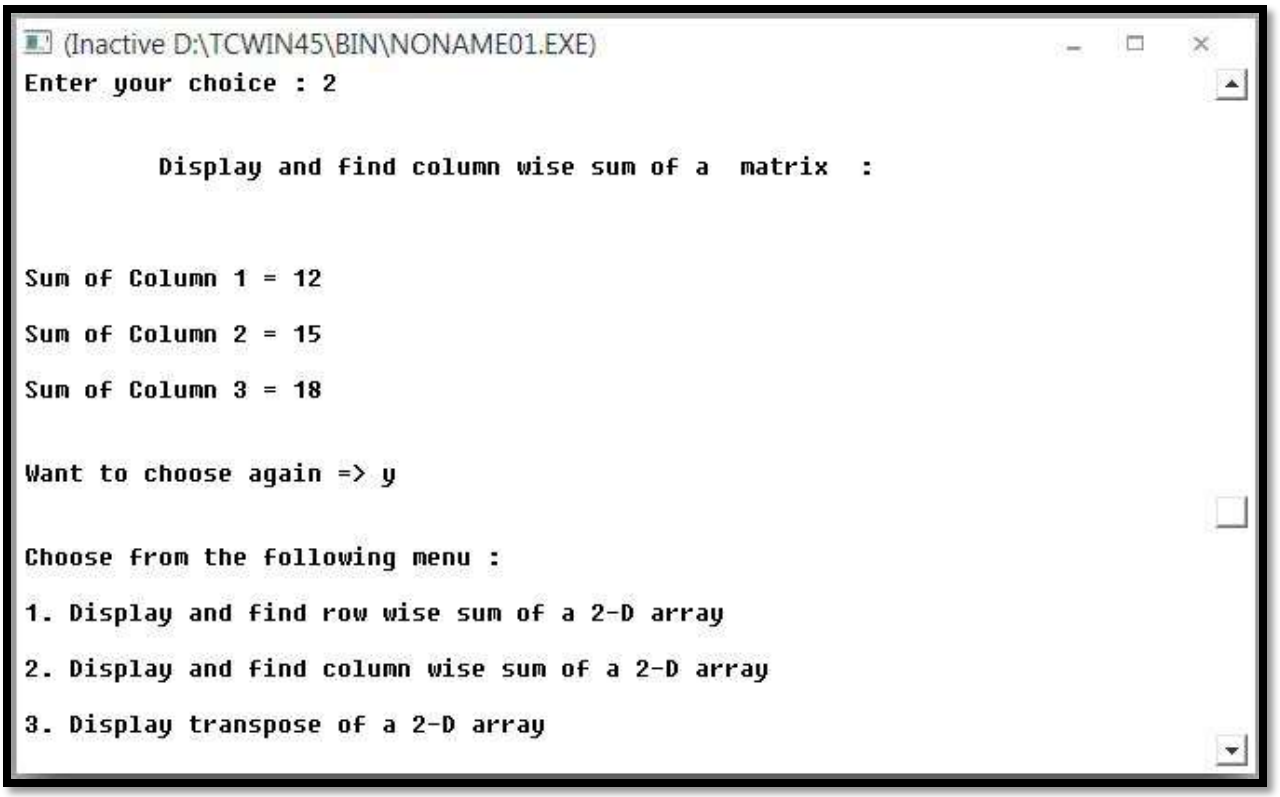
```
}


void transpose(int a[80][80])
{
intv,u;

v=m;
u=n;
for(j=0; j<v; j++)
 {
            for(i=0; i<u; i++)
            {
            cout<<"\t"<<a[i][j];
            }
            cout<<"\n\n";
 }

}
```

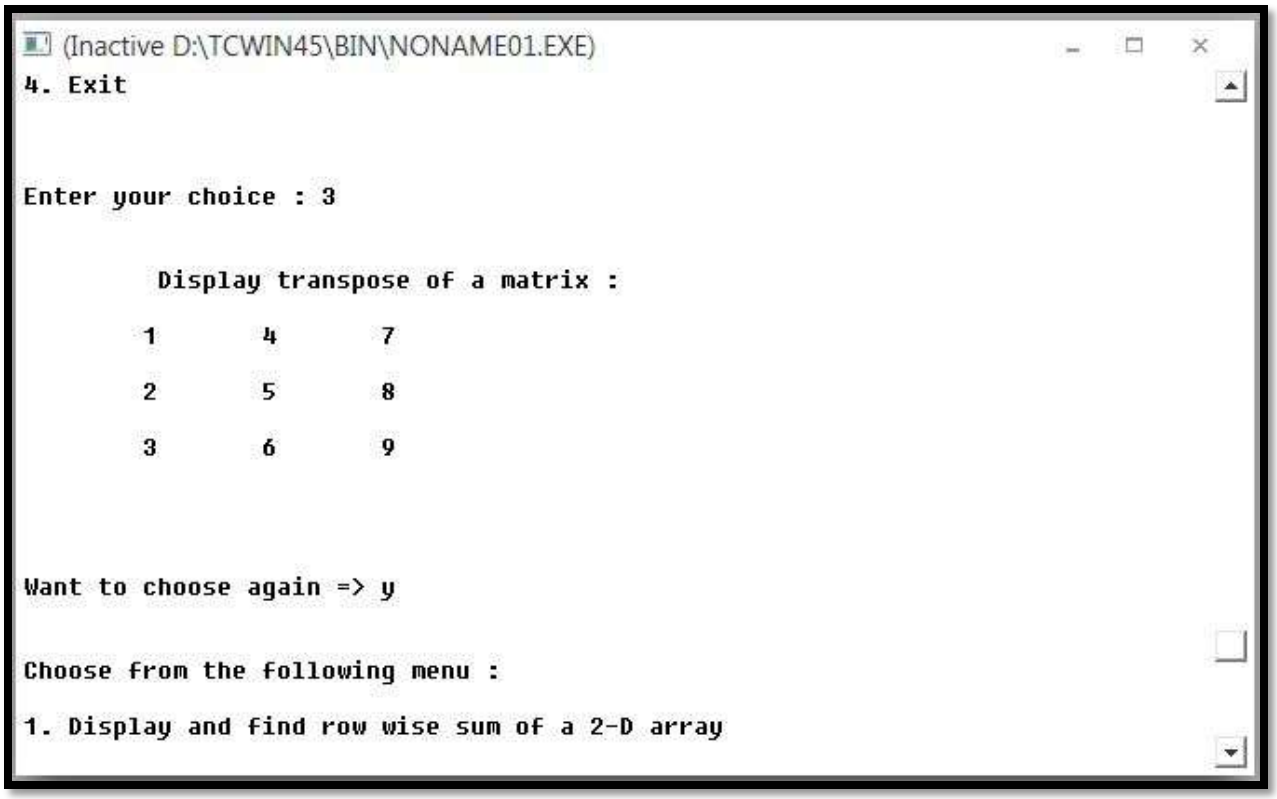
OUTPUT:

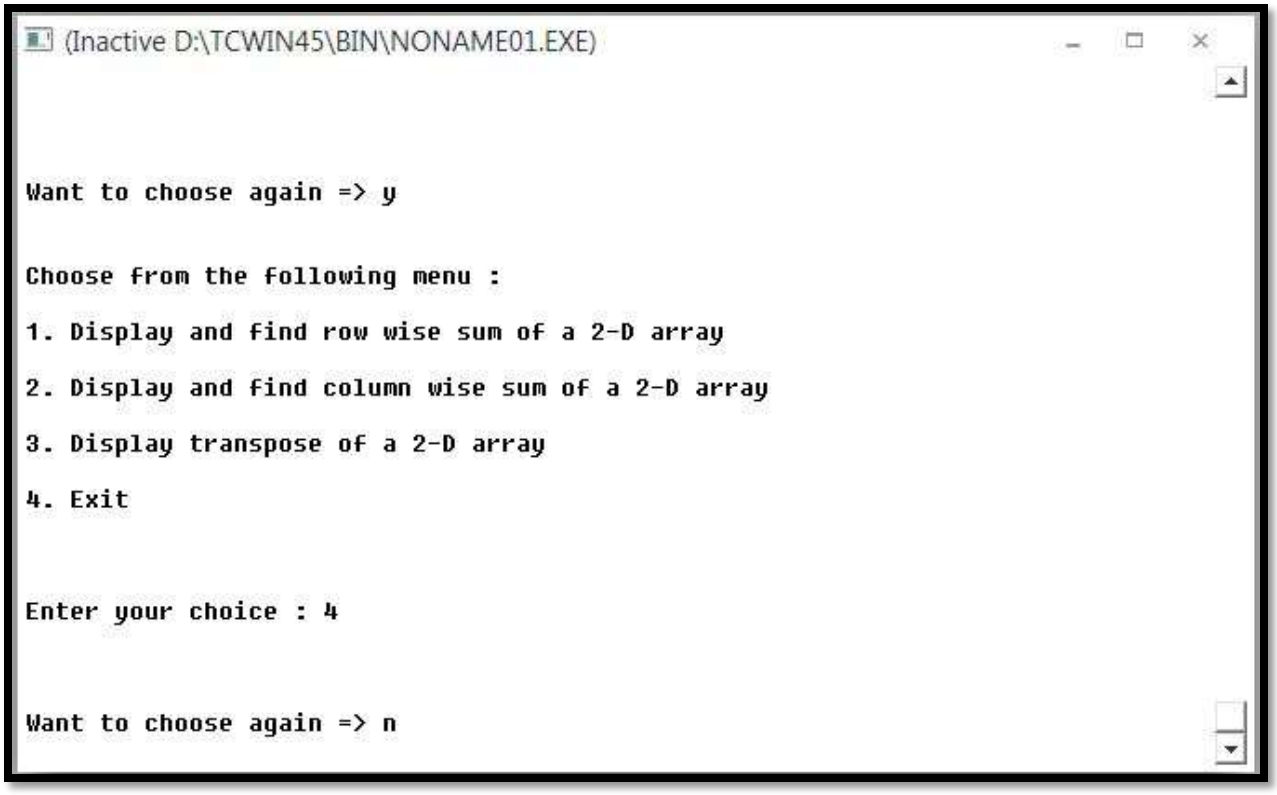

(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Describe the Size of matrix :
Enter the number of rows : 3
Enter the number of columns : 3
Enter the elements of matrix :
1
2
3
4
5
6
7
8
9
Matrix is :


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Matrix is :
1 2 3
4 5 6
7 8 9
Choose from the following menu :
1. Display and find row wise sum of a 2-D array
2. Display and find column wise sum of a 2-D array
3. Display transpose of a 2-D array
4. Exit
Enter your choice : 1


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Display and find row wise sum of a matrix :
Sum of Row 1 = 6
Sum of Row 2 = 15
Sum of Row 3 = 24
Want to choose again => y
Choose from the following menu :
1. Display and find row wise sum of a 2-D array
2. Display and find column wise sum of a 2-D array
3. Display transpose of a 2-D array
4. Exit


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter your choice : 2
Display and find column wise sum of a matrix :
Sum of Column 1 = 12
Sum of Column 2 = 15
Sum of Column 3 = 18
Want to choose again => y
Choose from the following menu :
1. Display and find row wise sum of a 2-D array
2. Display and find column wise sum of a 2-D array
3. Display transpose of a 2-D array


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
4. Exit
Enter your choice : 3
Display transpose of a matrix :
1 4 7
2 5 8
3 6 9
Want to choose again => y
Choose from the following menu :
1. Display and find row wise sum of a 2-D array


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Want to choose again => y
Choose from the following menu :
1. Display and find row wise sum of a 2-D array
2. Display and find column wise sum of a 2-D array
3. Display transpose of a 2-D array
4. Exit
Enter your choice : 4
Want to choose again => n

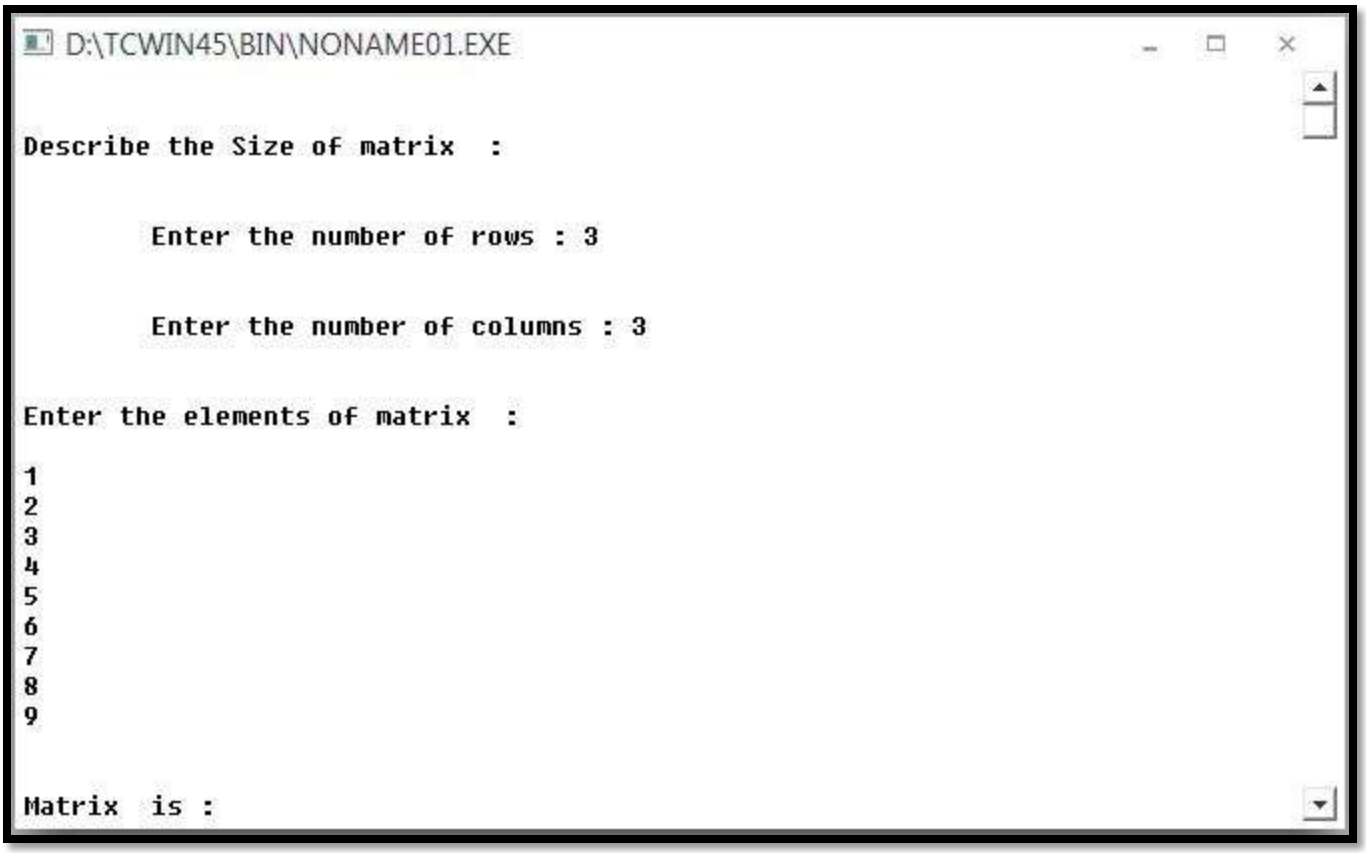
2. Write a program to find the sum of both the diagonals of a matrix using function.

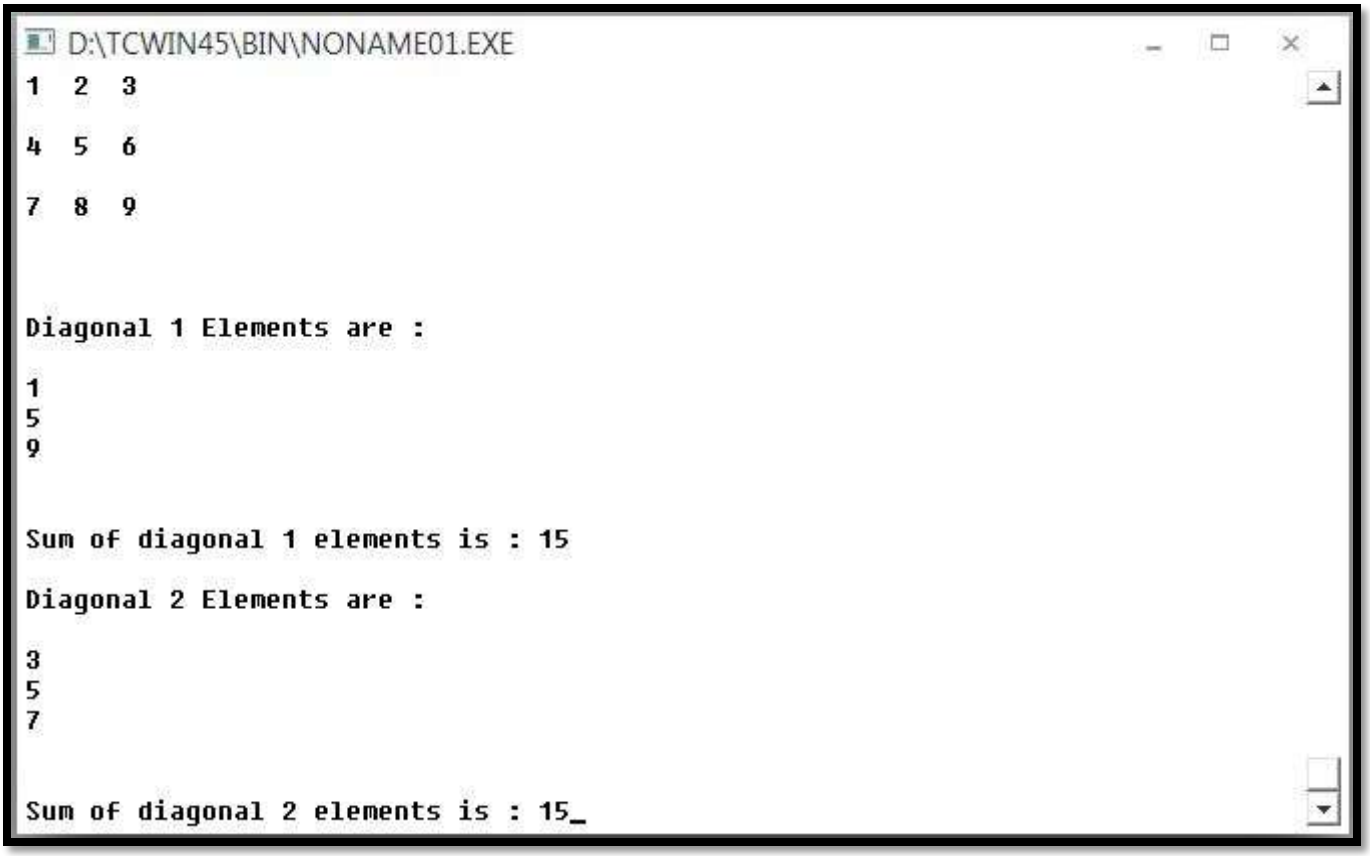
```
#include<iostream.h>
#include<process.h>
#include<conio.h>

int a[80][80];            // 2-D matrices
int i=0, j=0;
int m, n;                         // Matrix 1 : m= no. of Rows , n=no. of Columns

int sum=0;

// Function Declaration

void diagonal(int a[80][80]);


void main()  // main body
{
clrscr();


cout<<"\n\nDescribe the Size of matrix  : ";

cout<<"\n\n\n\tEnter  the number of rows : ";
          cin>>m;
          cout<<"\n\n\tEnter  the number of columns : ";
          cin>>n;

cout<<"\n\nEnter the elements of matrix  : \n\n";

for(i=0; i<m; i++)
{
for(j=0; j<n; j++)
cin>>a[i][j];
}

cout<<"\n\nMatrix   is : \n\n";
for(i=0; i<m; i++)
{
                    for(j=0; j<n; j++)
           {
```

```
                    cout<<a[i][j]<<"  ";
            }
          cout<<"\n\n";
}

diagonal(a);

getch();
}




//------------------------------------------------------------ Function Definitions ----------------------------------------
-------------------


void diagonal(int a[80][80])
{
intui;

                    ui=m;

sum=0;

cout<<"\n\nDiagonal 1 Elements are : \n\n";

for(i=0; i<ui; i++)
                    {
          cout<<a[i][i]<<"\n";
          sum+=a[i][i];
                    }
          cout<<"\n\nSum  of diagonal 1 elements is : "<<sum;


sum=0;

cout<<"\n\nDiagonal 2 Elements are : \n\n";

for(i=0; i<ui; i++)
           {
          cout<<a[i][ui-(i+1)]<<"\n";
          sum+=a[i][ui-(i+1)];
```

```
            }
cout<<"\n\nSum  of diagonal 2 elements is : "<<sum;

 }
```

OUTPUT:

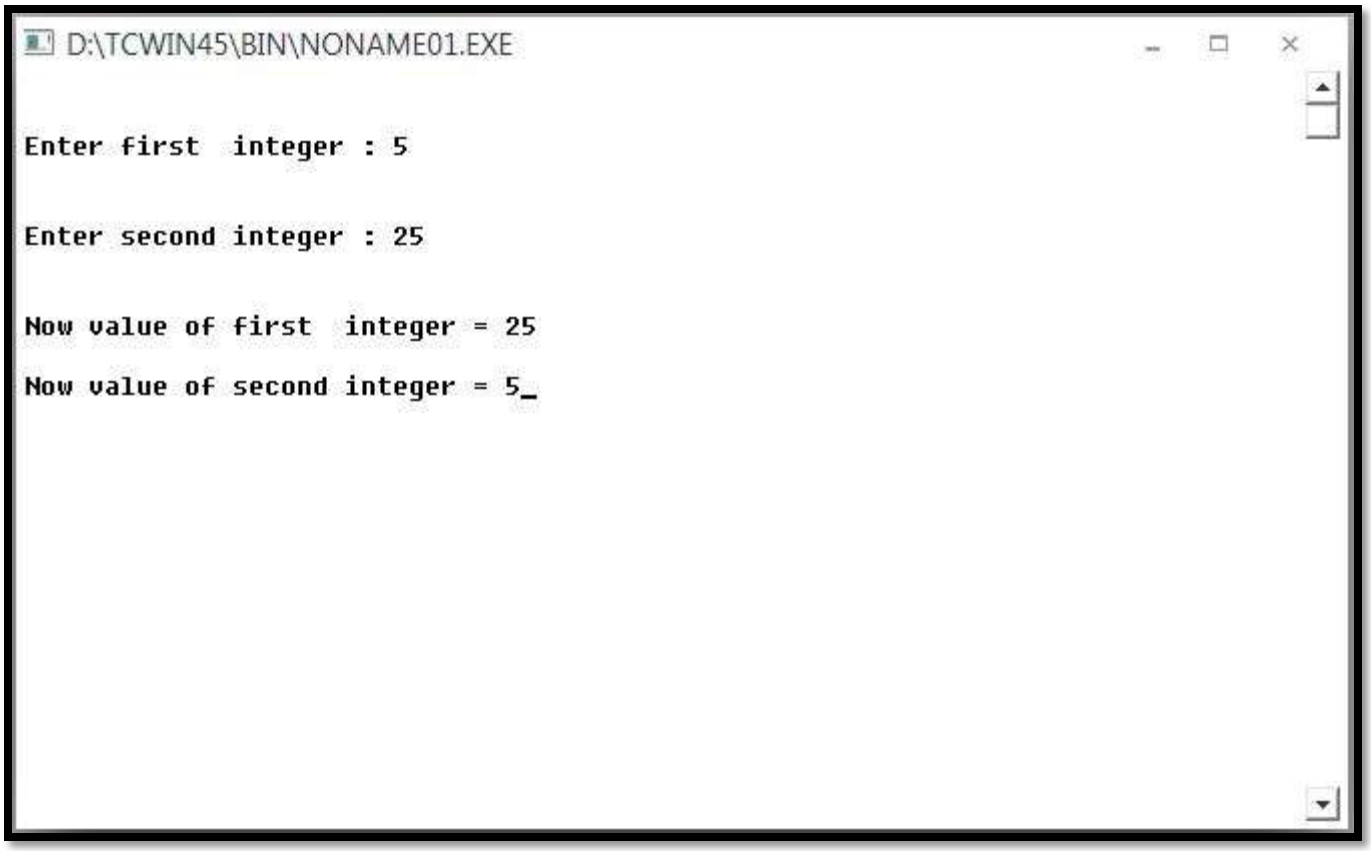

D:\TCWIN45\BIN\NONAME01.EXE
Describe the Size of matrix :
Enter the number of rows : 3
Enter the number of columns : 3
Enter the elements of matrix :
1
2
3
4
5
6
7
8
9
Matrix is :


D:\TCWIN45\BIN\NONAME01.EXE
1 2 3
4 5 6
7 8 9
Diagonal 1 Elements are :
1
5
9
Sum of diagonal 1 elements is : 15
Diagonal 2 Elements are :
3
5
7
Sum of diagonal 2 elements is : 15_

3. Write a program to swap any two numbers without using third variable.

```
#include<iostream.h>
#include<conio.h>

void main()
{
clrscr();

inta,b;

cout<<"\n\nEnter first integer : "; cin>>a;
cout<<"\n\nEnter second integer : "; cin>>b;

a = a * b;
b = a / b;
a = a / b;

cout<<"\n\nNow value of first integer = "<<a;
cout<<"\n\nNow value of second integer = "<<b;

getch();

}
```

OUTPUT:


D:\TCWIN45\BIN\NONAME01.EXE
Enter first integer : 5
Enter second integer : 25
Now value of first integer = 25
Now value of second integer = 5_

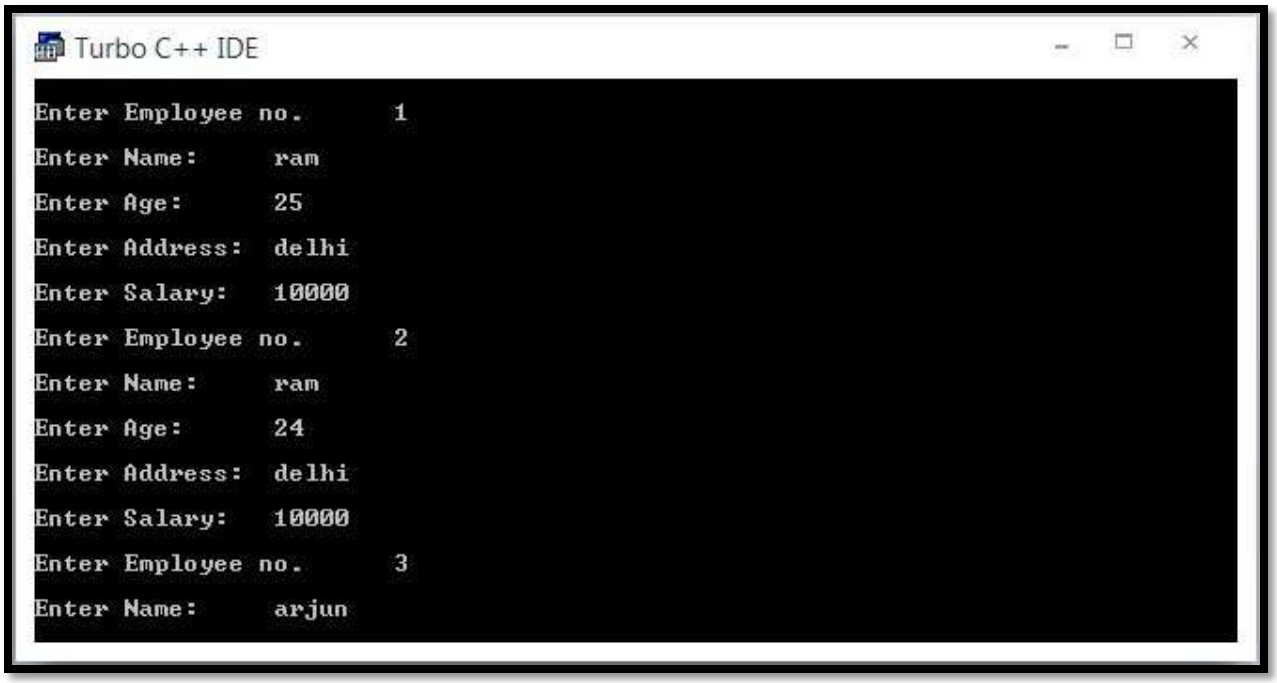
4. Write a program to store information of 10 employees and to display of an employee depending upon the employee no given by the user using structure.

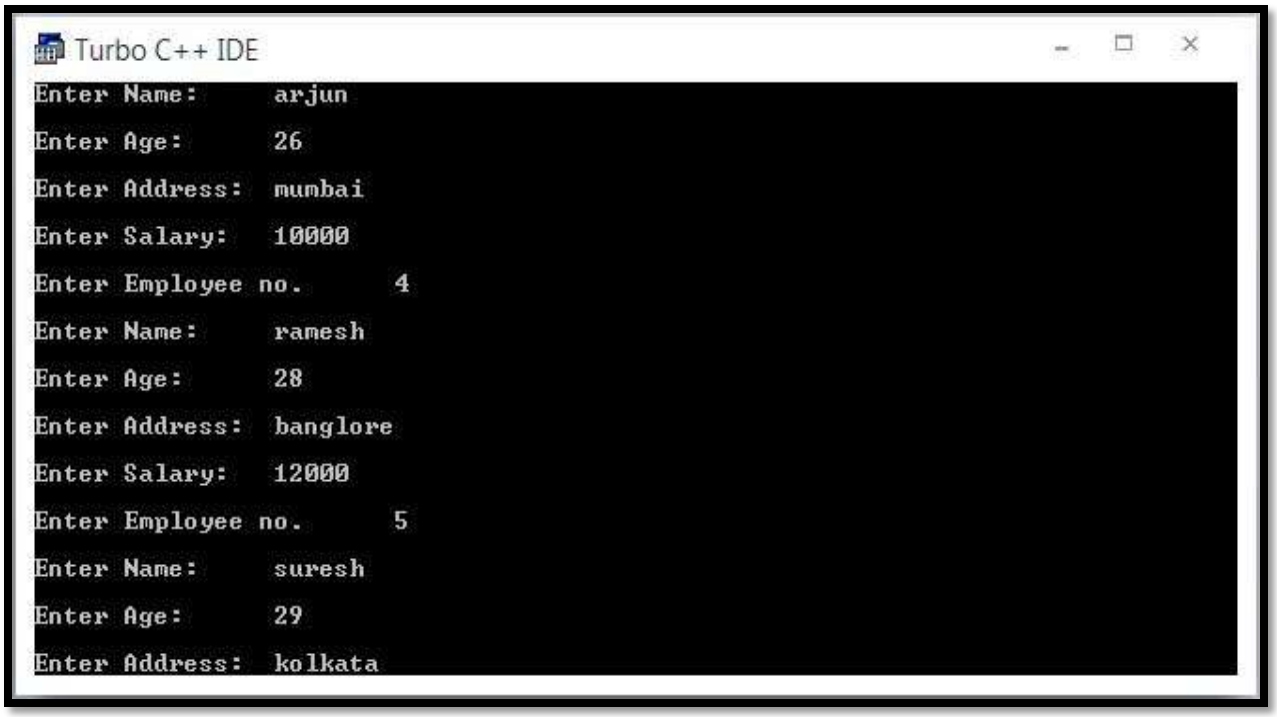
```
#include <stdio.h>

#include<iostream.h>

#include <conio.h>


struct details

{

char name[30];

int age;

char address[500];

float salary;

inteno;

};


int main()

{

int s;

struct details d[10];

clrscr();


for(int i=0;i<10;i++)

 {

cout<<"\nEnter Employee no.\t";

cin>>d[i].eno;
```

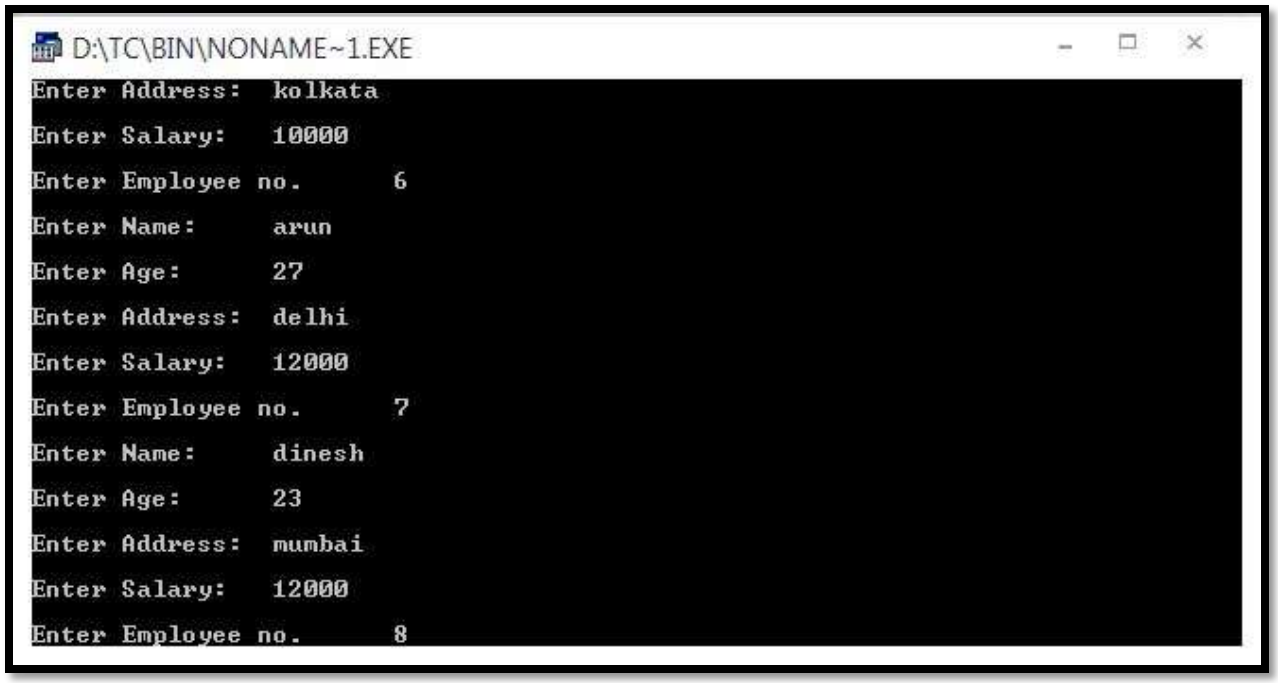
```
cout<<"\nEnter Name:\t";
gets(d[i].name);
cout<<"\nEnter Age:\t";
cin>>d[i].age;
cout<<"\nEnter Address:\t";
gets(d[i].address);
cout<<"\nEnter Salary:\t";
cin>>d[i].salary;
 }
cout<<"Enter Employee no. whose record is to be found:";
cin>>s;
int flag=0;
for(i=0;i<10;i++)
 {
if(d[i].eno==s)
 {
flag=1;
break;
 }
 }

if(flag==1)
 {
cout<<"\n";
```

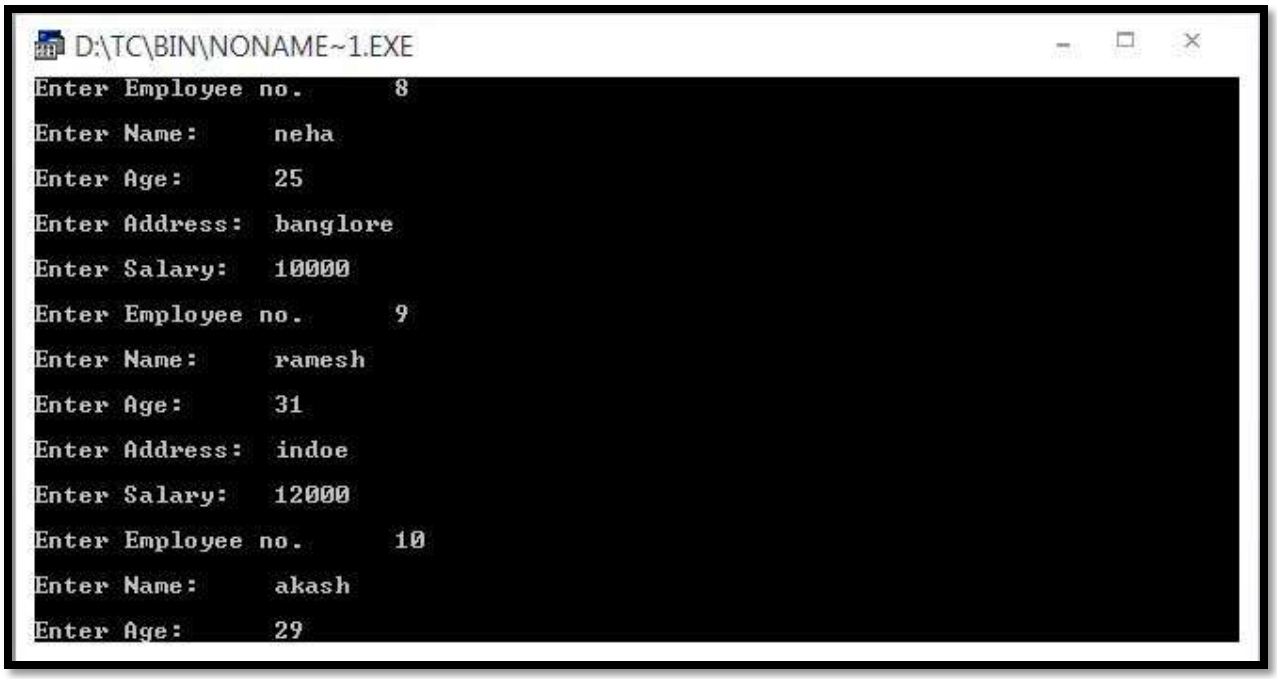
```
cout<<"\nName of the Employee :\t"<<d[i].name;
cout<<"\nAge of the Employee :\t"<<d[i].age;
cout<<"\nAddress of the Employee :\t"<<d[i].address;
cout<<"\nSalary of the Employee :\t"<<d[i].salary;
 }

else
 {
cout<<"data not found";
 }
getch();
return 0;
}
```

OUTPUT:


Turbo C++ IDE
Enter Employee no. 1
Enter Name: ram
Enter Age: 25
Enter Address: delhi
Enter Salary: 10000
Enter Employee no. 2
Enter Name: ram
Enter Age: 24
Enter Address: delhi
Enter Salary: 10000
Enter Employee no. 3
Enter Name: arjun


Turbo C++ IDE
Enter Name: arjun
Enter Age: 26
Enter Address: mumbai
Enter Salary: 10000
Enter Employee no. 4
Enter Name: ramesh
Enter Age: 28
Enter Address: banglore
Enter Salary: 12000
Enter Employee no. 5
Enter Name: suresh
Enter Age: 29
Enter Address: kolkata


D:\TC\BIN\NONAME~1.EXE
Enter Address: kolkata
Enter Salary: 10000
Enter Employee no. 6
Enter Name: arun
Enter Age: 27
Enter Address: delhi
Enter Salary: 12000
Enter Employee no. 7
Enter Name: dinesh
Enter Age: 23
Enter Address: mumbai
Enter Salary: 12000
Enter Employee no. 8


D:\TC\BIN\NONAME~1.EXE
Enter Employee no. 8
Enter Name: neha
Enter Age: 25
Enter Address: banglore
Enter Salary: 10000
Enter Employee no. 9
Enter Name: ramesh
Enter Age: 31
Enter Address: indoe
Enter Salary: 12000
Enter Employee no. 10
Enter Name: akash
Enter Age: 29


D:\TC\BIN\NONAME~1.EXE
Enter Name: ramesh
Enter Age: 31
Enter Address: indore
Enter Salary: 12000
Enter Employee no. 10
Enter Name: akash
Enter Age: 29
Enter Address: delhi
Enter Salary: 12000
Enter Employee no. whose record is to be found:1
Name of the Employee : ram
Age of the Employee : 25
Address of the Employee : delhi
Salary of the Employee : 10000

6. Define a class report with the following specification:
Private:
adno, name, marks- array of five integers, average- float type
getavg( )- to compute the average obtained.
Public:
Report()- constructor
readinfo( )- to read all values
displayinfo( )- to display data members of report on the screen.
Implement this class in C++.

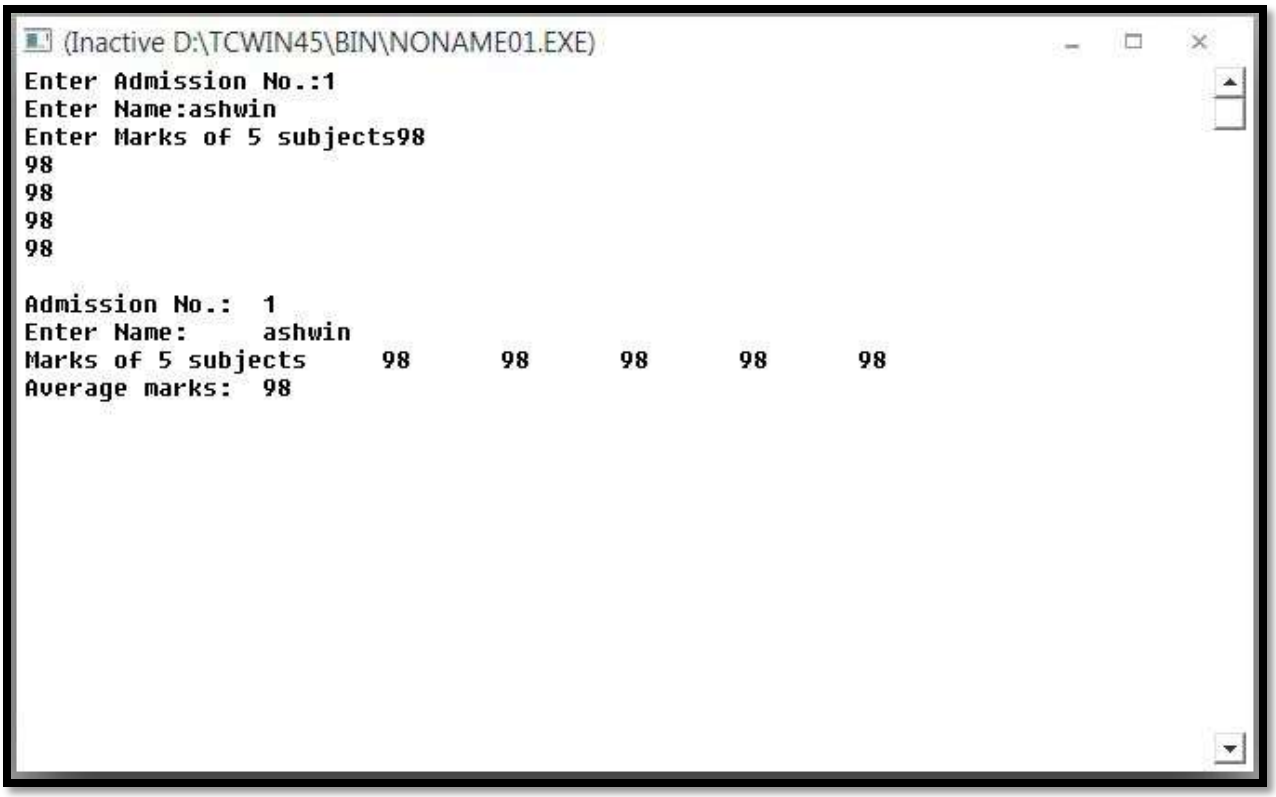
```
#include<iostream.h>

#include<conio.h>

#include<stdio.h>

#include<string.h>

class report

{

private:

intadno;

char name[25];

int marks[5];

floatavg;

voidgetavg();



public:



report()

{

strcpy(name,"no name");

adno=0;
```

```
avg=0;
}
voidreadinfo();
voiddisplayinfo();
};


void report::getavg()
{
int sum=0;
for(int i=0;i<5;i++)
{
sum=sum+marks[i];
}
avg=sum/5;
}


void report::readinfo()
{
cout<<"Enter Admission No.:";
cin>>adno;
cout<<"Enter Name:";
gets(name);
```

```
cout<<"Enter Marks of 5 subjects";
for(int i=0;i<5;i++)
{
cin>>marks[i];
}
}


void report::displayinfo()
{
cout<<"\nAdmission No.:\t";
cout<<adno;
cout<<"\nEnter Name:\t";
puts(name);
cout<<"Marks of 5 subjects";
for(int i=0;i<5;i++)
{
cout<<"\t"<<marks[i];
}
getavg();
cout<<"\nAverage marks:\t"<<avg;
}

void main()
```

```
{
report s1;
s1.readinfo();
s1.displayinfo();
}
```

OUTPUT:


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter Admission No.:1
Enter Name:ashwin
Enter Marks of 5 subjects98
98
98
98
98
Admission No.: 1
Enter Name: ashwin
Marks of 5 subjects 98 98 98 98 98
Average marks: 98

7.Define a class CARRENTAL in c++ with the following Description:

Private Member:

- **CarID of type long int**
- **AboutCar of type string**
- **Cartype of type string**
- **Rent of type float**
- **A member function AssignRent() to assign the following values for rent as per the given Cartype**

Cartype	**Rent**
Small	**1000**
Van	**800**
SUV	**2500**

Public members

- **A function GETCar() to allow user to enter values for CarID, About Car, Cartype and call Function AssignRent() to assign Rent.**
- **A function ShowCar() to allow user to view the content of all the data members.**

```
#include<iostream.h>

#include<conio.h>

#include<stdio.h>

#include<string.h>

classcarrental

{

longcarid;

charaboutcar[50];

charcartype[25];

float rent;
```

```
voidassignrent()
{
if(strcmp(cartype,"small")==0)
{
rent=1000;
}

else if(strcmp(cartype,"van")==0)
{
rent=800;
}

else
{
rent=2500;
}
}

public:

voidgetcar()
{
cout<<"\nentercarID:";
cin>>carid;
```

```
cout<<"\nentercartype:";
gets(cartype);
cout<<"\nenter car description:";
gets(aboutcar);
assignrent();
}
voidshowcar()
{
cout<<"\n\ncarID:\t";
cout<<carid;
cout<<"\n\ncartype:\t";
puts(cartype);
cout<<"\ncar description:\t";
puts(aboutcar);
cout<<"\nrent:\t"<<rent;

}

};

void main()
{
clrscr();
carrental s1;
s1.getcar();
```

```
s1.showcar();

getch();

}
```

OUTPUT:


Turbo C++ IDE
enter carID:1
enter cartype:van
enter car description:my car
carID: 1
cartype: van
car description: my car
rent: 800

8. Write a program that reads two matrices$M1[]_{mXn}$and $M2[]_{mXn}$and compare them for equality.

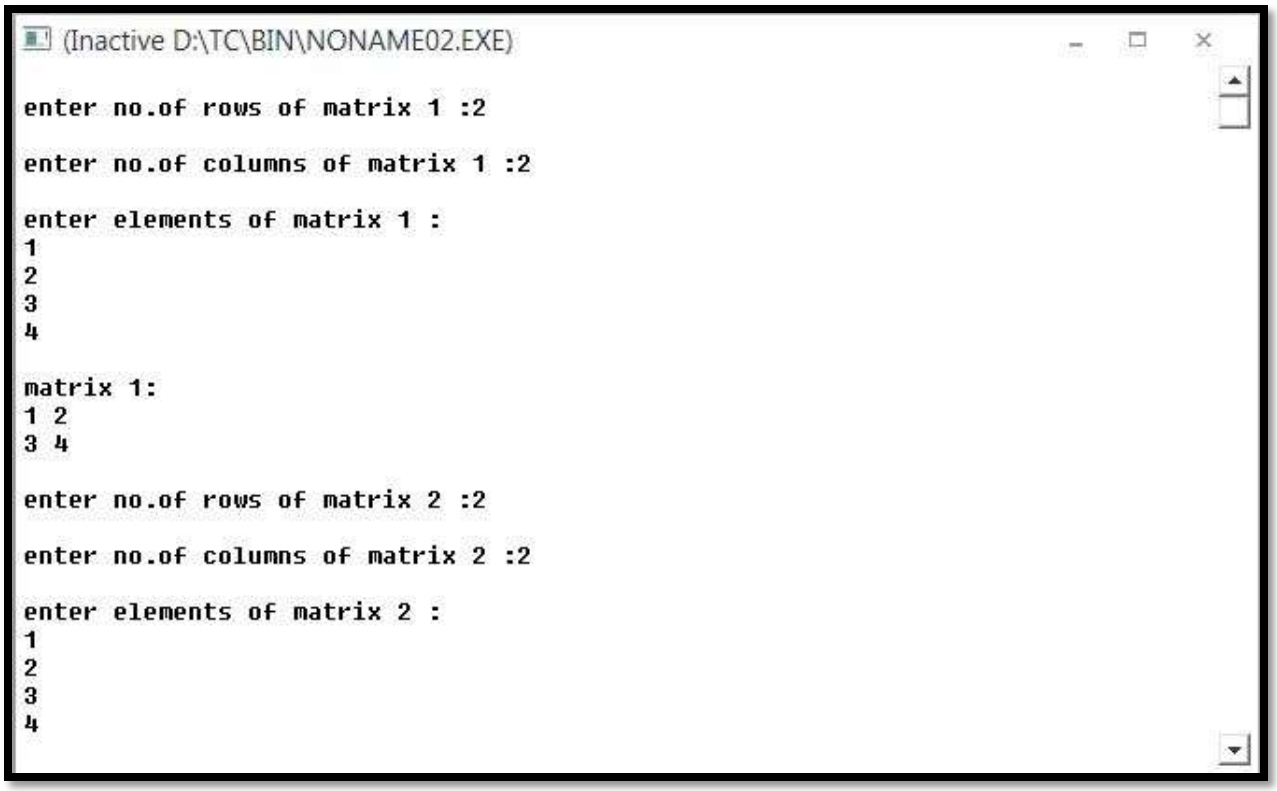
```
#include<iostream.h>
#include<process.h>
#include<conio.h>

int a[80][80],b[80][80];            // 2-D matrices
int i=0, j=0;
int m, n, p, q;                     // Matrix 1 : m= no. of Rows , n=no. of Columns
                                                    //  Matrix 2 : p= no. of Rows , q=no. of Columns

int mc, oc, sum=0;

void equivalency ( int a[80][80],int b[80][80]);

void main()
{
cout<<"\nenterno.of rows of matrix 1 :";
cin>>m;
cout<<"\nenterno.of columns of matrix 1 :";
cin>>n;
cout<<"\nenter elements of matrix 1 :\n";
for(i=0; i<m; i++)
 {
          for(j=0; j<n; j++)
```

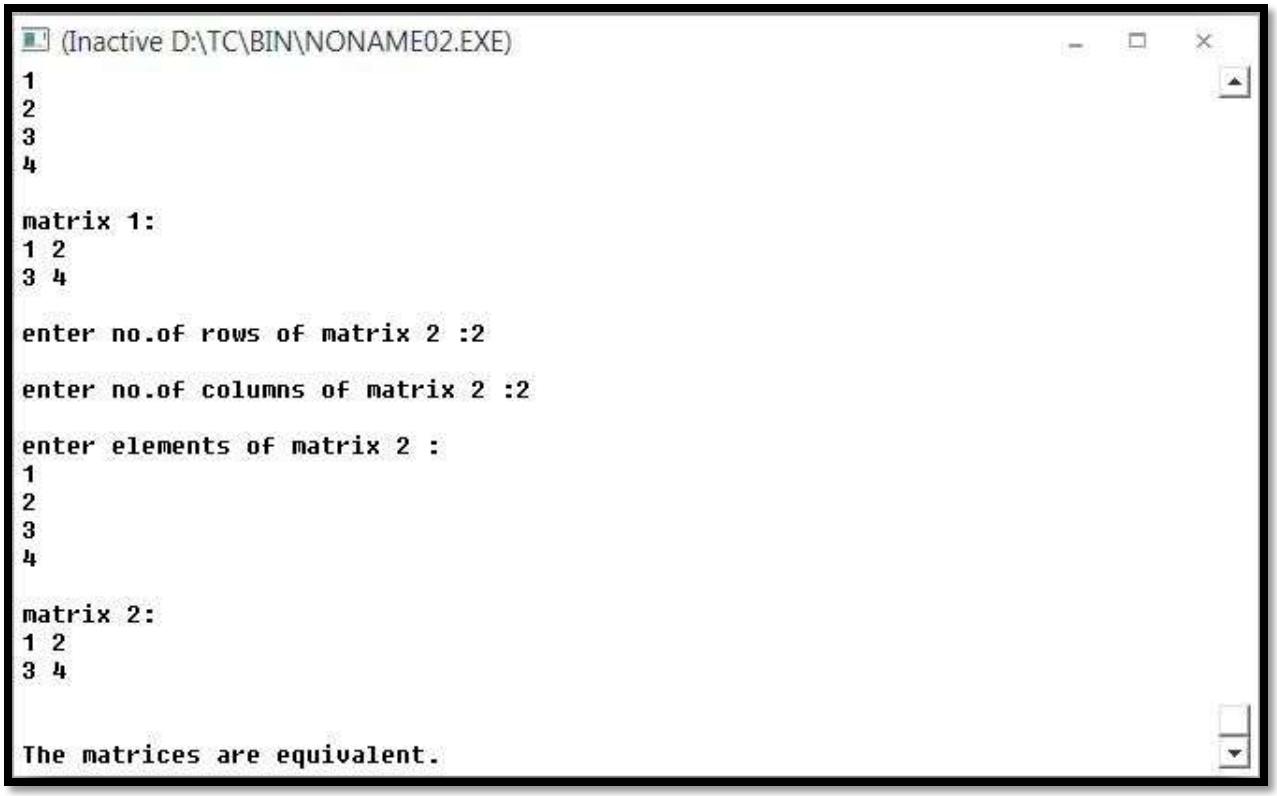
```
        {
        cin>>a[i][j];
        }

}
cout<<"\nmatrix 1:\n";
for(i=0;i<m; i++)
{
        for(j=0;j<n; j++)
        {
        cout<<a[i][j]<<" ";
        }
        cout<<"\n";
}

cout<<"\nenterno.ofrows of matrix 2 :";
cin>>p;
cout<<"\nenterno.ofcolumns of matrix 2 :";
cin>>q;
cout<<"\nenter elements of matrix 2 :\n";
for(i=0;i<p; i++)
{
        for(j=0;j<q; j++)
        {
        cin>>b[i][j];
```

```
        }


}
cout<<"\nmatrix 2:\n";
for(i=0; i<p; i++)
{
        for(j=0; j<q; j++)
        {
        cout<<b[i][j]<<" ";
        }
        cout<<"\n";
}

equivalency(a,b);
}

void equivalency ( int a[80][80],int b[80][80])
{int count=0;
for(i=0; i<m; i++)
{
        for(j=0; j<n; j++)
        {
        if(a[i][j]==b[i][j])
        ++count;
        }
```

```
 }
if(count==(m*n))
cout<<"\n\nThe matrices are equivalent.";
else
cout<<"\n\nThe matrices are not equivalent.";
}
```

OUTPUT:


(Inactive D:\TC\BIN\NONAME02.EXE)
enter no.of rows of matrix 1 :2
enter no.of columns of matrix 1 :2
enter elements of matrix 1 :
1
2
3
4
matrix 1:
1 2
3 4
enter no.of rows of matrix 2 :2
enter no.of columns of matrix 2 :2
enter elements of matrix 2 :
1
2
3
4

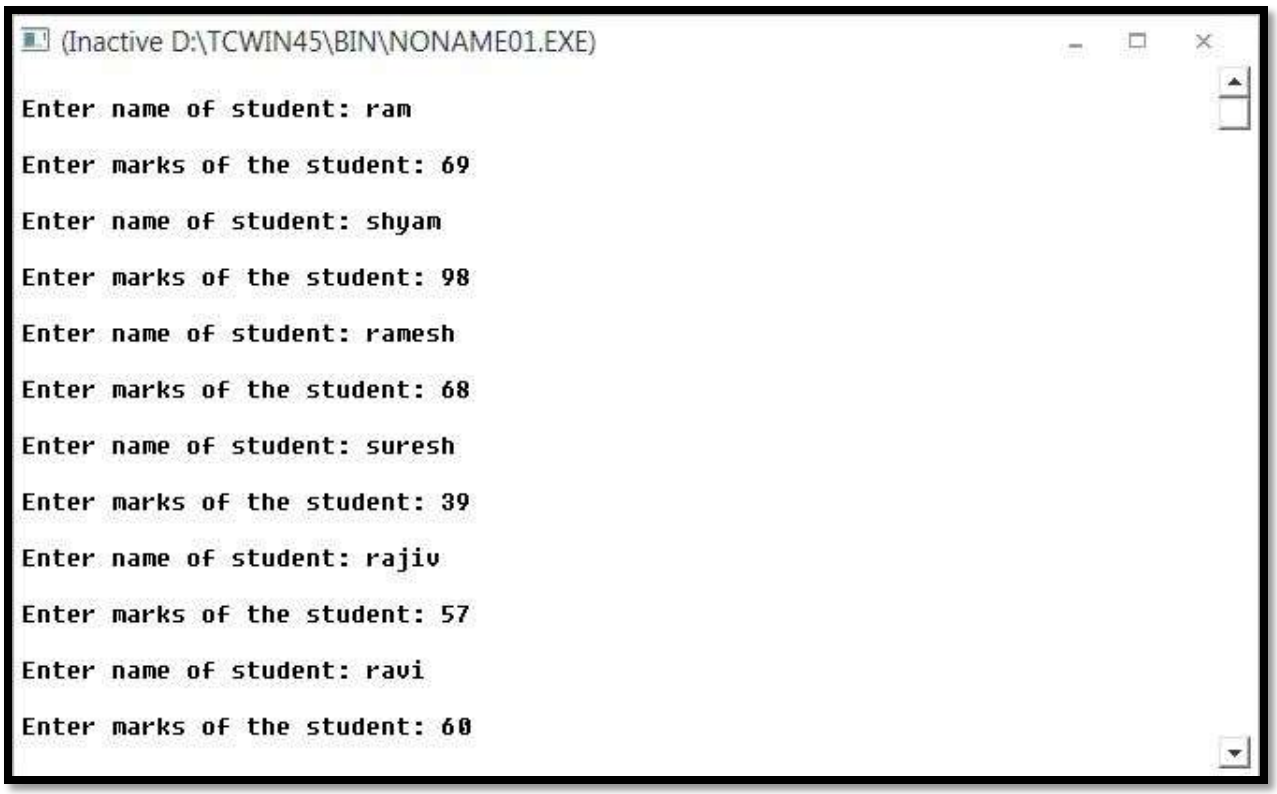

(Inactive D:\TC\BIN\NONAME02.EXE)
1
2
3
4
matrix 1:
1 2
3 4
enter no.of rows of matrix 2 :2
enter no.of columns of matrix 2 :2
enter elements of matrix 2 :
1
2
3
4
matrix 2:
1 2
3 4
The matrices are equivalent.

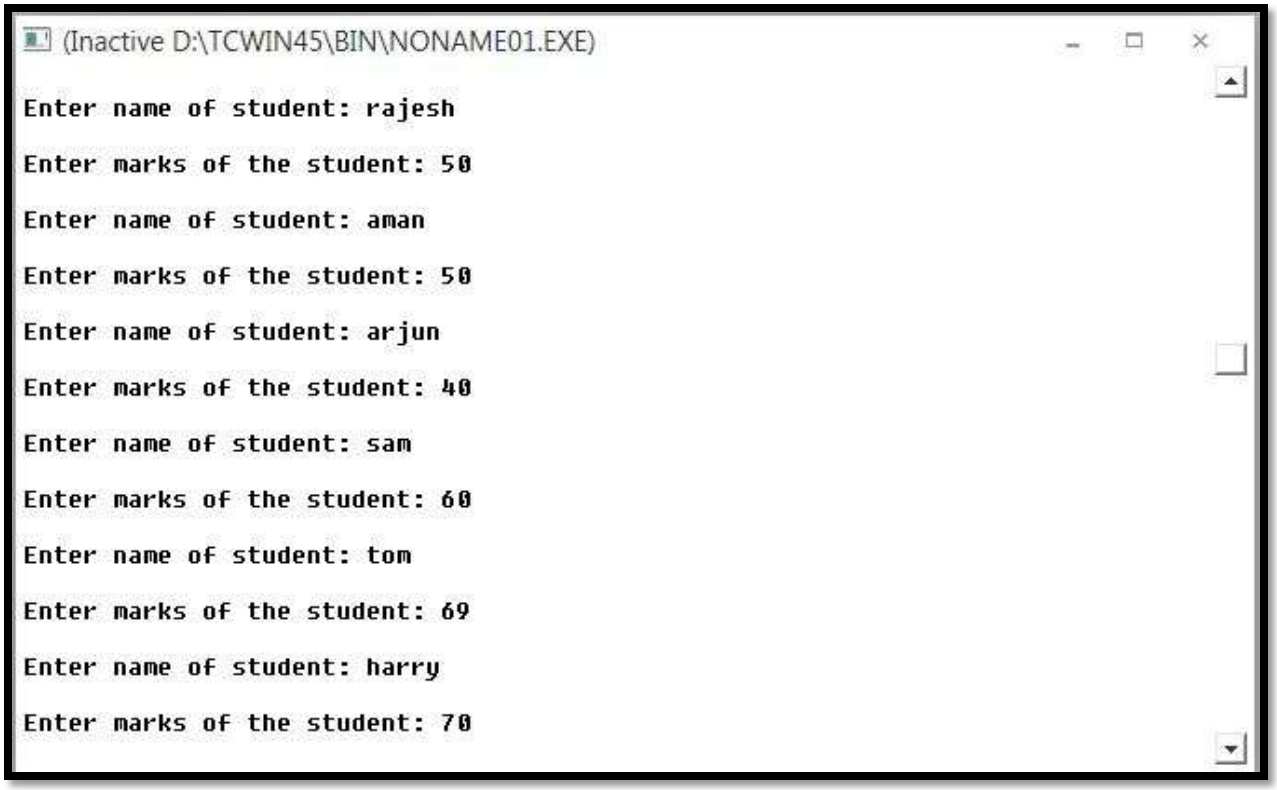
9. Write a program to accept the name and total marks of 20 students in an array. Display the names of the students (including marks) securing highest and lowest marks. (use array of structure).

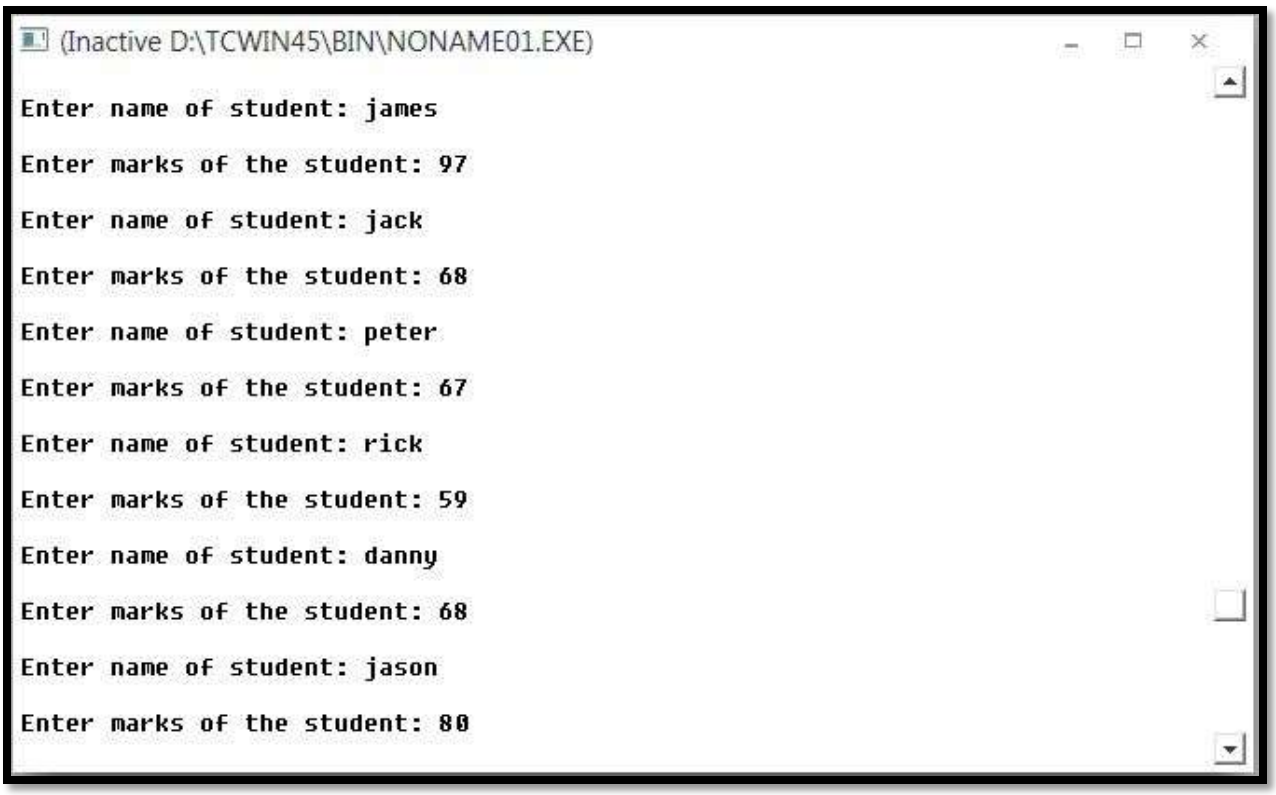
```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>

struct stud
{
char name[25];
float marks;
};

void main()
{
stud s1[20];
intu,v;

for(int i=0;i<20;i++)
{
cout<<"\nEnter name of student: ";
gets(s1[i].name);
cout<<"\nEnter marks of the student: ";
cin>>s1[i].marks;
}
```

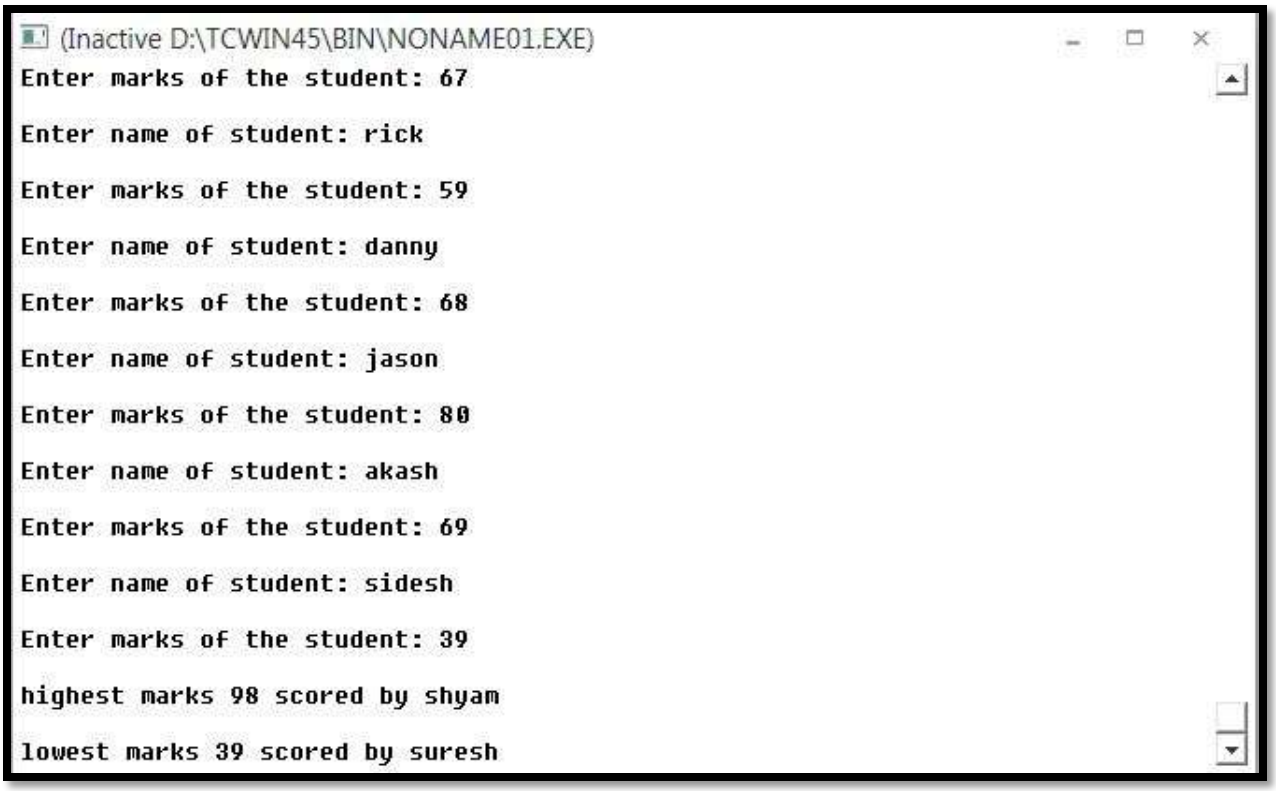
```
float max=0,min=s1[0].marks;


for(i=0;i<20;i++)
{


if(s1[i].marks>max)
{
max=s1[i].marks;
u=i;
}


if(min>s1[i].marks)
{
min=s1[i].marks;
v=i;
}


}
cout<<"\nhighest marks "<<max<<" scored by "<<s1[u].name;
cout<<"\n\nlowest marks "<<min<<" scored by "<<s1[v].name;


}
```

OUTPUT:


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter name of student: ram
Enter marks of the student: 69
Enter name of student: shyam
Enter marks of the student: 98
Enter name of student: ramesh
Enter marks of the student: 68
Enter name of student: suresh
Enter marks of the student: 39
Enter name of student: rajiv
Enter marks of the student: 57
Enter name of student: ravi
Enter marks of the student: 60


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter name of student: rajesh
Enter marks of the student: 50
Enter name of student: aman
Enter marks of the student: 50
Enter name of student: arjun
Enter marks of the student: 40
Enter name of student: sam
Enter marks of the student: 60
Enter name of student: tom
Enter marks of the student: 69
Enter name of student: harry
Enter marks of the student: 70


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter name of student: james
Enter marks of the student: 97
Enter name of student: jack
Enter marks of the student: 68
Enter name of student: peter
Enter marks of the student: 67
Enter name of student: rick
Enter marks of the student: 59
Enter name of student: danny
Enter marks of the student: 68
Enter name of student: jason
Enter marks of the student: 80


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter marks of the student: 67
Enter name of student: rick
Enter marks of the student: 59
Enter name of student: danny
Enter marks of the student: 68
Enter name of student: jason
Enter marks of the student: 80
Enter name of student: akash
Enter marks of the student: 69
Enter name of student: sidesh
Enter marks of the student: 39
highest marks 98 scored by shyam
lowest marks 39 scored by suresh

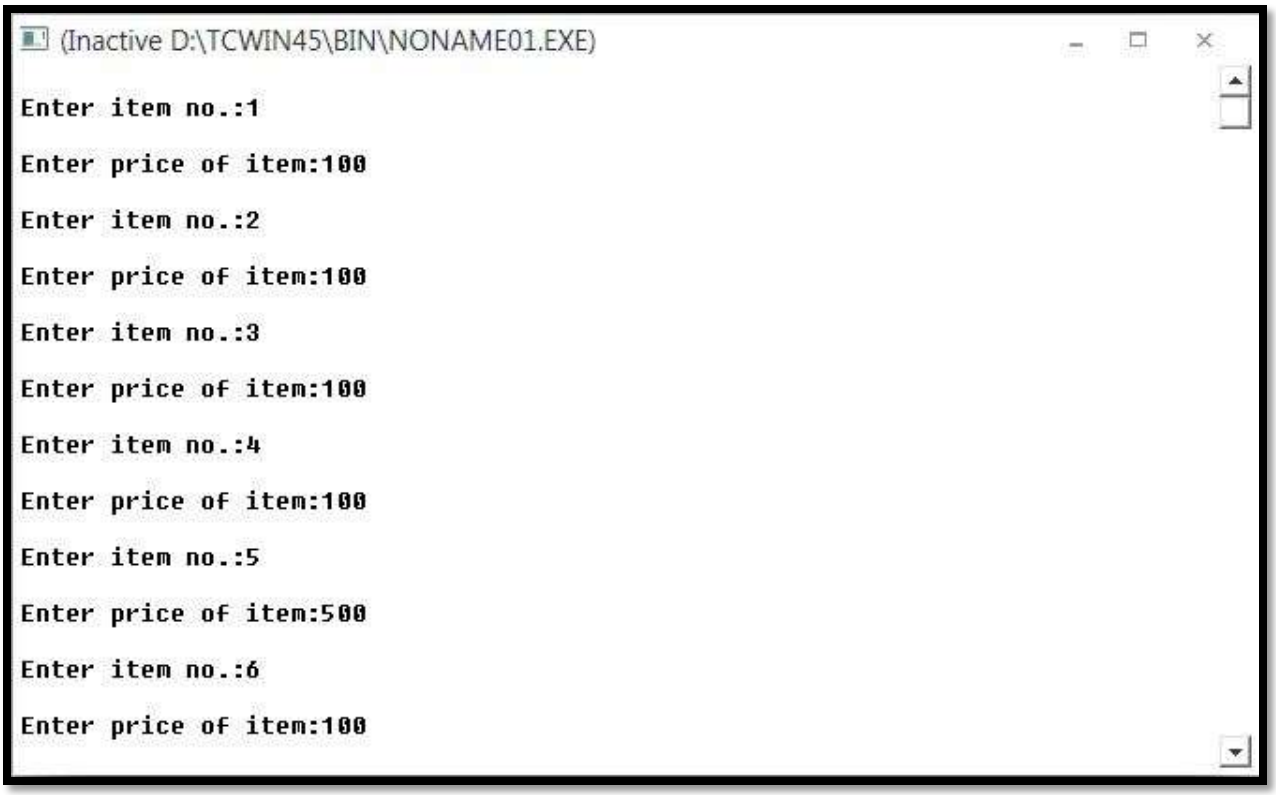
10. Write a program using a class to store price list of 50 items and to print the largest price as well as the sum of all prices. You can take name of class as ITEM.

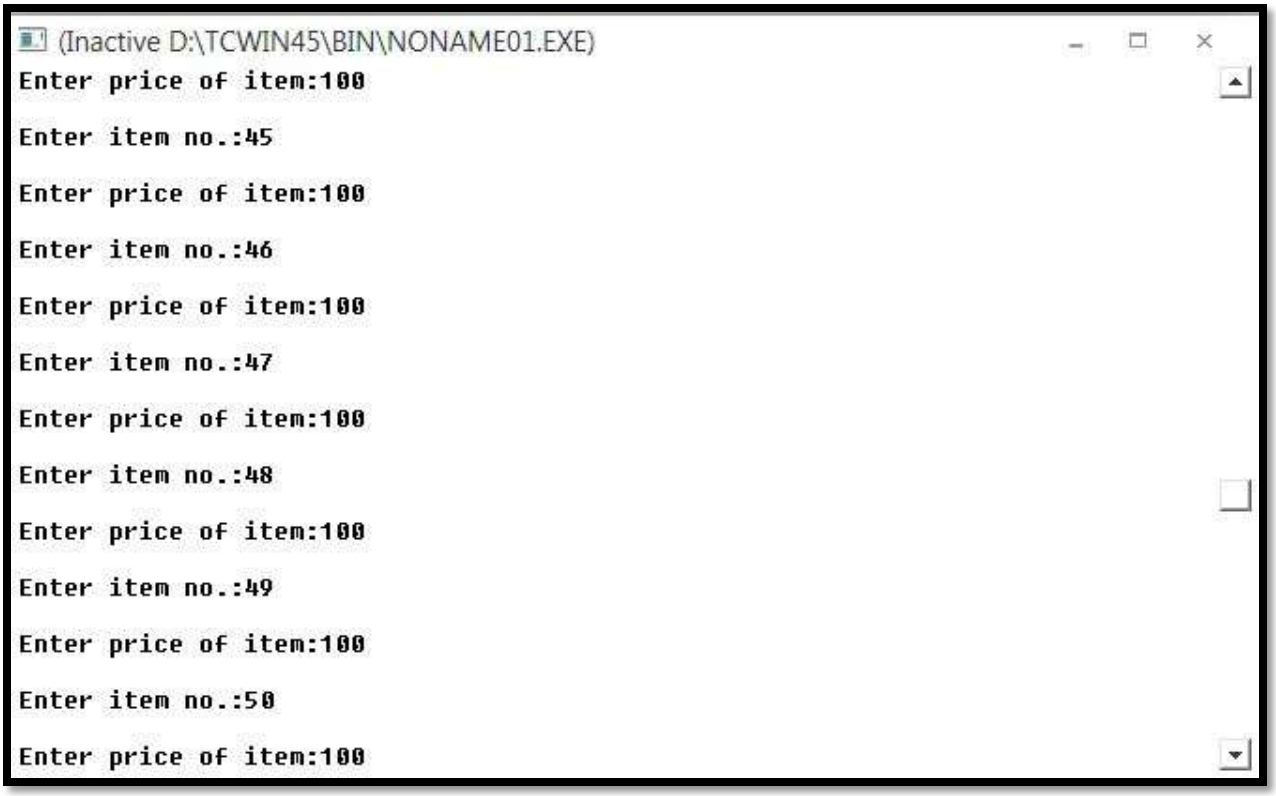
```
#include<iostream.h>

#include<conio.h>

#include<stdio.h>


class ITEM

{


public:


intitemno;

int price;




void enter()

{

cout<<"\nEnter  item no.:";

cin>>itemno;

cout<<"\nEnter  price of item:";

cin>>price;

}


void display()
```

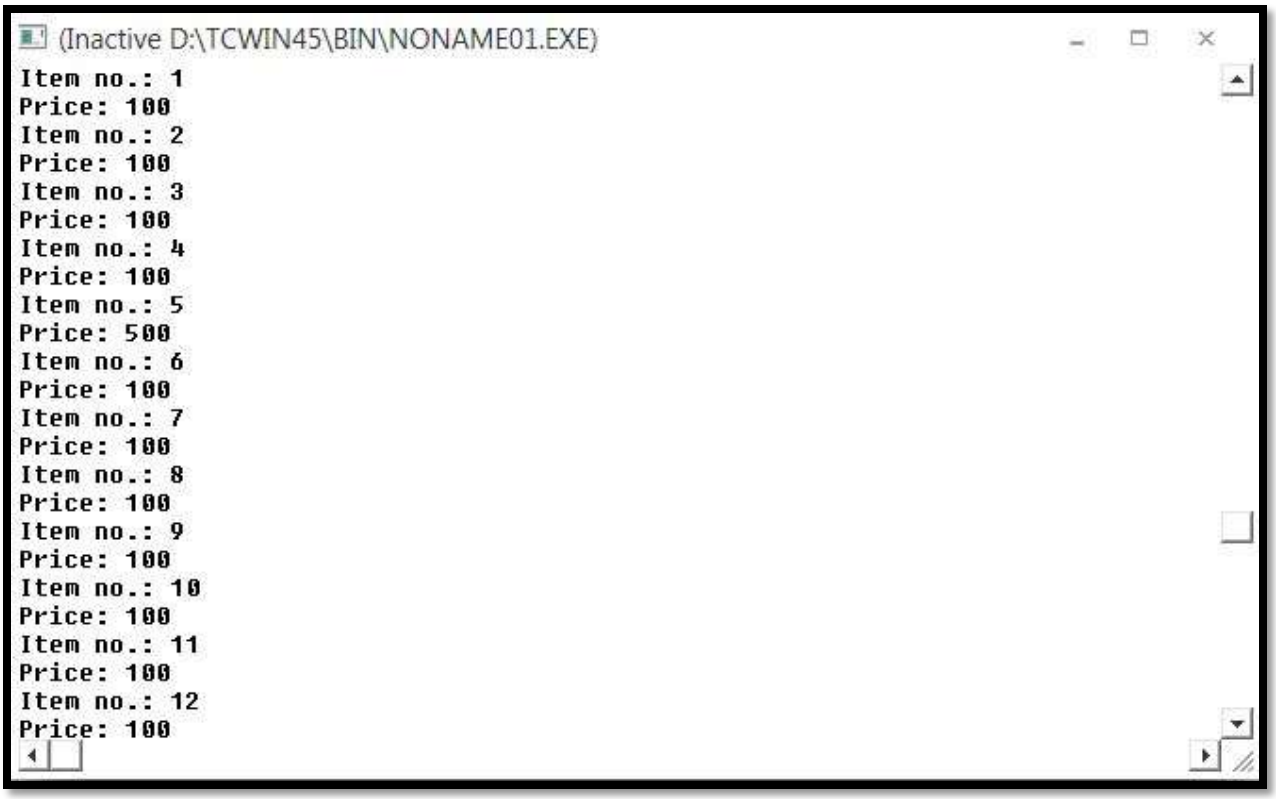
```
{
cout<<"\nItem  no.: ";
cout<<itemno;
cout<<"\nPrice: ";
cout<<price;
}

};

void main()
{
ITEM s1[50];

for(int i=0;i<50;i++)
{
s1[i].enter();
}

for(i=0;i<50;i++)
{
s1[i].display();
}

int max=0,sum=0;
```

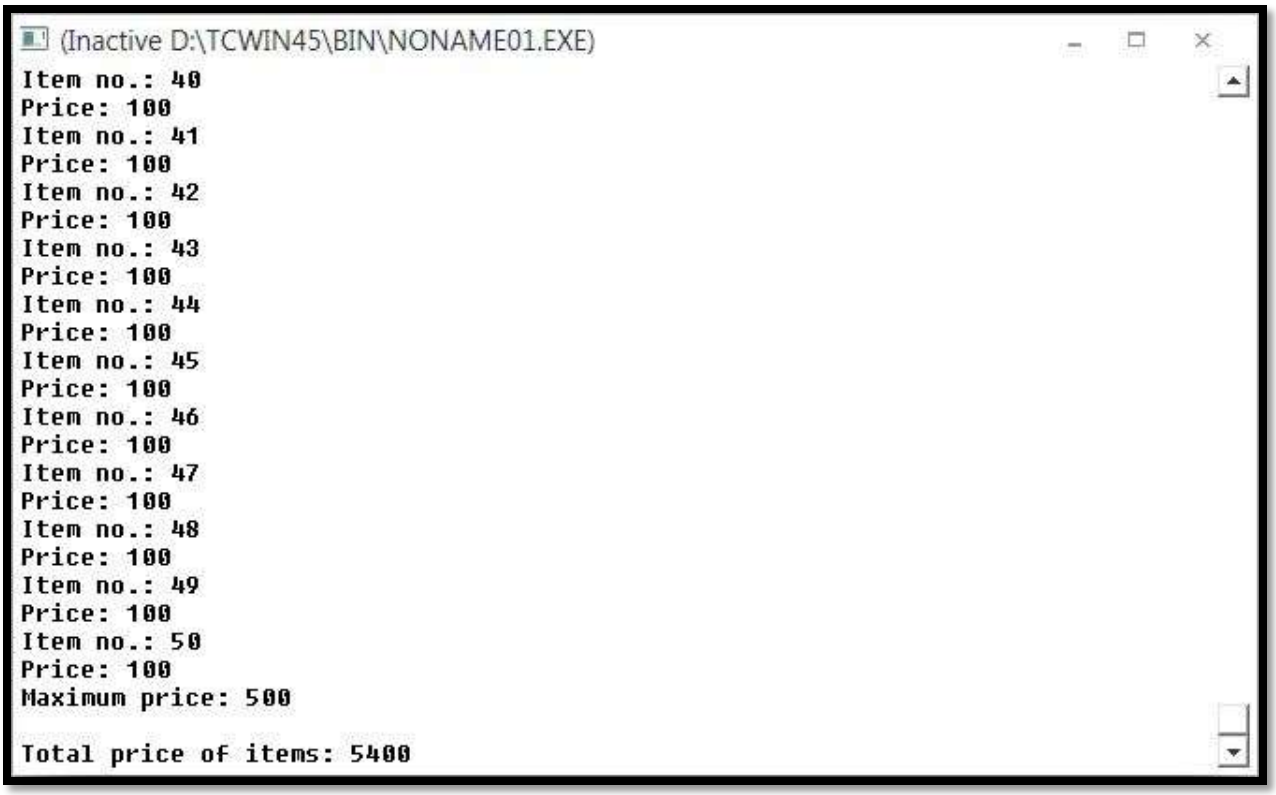
```
for(i=0;i<50;i++)
{
if(max<s1[i].price)
{
max=s1[i].price;
}
}

for(i=0;i<50;i++)
{
sum=sum+s1[i].price;
}

cout<<"\nMaximum  price: "<<max;
cout<<"\n\nTotal  price of items: "<<sum;
}
```

OUTPUT:


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter item no.:1
Enter price of item:100
Enter item no.:2
Enter price of item:100
Enter item no.:3
Enter price of item:100
Enter item no.:4
Enter price of item:100
Enter item no.:5
Enter price of item:500
Enter item no.:6
Enter price of item:100


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter price of item:100
Enter item no.:45
Enter price of item:100
Enter item no.:46
Enter price of item:100
Enter item no.:47
Enter price of item:100
Enter item no.:48
Enter price of item:100
Enter item no.:49
Enter price of item:100
Enter item no.:50
Enter price of item:100


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Item no.: 1
Price: 100
Item no.: 2
Price: 100
Item no.: 3
Price: 100
Item no.: 4
Price: 100
Item no.: 5
Price: 500
Item no.: 6
Price: 100
Item no.: 7
Price: 100
Item no.: 8
Price: 100
Item no.: 9
Price: 100
Item no.: 10
Price: 100
Item no.: 11
Price: 100
Item no.: 12
Price: 100


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Item no.: 40
Price: 100
Item no.: 41
Price: 100
Item no.: 42
Price: 100
Item no.: 43
Price: 100
Item no.: 44
Price: 100
Item no.: 45
Price: 100
Item no.: 46
Price: 100
Item no.: 47
Price: 100
Item no.: 48
Price: 100
Item no.: 49
Price: 100
Item no.: 50
Price: 100
Maximum price: 500
Total price of items: 5400

11. Write a menu driven program using class to show the details of 10 students and provide the facility of viewing details of the topper as well as of specific student by providing his/her roll number. (Take the name of class as STUDENT).

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
int MAX=3;
class student
{
        introllno;              //Roll No Of The Student
        char name[21];          //Name Of The Student
        float marks;            //Marks Of The Student
        char grade;             /*Grade Of The Student On The Basis Of
                                    Percentage  */
        public:
        voidreadstudent()
        {
        cout<<"\n\tEnter The Roll No Of The Student: ";
        cin>>rollno;
        cout<<"\n\tEnter The Name Of The Student: ";
        gets(name);
        cout<<"\n\tEnter The Marks Of The Student: ";
        cin>>marks;
        }
        voiddispstudent()
```

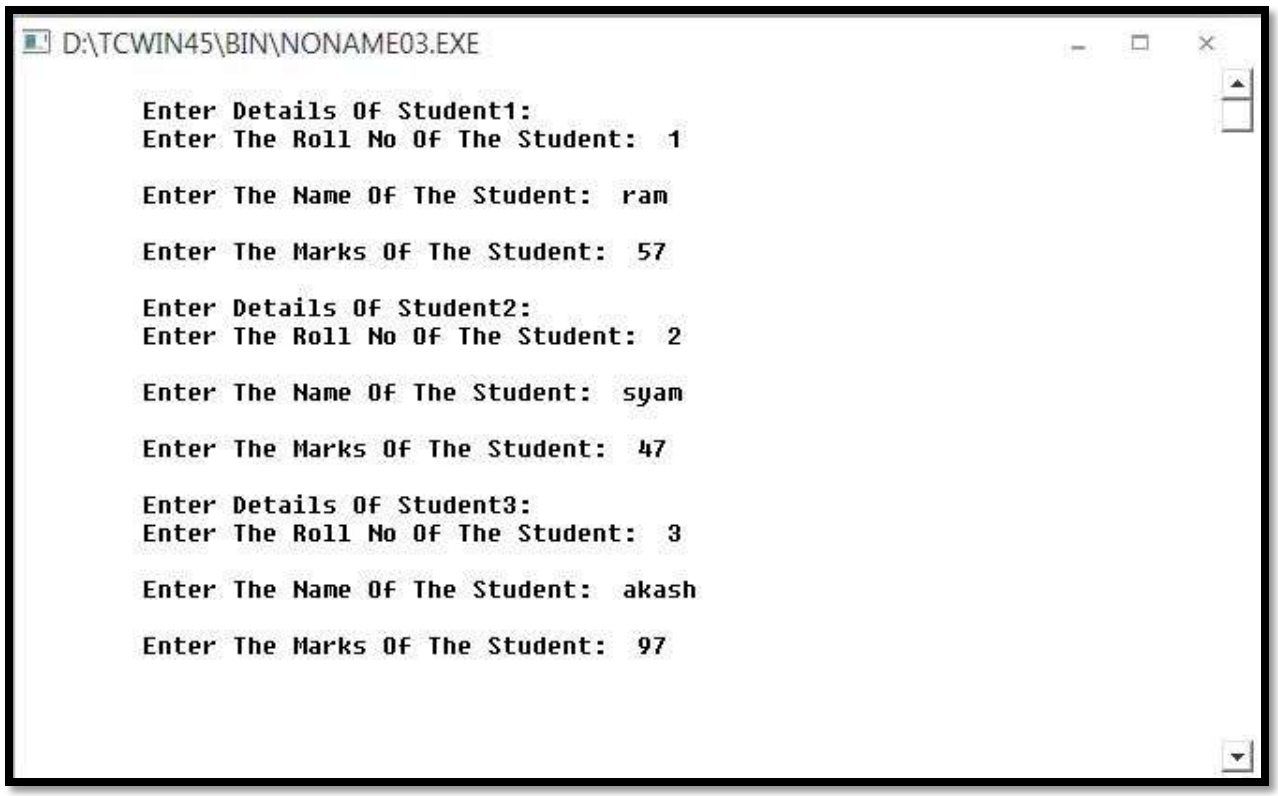
```
{    calcgrade();
cout<<"\n\tRoll No Of The Student:  "<<rollno;
cout<<"\n\tEnter The Name Of The Student:  "<<name;
cout<<"\n\tMarks Of The Student: "<<marks;
cout<<"\n\tGrade: "<<grade;
}
intgetrollno()        //Accessor Function
{
returnrollno;
}
floatgetmarks()
{
return marks;
}
voidcalcgrade()
{
if(marks>=75)
        grade = 'O';
else if(marks>=60)
        grade = 'A';
else if(marks>=50)
        grade = 'B';
else if(marks>=40)
        grade = 'C';
else
```

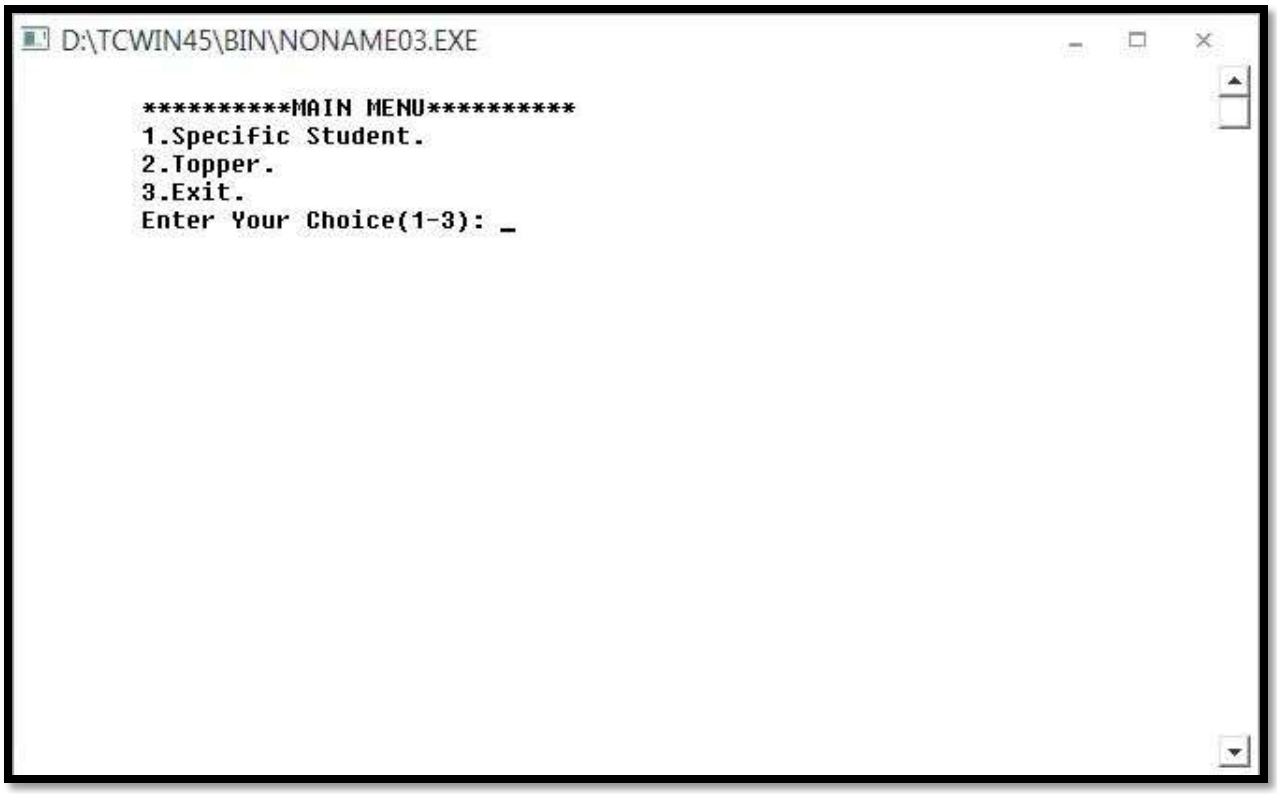
```
                grade = 'F';
        }

};
void main()
{
        clrscr();
        studentstd[10];
        for(int i=0;i<MAX;i++)
         {
        cout<<"\n\tEnter Details Of Student"<<(i+1)<<":";
        std[i].readstudent();
         }
        intchoice,rno,pos=-1,highmarks=0;
        do
         {
        clrscr();
        cout<<"\n\t**********MAIN  MENU**********";
        cout<<"\n\t1.Specific Student.";
        cout<<"\n\t2.Topper.";
        cout<<"\n\t3.Exit.";
        cout<<"\n\tEnter Your Choice(1-3): ";
        cin>>choice;
        switch(choice)
        {
```

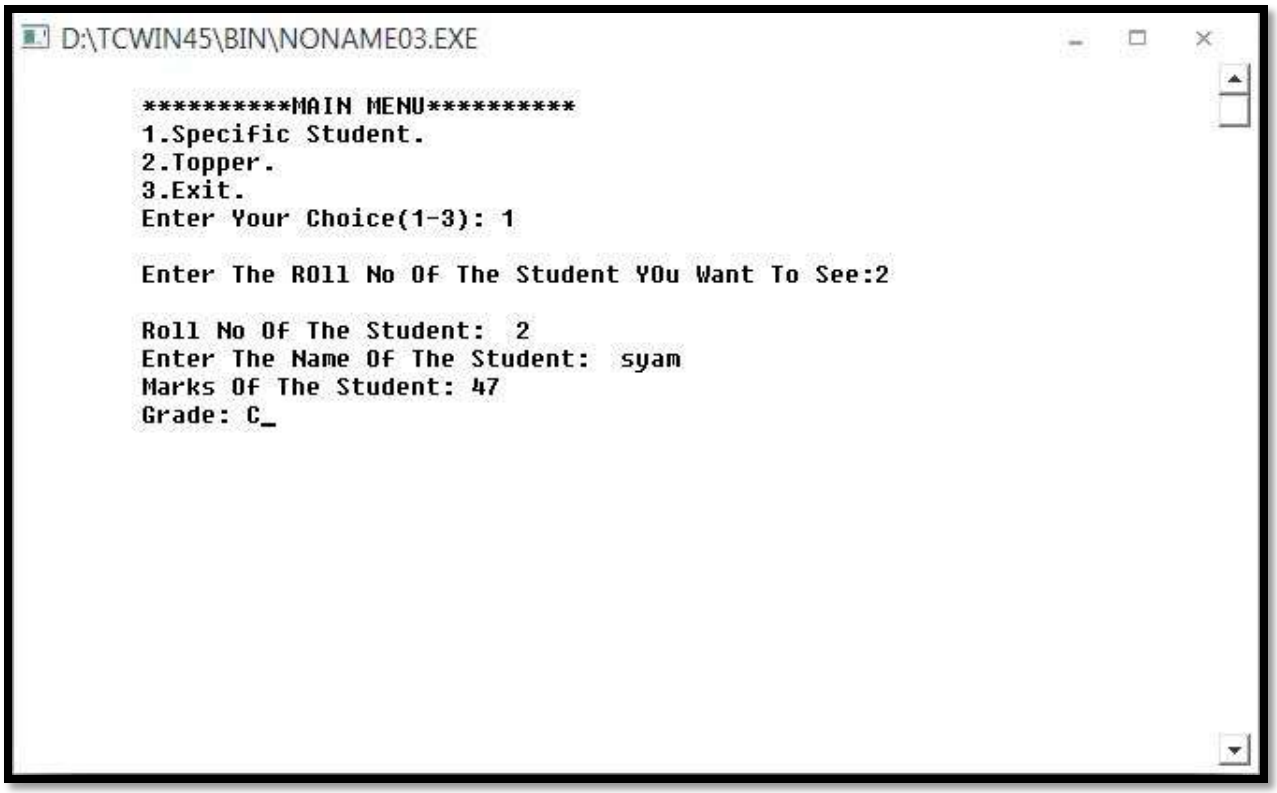
```
case 1: cout<<"\n\tEnter The ROll No Of The Student YOu Want To See:";
        cin>>rno;
        for(i=0;i<MAX;++i)
         {
        if(std[i].getrollno()==rno)
         {
                        std[i].dispstudent();
                        break;
         }
         }
        if(i==MAX)
        cout<<"\n\tInvalid Roll No!!!!!!!!!!!!";
        getch();
        break;
case 2: for(i=0;i<MAX;++i)
         {
        if(std[i].getmarks()>highmarks)
         {
                        pos=1;
                        highmarks=std[i].getmarks();
         }
                }
std[pos].dispstudent();
                getch();
break;
```

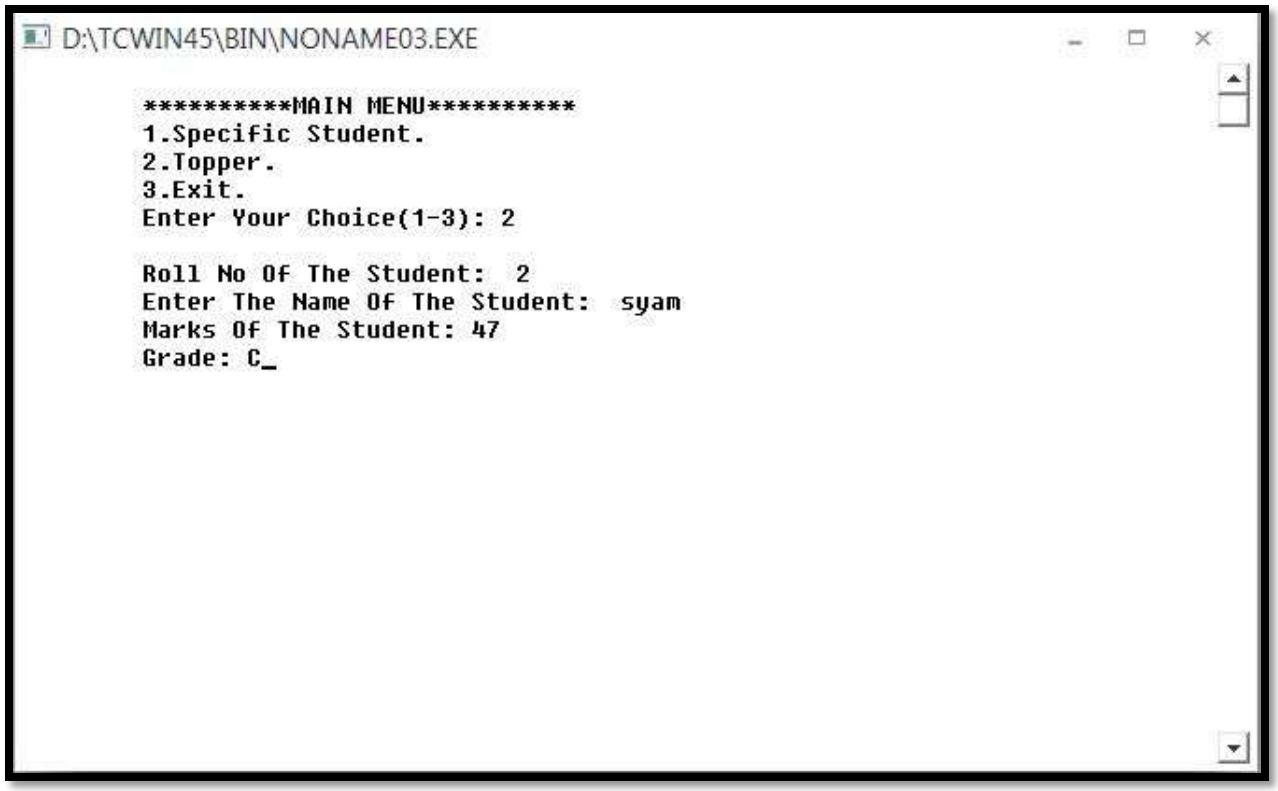
```
                case 3:  break;
        default: cout<<"\n\t Wrong Choice Entered!!!!!!!!!!!!!!!";
                                        break;
        }
        }while(choice>=1&&choice<3);
}
```

OUTPUT:


D:\TCWIN45\BIN\NONAME03.EXE
Enter Details Of Student1:
Enter The Roll No Of The Student: 1
Enter The Name Of The Student: ram
Enter The Marks Of The Student: 57
Enter Details Of Student2:
Enter The Roll No Of The Student: 2
Enter The Name Of The Student: syam
Enter The Marks Of The Student: 47
Enter Details Of Student3:
Enter The Roll No Of The Student: 3
Enter The Name Of The Student: akash
Enter The Marks Of The Student: 97


D:\TCWIN45\BIN\NONAME03.EXE
**********MAIN MENU**********
1.Specific Student.
2.Topper.
3.Exit.
Enter Your Choice(1-3): _


D:\TCWIN45\BIN\NONAME03.EXE
**********MAIN MENU**********
1.Specific Student.
2.Topper.
3.Exit.
Enter Your Choice(1-3): 1
Enter The ROll No Of The Student YOu Want To See:2
Roll No Of The Student: 2
Enter The Name Of The Student: syam
Marks Of The Student: 47
Grade: C_


D:\TCWIN45\BIN\NONAME03.EXE
**********MAIN MENU**********
1.Specific Student.
2.Topper.
3.Exit.
Enter Your Choice(1-3): 2
Roll No Of The Student: 2
Enter The Name Of The Student: syam
Marks Of The Student: 47
Grade: C_

13. Write a program to implement multilevel inheritance in C++ using classes.

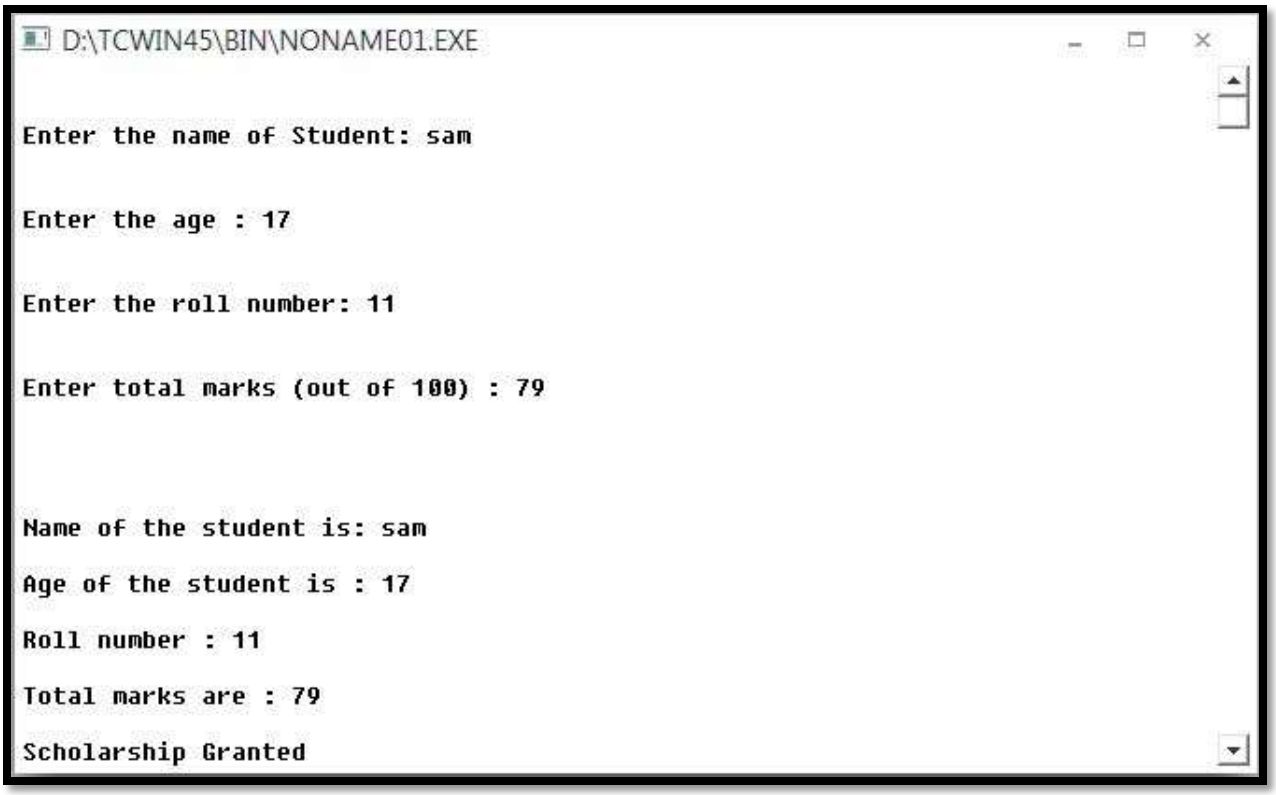
```
#include<iostream.h>
#include<stdio.h>
#include<conio.h>

class person
        {
        char name[21];
        int age;

        public:

        voidindata()
        {
                        cout<<"\n\nEnter the name of Student: " ;
                gets(name);
                                cout<<"\n\nEnter the age : ";
                cin>>age;
        }

        voidoutdata()
        {       cout<<"\n\n";
                        cout<<"\n\nName of the student is: "<<name;
                        cout<<"\n\nAge of the student is : "<<age;
```

```
        }


        };



class student: public person
 {
        floatTmarks;
        introllno;

        public:
        float m;

        void enter()
        {
        cout<<"\n\nEnter the roll number: "; cin>>rollno;
                cout<<"\n\nEnter total marks (out of 100) : ";
                cin>>Tmarks;
                m=Tmarks;
        }

        void display()
        {
        cout<<"\n\nRoll number : "<<rollno;
                cout<<"\n\nTotal marks are : "<<Tmarks;
```

```
        }
};


class scholarship: public student
{
public:

voidschol()
{

if (m>75)
cout<<"\n\nScholarship Granted";

else
cout<<"\n\nNo Scholarship";

}
};


void main()
{
clrscr();
scholarship A;
```

```
A.indata();

A.enter();

A.outdata();

A.display();

A.schol();

getch();

}
```

OUTPUT:


D:\TCWIN45\BIN\NONAME01.EXE
Enter the name of Student: sam
Enter the age : 17
Enter the roll number: 11
Enter total marks (out of 100) : 79
Name of the student is: sam
Age of the student is : 17
Roll number : 11
Total marks are : 79
Scholarship Granted

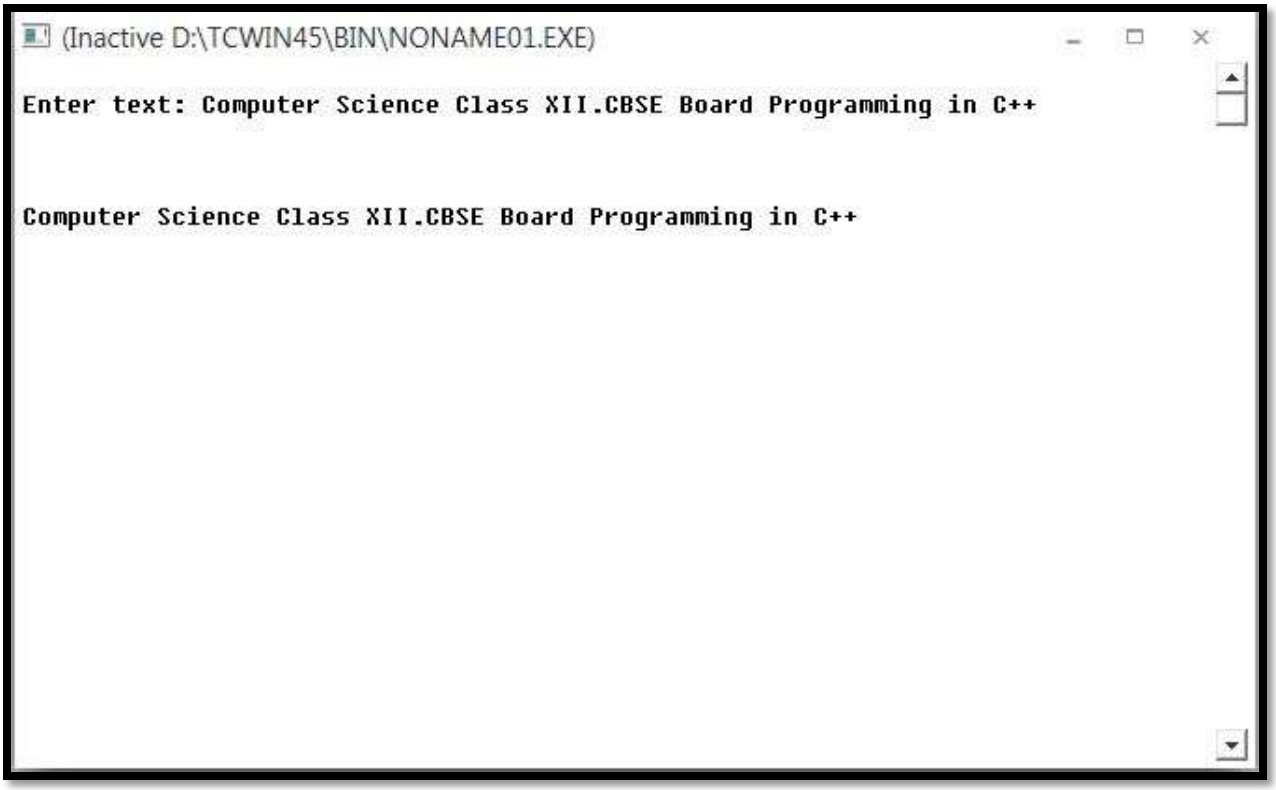
15. Write a program in C++ to write text to a file Test.txt and again reading back the contents of the file & display it on the screen. The contents is give as-

"Computer Science Class XII.CBSE Board Programming in C++"

```
#include<iostream.h>

#include<stdio.h>

#include<conio.h>

#include<fstream.h>


void main()

{

charch[100],ch1[100];

fstream f1;


f1.open("test.txt",ios::out);

cout<<"\nEnter text: ";

gets(ch);

f1<<ch;

f1.close();


f1.open("test.txt",ios::in);

f1.seekg(0);

while(!f1.eof())

{

f1.get(ch1,100);
```

```
cout<<"\n\n\n";

puts(ch1);

}

f1.close();

}
```

OUTPUT:

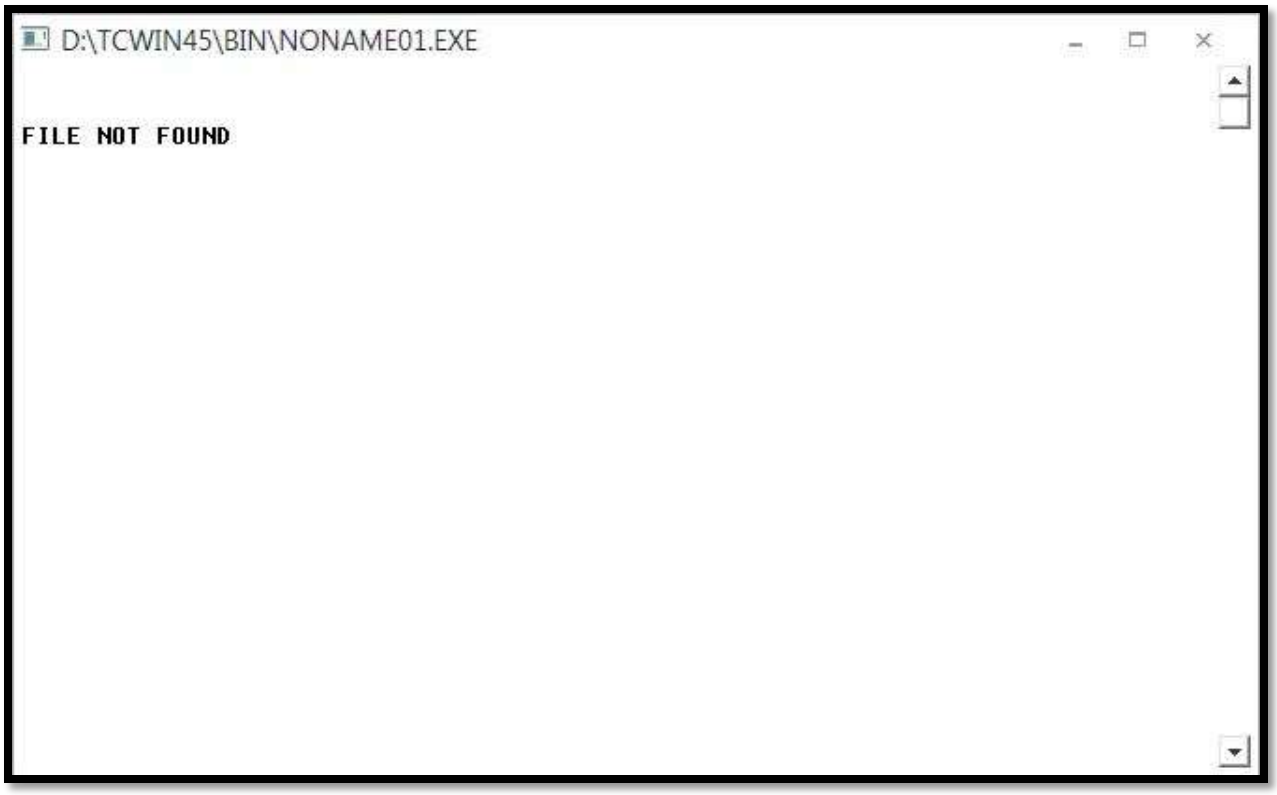

(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter text: Computer Science Class XII.CBSE Board Programming in C++
Computer Science Class XII.CBSE Board Programming in C++

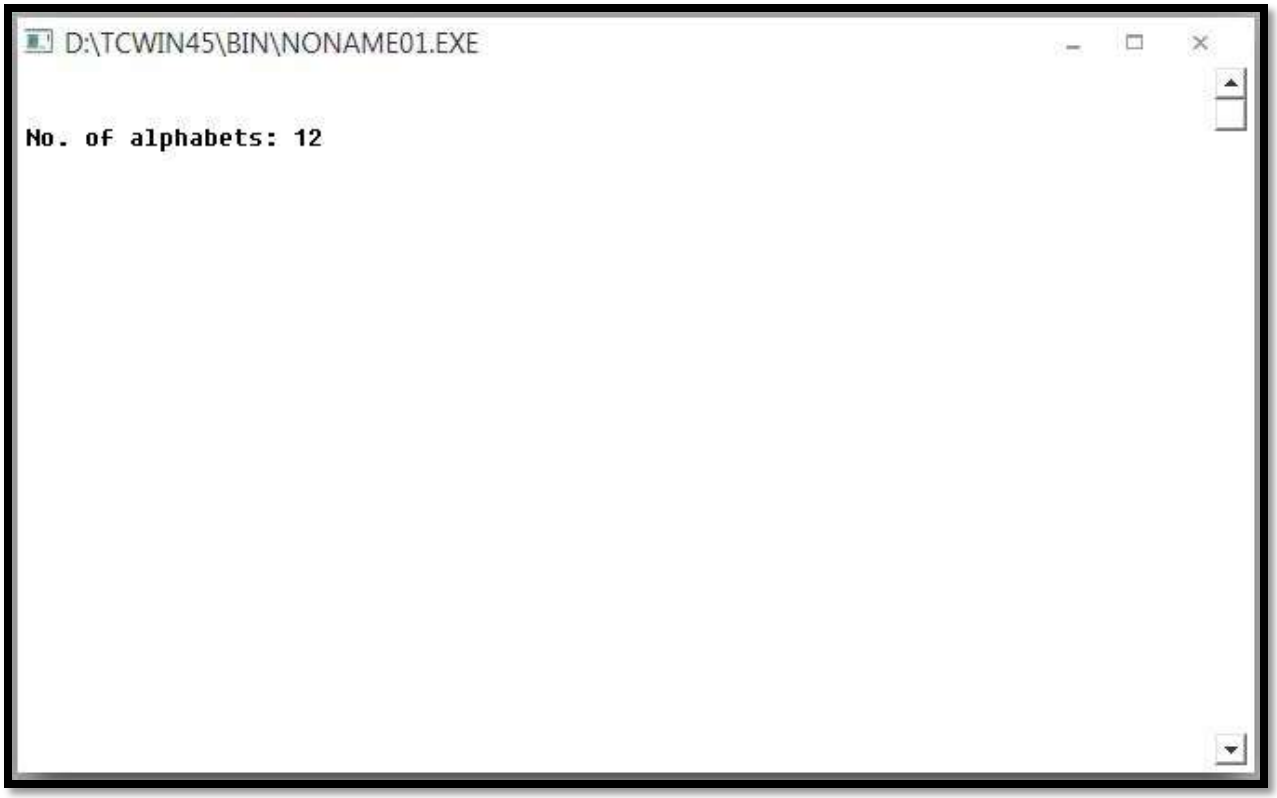
19. Write a program in C++ to count number of alphabets present in a text file record.txt.

```
#include<fstream.h>
#include<iostream.h>
#include<conio.h>
#include<ctype.h>

void main()
{
fstream f1;
charch;
int count=0;

f1.open("record.txt",ios::in);

if(!f1)
{
cout<<"\n\nFILE  NOT FOUND";
}

else
{
f1.seekg(0);
while(!f1.eof())
```

```
{
f1.get(ch);

if(isupper(ch)==0||islower(ch)==0)
{
count++;
}

}

cout<<"\n\nNo.  of alphabets: "<<count;
}

getch();
}
```

OUTPUT:


D:\TCWIN45\BIN\NONAME01.EXE
FILE NOT FOUND

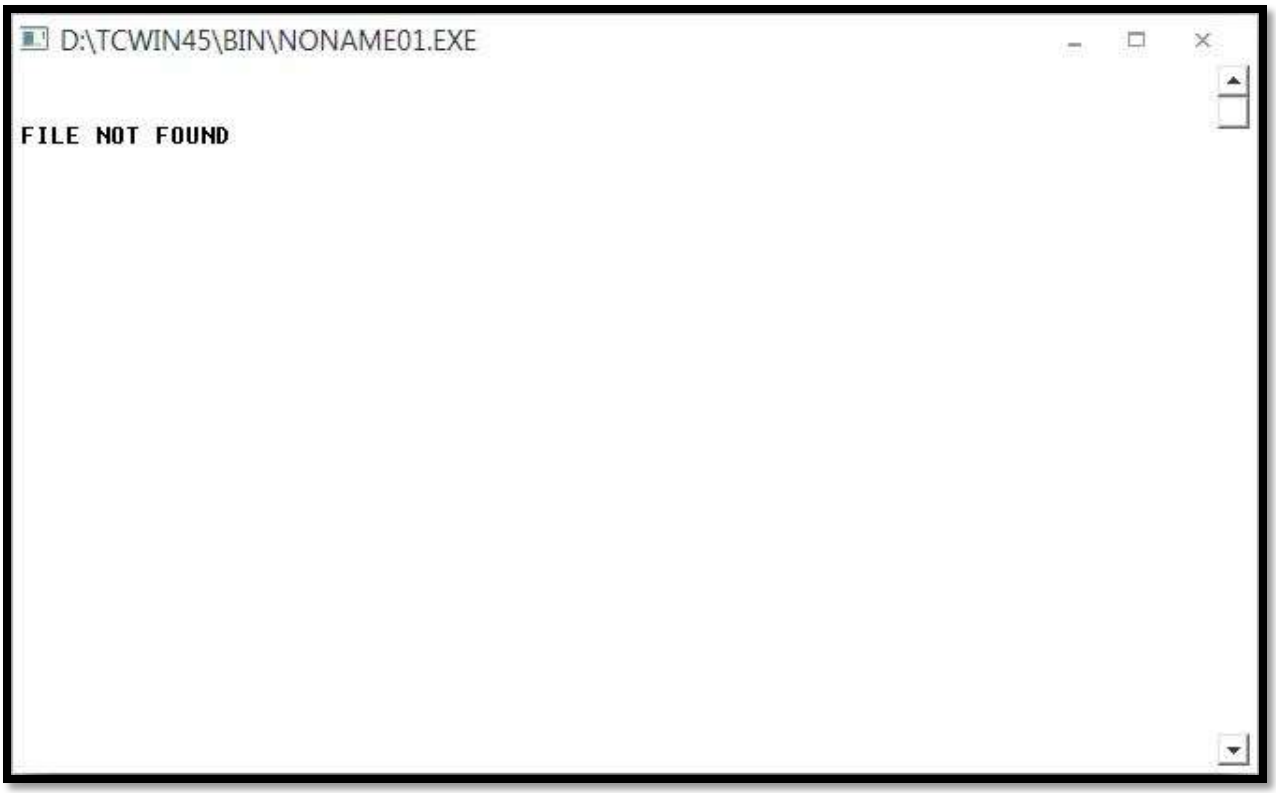

D:\TCWIN45\BIN\NONAME01.EXE
No. of alphabets: 12

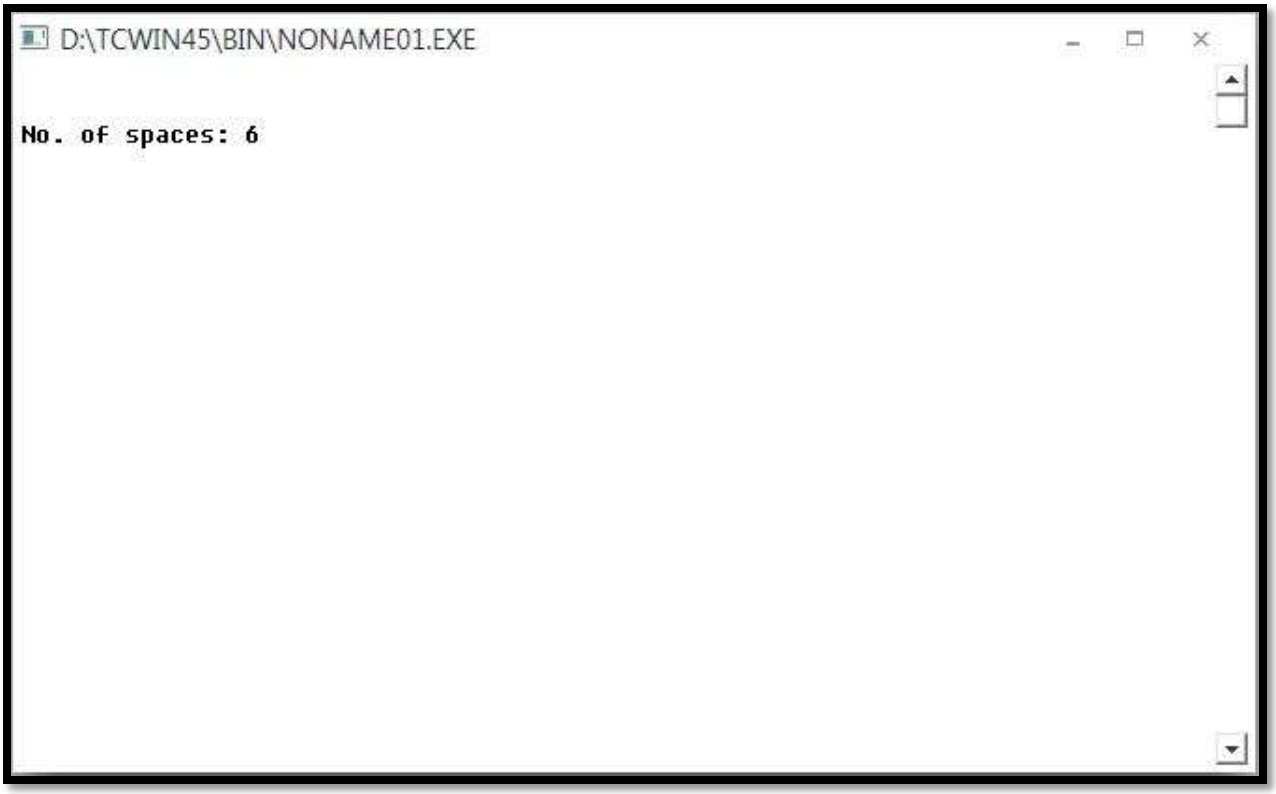
20. Write a function in C++ to read the content from a text file NOTES. TXT, count and display the number of blank spaces present in it.

```
#include<fstream.h>

#include<iostream.h>

#include<conio.h>

#include<ctype.h>


void main()

{

fstream f1;

charch;

int count=0;


f1.open("notes.txt",ios::in);


if(!f1)

{

cout<<"\n\nFILE  NOT FOUND";

}


else

{

f1.seekg(0);

while(!f1.eof())
```

```
{
f1.get(ch);

if(ch==' ')
{
count++;
}

}

cout<<"\n\nNo.  of spaces: "<<count;
}

getch();
}
```

OUTPUT:

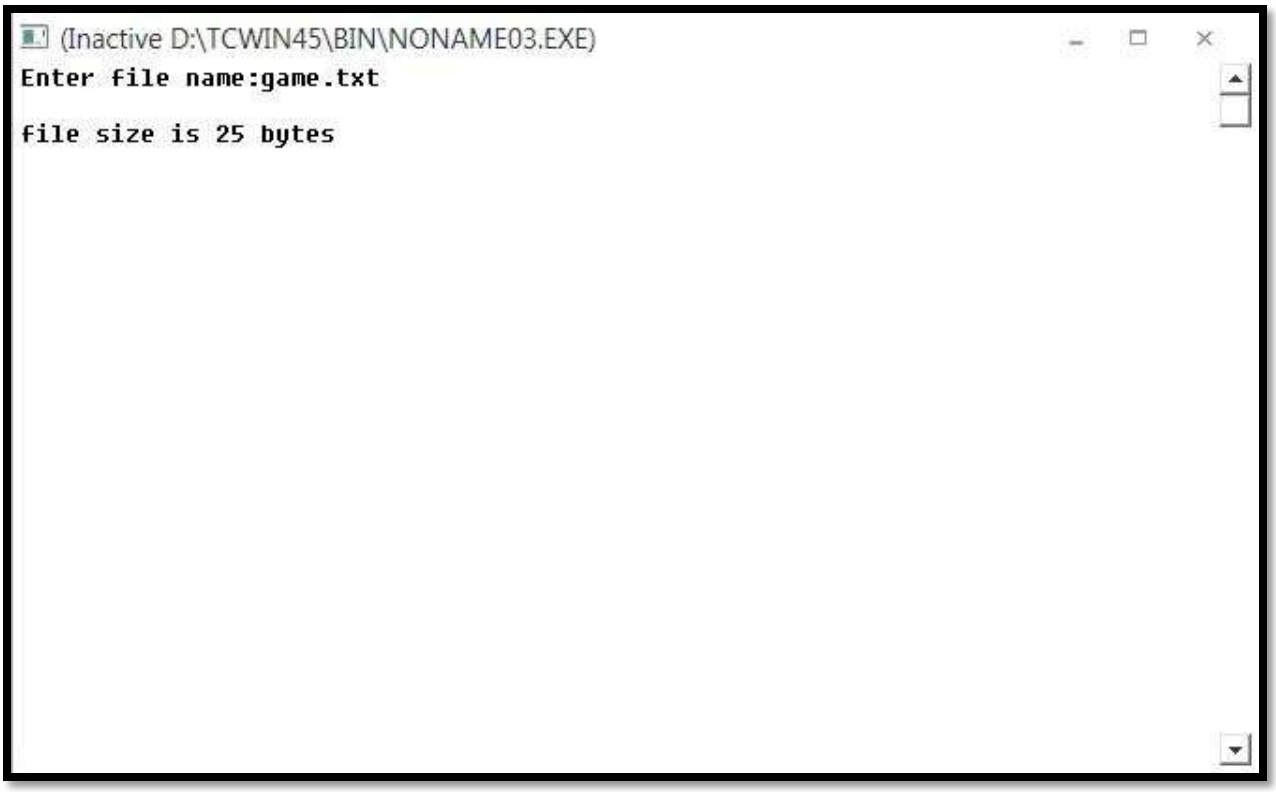

D:\TCWIN45\BIN\NONAME01.EXE
FILE NOT FOUND


D:\TCWIN45\BIN\NONAME01.EXE
No. of spaces: 6

21.Write a program that displays the size of a file in bytes.

```
#include<iostream.h>
#include<conio.h>
#include<fstream.h>
#include<process.h>
#include<stdio.h>
int main()
{
clrscr();
char filename[20];
cout<<"Enter file name:";
gets(filename);
ifstream fin(filename,ios::in|ios::ate);
if(!fin)
{
cout<<"\nSorrycan not open "<<filename<<" file";
return1;
}
long bytes=fin.tellg();
cout<<"\nfile size is "<<bytes<<" bytes\n";
getch();
return 0;
}
```

OUTPUT:


(Inactive D:\TCWIN45\BIN\NONAME03.EXE)
Enter file name:game.txt
file size is 25 bytes


(Inactive D:\TCWIN45\BIN\NONAME03.EXE)
Enter file name:nofile.txt
Sorry can not open nofile.txt file

23.Declare a class student fields sname,section and marks and member functions to

1) Append the records into a datafile

2) Display the records of the having scored more than 40%. Implement the class using a menu driven program

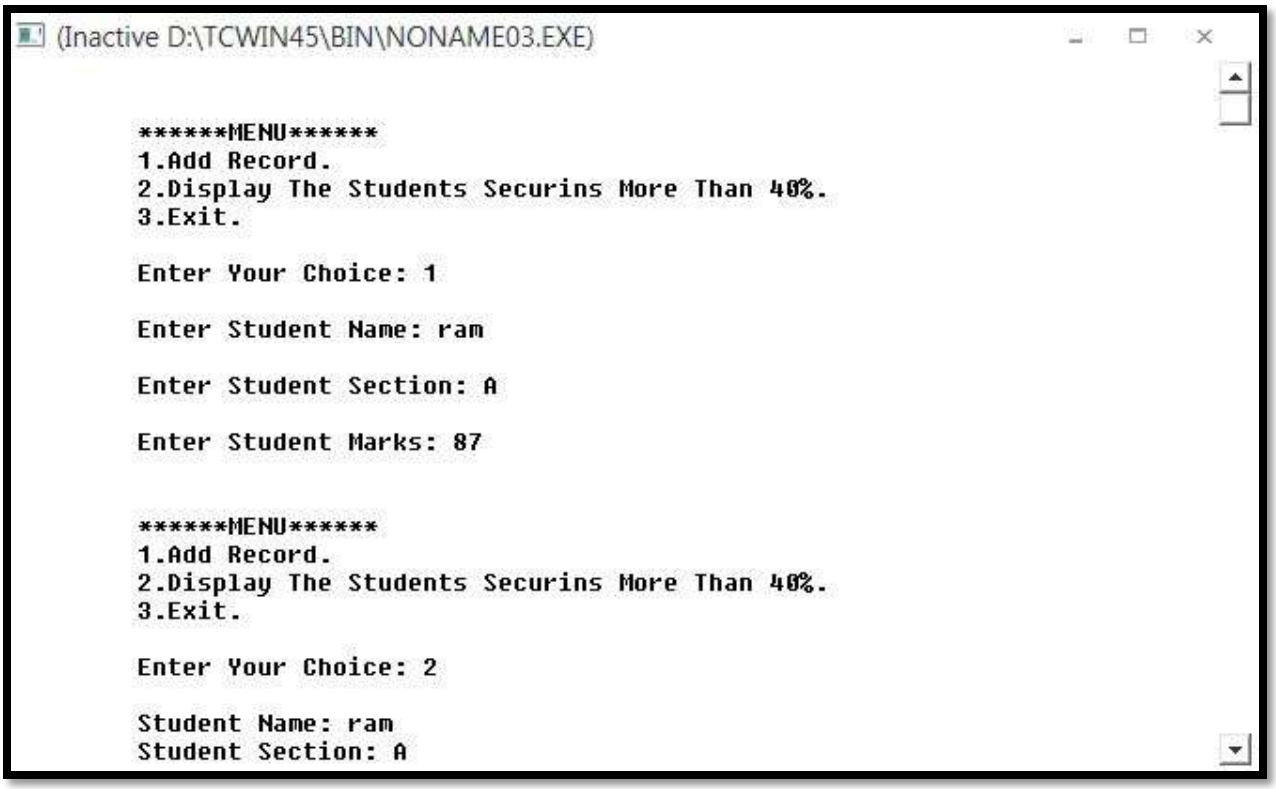
```
#include<fstream.h>
#include<conio.h>
#include<stdio.h>
#include<ctype.h>
#include<process.h>
class student
{
charsname[20];
char section[10];
float marks;
public:
voidgetit()
    {
        cout<<"\n\tEnter Student Name: ";
        gets(sname);
        cout<<"\n\tEnter Student Section: ";
        gets(section);
        cout<<"\n\tEnter Student Marks: ";
        cin>>marks;
    }
voidshowit()
```

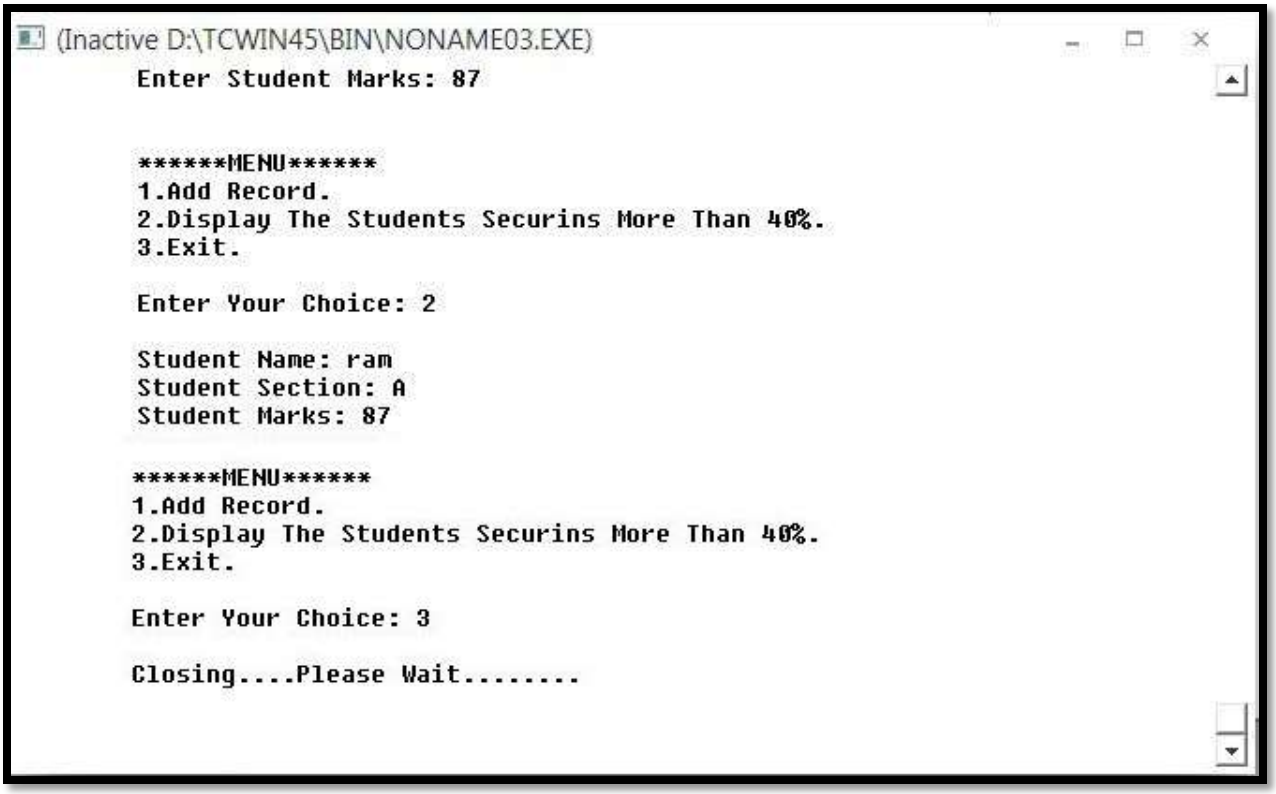
```
    {
        cout<<"\n\tStudent Name: "<<sname;
        cout<<"\n\tStudent Section: "<<section;
        cout<<"\n\tStudent Marks: "<<marks;
    }
void write()
    {   student e;
        ofstreamfout("STUDENT.txt",ios::binary||ios::app);
        getit();
        fout.write((char*)&e,sizeof(e));
        fout.close();
    }
void read()
    {   student e;
        ifstream fin("STUDENT.txt",ios::binary);
        while(!fin.eof())
          {
        fin.read((char*)&e,sizeof(e));
        if(marks>40)
                showit();
          }
    }
};

void main()
```

```
{
clrscr();
student s1;
intch;
do
    {      cout<<"\n\n\t******MENU******";
            cout<<"\n\t1.Add Record.";
            cout<<"\n\t2.Display The Students Securins More Than 40%. ";
            cout<<"\n\t3.Exit.";
            cout<<"\n\n\tEnter Your Choice: ";
            cin>>ch;
            switch(ch)
            {
            case 1:{
                        s1.write();
                        getch();
                        break;
                          }
            case 2:{
                        s1.read();
                        getch();
                        break;
                          }
            case 3:{
                        cout<<"\n\tClosing....Please Wait.....";
```

```
            break;
              }
default :{ cout<<"\n\tWrong Choice Inserted!!!!!!!!";break; }
}}while(1);      }
```

OUTPUT:


(Inactive D:\TCWIN45\BIN\NONAME03.EXE)
******MENU******
1.Add Record.
2.Display The Students Securins More Than 40%.
3.Exit.
Enter Your Choice: 1
Enter Student Name: ram
Enter Student Section: A
Enter Student Marks: 87
******MENU******
1.Add Record.
2.Display The Students Securins More Than 40%.
3.Exit.
Enter Your Choice: 2
Student Name: ram
Student Section: A


(Inactive D:\TCWIN45\BIN\NONAME03.EXE)
Enter Student Marks: 87
******MENU******
1.Add Record.
2.Display The Students Securins More Than 40%.
3.Exit.
Enter Your Choice: 2
Student Name: ram
Student Section: A
Student Marks: 87
******MENU******
1.Add Record.
2.Display The Students Securins More Than 40%.
3.Exit.
Enter Your Choice: 3
Closing....Please Wait.....

24. Write a menu driven program with function to-
1) Create an array of 10 integers
2) Sort the array using bubble sort
3) Search for a given integer from the array using binary search.

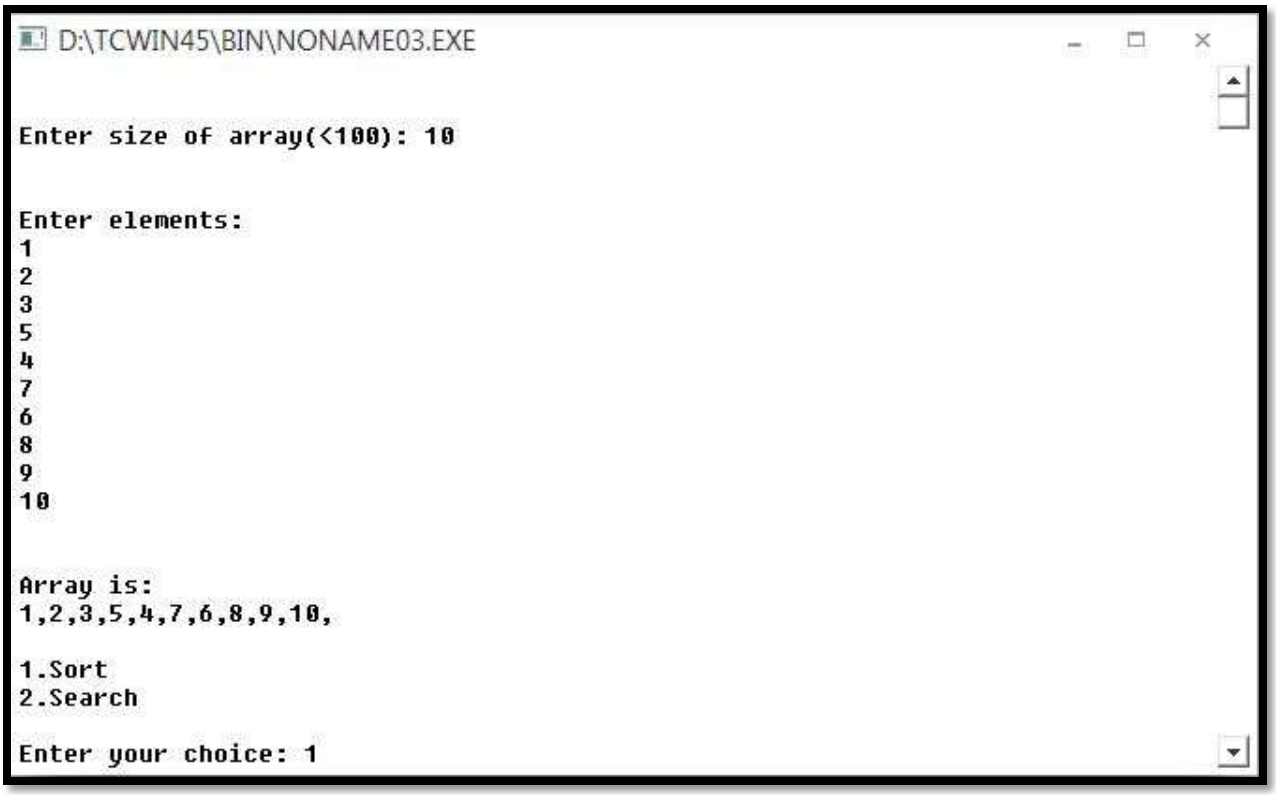
```
#include<iostream.h>

#include<conio.h>




voidbubble_sort (int A[], int n)

{ int temp; int count=0;

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

{

        for(int j=0; j<n-1; j++)

                { if(A[j+1]<A[j])

                        { count++;

                        temp=A[j+1];

                        A[j+1]=A[j];

                         A[j]=temp;

                        cout<<"\n\nArray for iteration "<<count<<" is : \n\n";

                        for(int k=0; k<n; k++)

                        cout<<A[k]<<" ";

                        }

                }

}

}
```

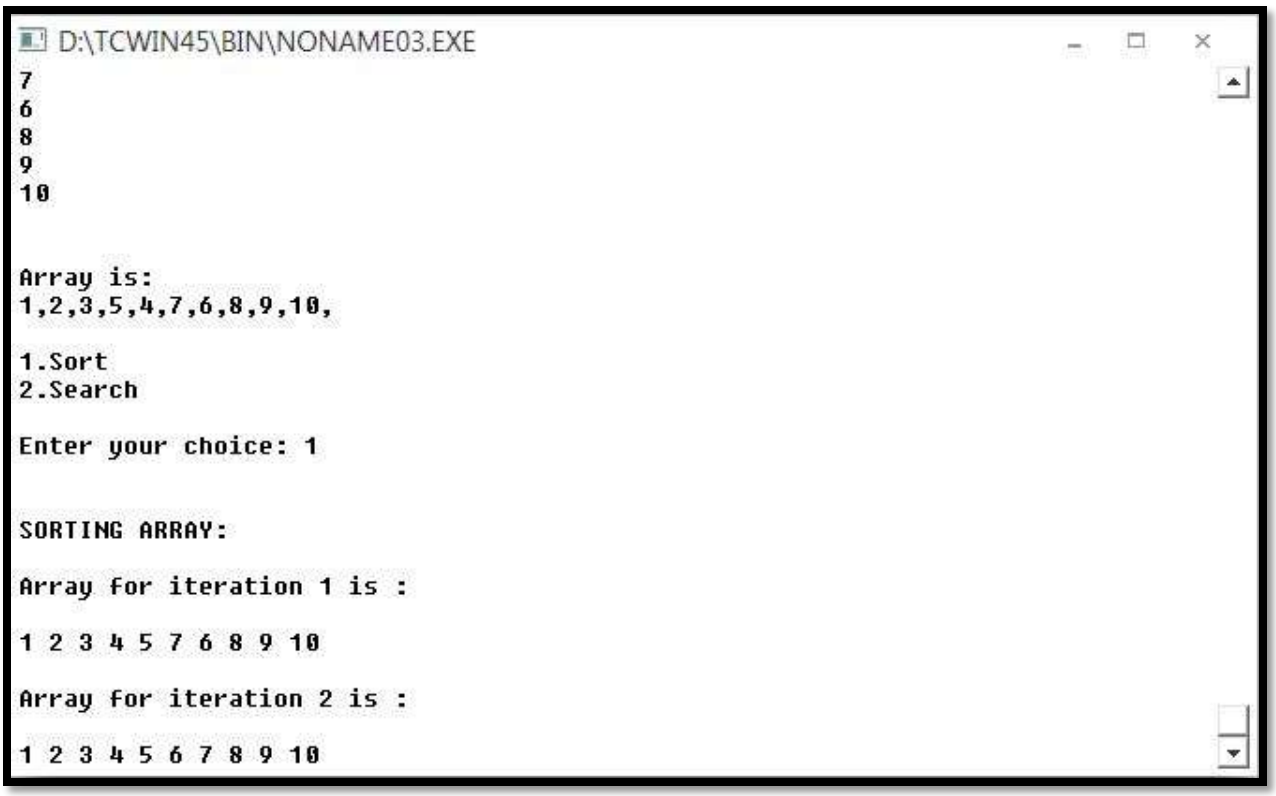
```
voidbinary_search(int A[], int n, int p)
{
intL,U,mid;
charch;
  L=0; U=n-1;

while(L<=U) //i.e loop will continue if L<=u. if L>U loop will end
{ mid=(L+U)/2;
          if(A[mid]==p)
           {
                    cout<<"\n\nElement  "<<p<<" found. Search Successful.";
                    cout<<"\n\nSubscript  = "<<mid<<" \n\nPosition = "<<mid+1;
                    break;
           }
          else if(p<=A[mid])
           U=mid-1;

          else
           L=mid+1;
  }//end of while loop
if(L>U)
```

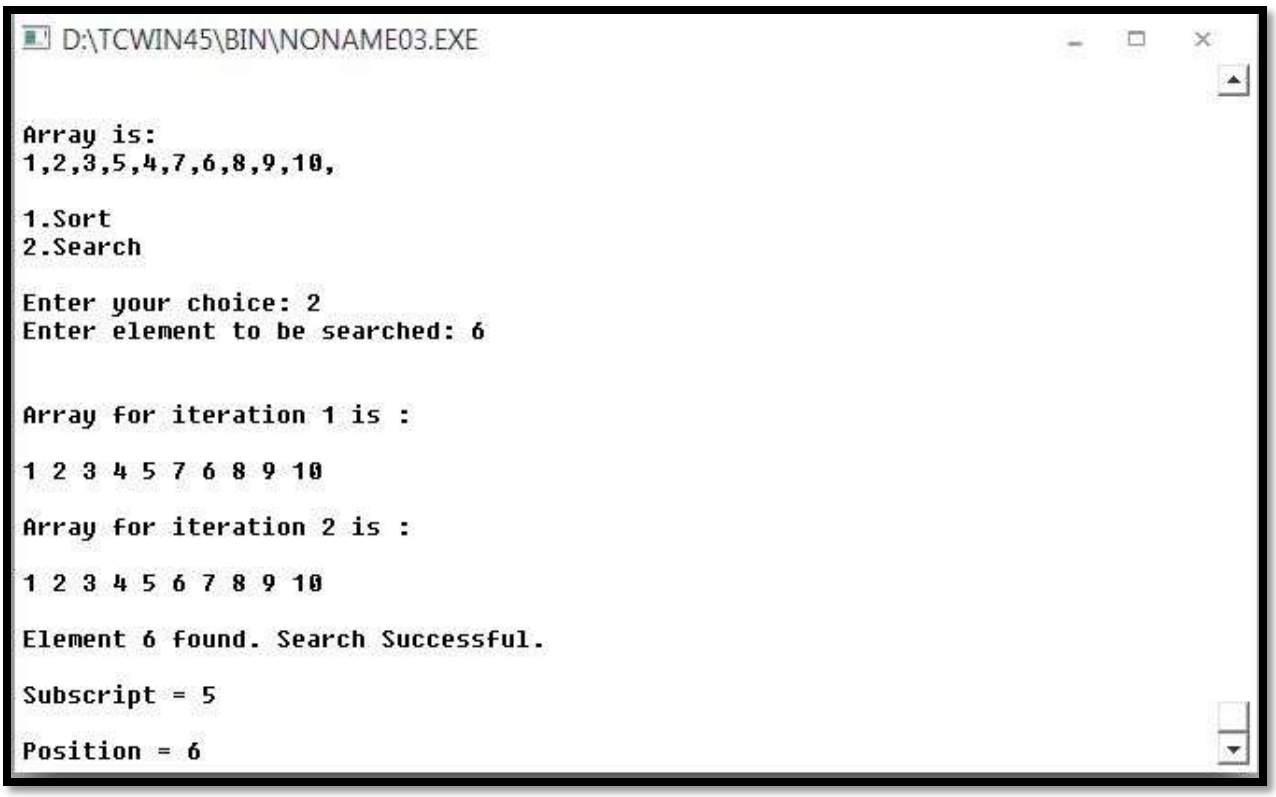
```
 {
cout<<"\n\nUnsuccessful search.";
            }


 }



void main()
{
int a[100],n,s,c;
cout<<"\n\nEnter  size of array(<100): ";
cin>>n;

cout<<"\n\nEnter  elements:\n";
for(int i=0;i<n;i++)
{
cin>>a[i];
}

cout<<"\n\nArray  is:\n";
for(i=0;i<n;i++)
{
```

```
cout<<a[i]<<",";
}

cout<<"\n\n1.Sort\n2.Search\n\nEnter  your choice: ";
cin>>c;

if(c==1)
{
cout<<"\n\nSORTING ARRAY:";

bubble_sort (a,n);
}

else if(c==2)
{
cout<<"Enter element to be searched: ";
cin>>s;
bubble_sort (a,n);
binary_search(a,n,s);

}

getch();
}
```

OUTPUT:


D:\TCWIN45\BIN\NONAME03.EXE
Enter size of array(<100): 10
Enter elements:
1
2
3
5
4
7
6
8
9
10
Array is:
1,2,3,5,4,7,6,8,9,10,
1.Sort
2.Search
Enter your choice: 1


D:\TCWIN45\BIN\NONAME03.EXE
7
6
8
9
10
Array is:
1,2,3,5,4,7,6,8,9,10,
1.Sort
2.Search
Enter your choice: 1
SORTING ARRAY:
Array for iteration 1 is :
1 2 3 4 5 7 6 8 9 10
Array for iteration 2 is :
1 2 3 4 5 6 7 8 9 10


D:\TCWIN45\BIN\NONAME03.EXE
Array is:
1,2,3,5,4,7,6,8,9,10,
1.Sort
2.Search
Enter your choice: 2
Enter element to be searched: 6
Array for iteration 1 is :
1 2 3 4 5 7 6 8 9 10
Array for iteration 2 is :
1 2 3 4 5 6 7 8 9 10
Element 6 found. Search Successful.
Subscript = 5
Position = 6

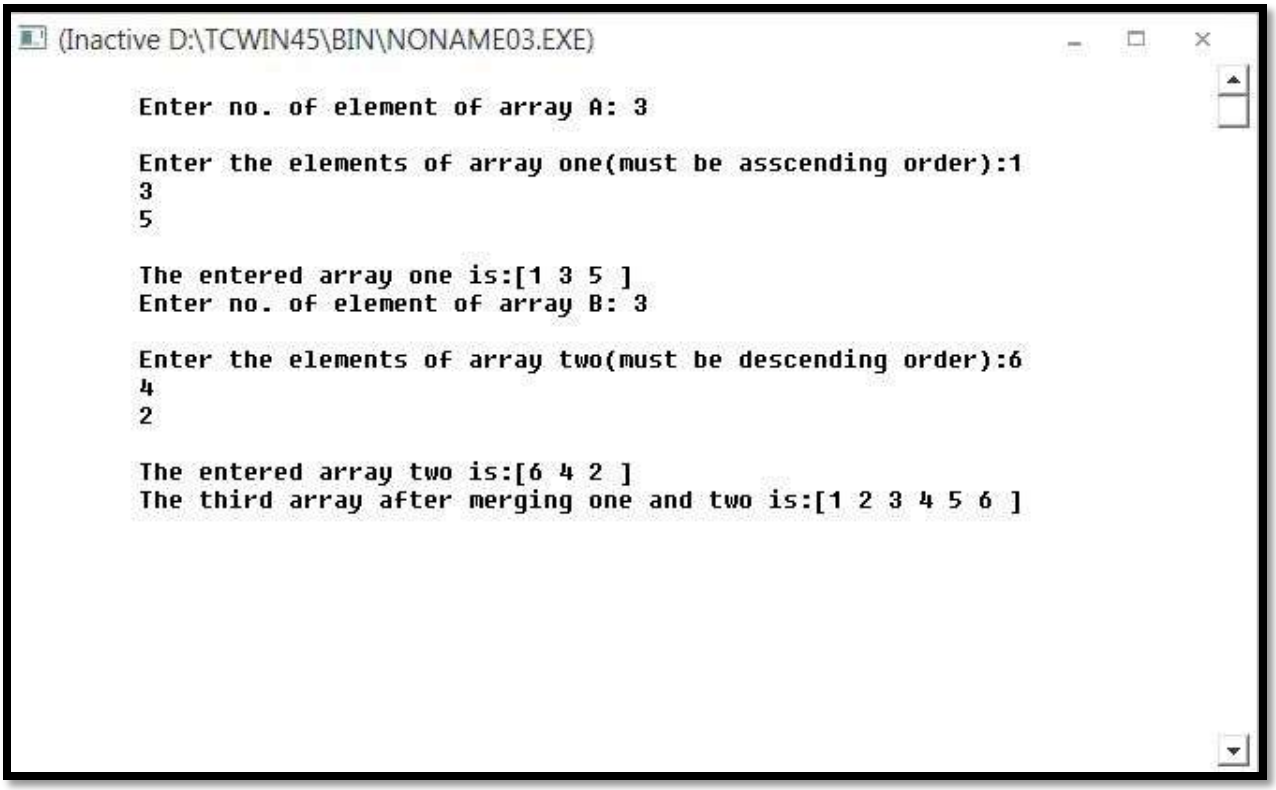
25. Suppose A,B, C are arrays of integers of sizes m,n, m+n respectively. The numbers in A appear in ascending order while the numbers in B appear in descending order. Write user defined function to produce a third array C by merging arrays A and B in ascending order. The function has A,B, C and m,n as arguments. Implement it in C++.

```
#include<iostream.h>
#include<conio.h>
void merging(int [],int [],int,int,int []);
void main()
{
int A[50],B[50],C[100],m,n,i;
clrscr();
cout<<"\n\tEnter no. of element of array A: ";
cin>>m;
cout<<"\n\tEnter the elements of array one(must be asscending order):";
for(i=0;i<m;i++)
 {
cin>>A[i];
cout<<"\t";
 }
cout<<"\n\tThe entered array one is:[";
for(i=0;i<m;i++)
 {
cout<<A[i]<<" ";
 }
cout<<"]";
cout<<"\n\tEnter no. of element of array B: ";
```

```
cin>>n;
cout<<"\n\tEnter the elements of array two(must be descending order):";
for(i=0;i<n;i++)
 {
cin>>B[i];
cout<<"\t";
 }
cout<<"\n\tThe entered array two is:[";
for(i=0;i<n;i++)
 {
cout<<B[i]<<" ";
 }
cout<<"]";
merging(A,B,m,n,C);
cout<<"\n\tThe third array after merging one and two is:[";
for(i=0;i<(m+n);i++)
 {
cout<<C[i]<<" ";
 }
cout<<"]";
getch();
}
void merging(int A[],int B[],intk,intl,int C[])
{
for(int i=0,j=l-1,s=0;i<k&&l>=0;)
```

```
{
if(A[i]<=B[j])
 {
 C[s++]=A[i++];
 }
else
 {
 C[s++]=B[j--];
 }
}
if(i<k)
 {
while(i<k)
 {
 C[s++]=A[i++];
 }
 }
else
 {
while(j>=0)
 {
 C[s++]=B[j--];
 }
 }
}
```

OUTPUT:


(Inactive D:\TCWIN45\BIN\NONAME03.EXE)
Enter no. of element of array A: 3
Enter the elements of array one(must be asscending order):1
3
5
The entered array one is:[1 3 5]
Enter no. of element of array B: 3
Enter the elements of array two(must be descending order):6
4
2
The entered array two is:[6 4 2]
The third array after merging one and two is:[1 2 3 4 5 6]

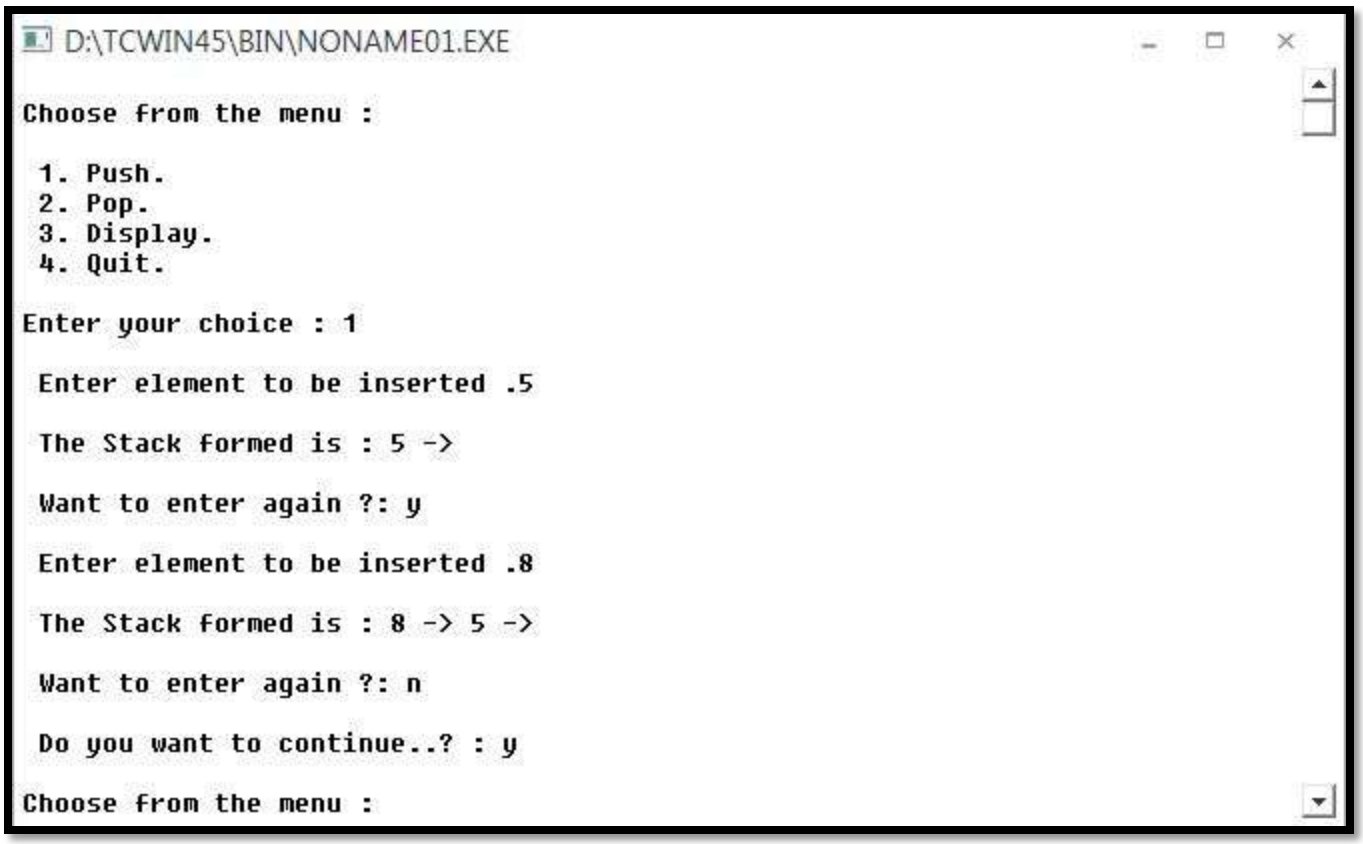
26. Write a C++ program to implements a stack using Linked List. The stack stores integer data. The program should allow the user to PUSH elements into the STACK, POP elements from the STACK & display the elements of the STACK.

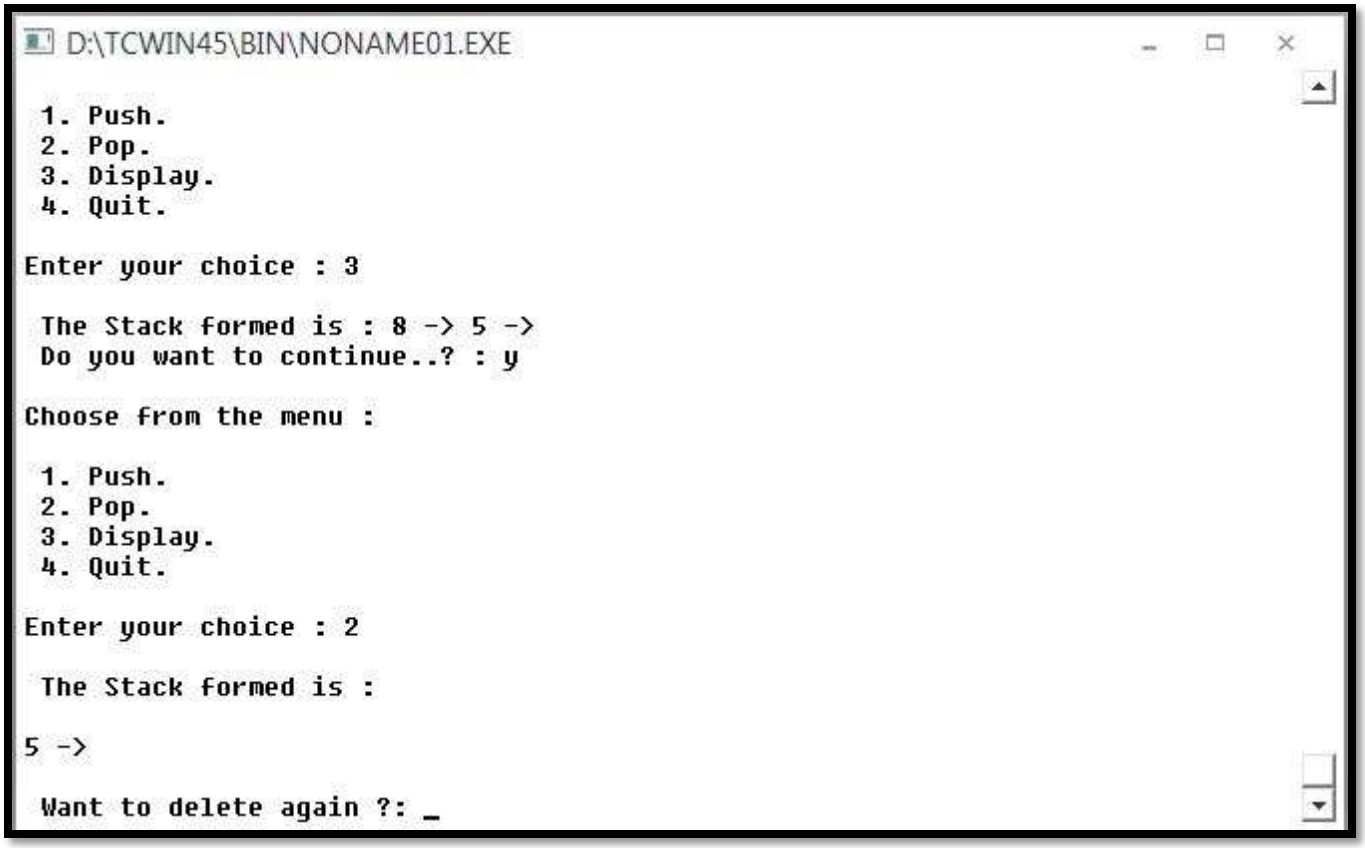
```
#include<iostream.h>
#include<conio.h>
#include<process.h>

struct node {
                int roll;
                node* next;
            }*top,*save,*ptr,*newptr,*np;

node *create(int a)
        {
        ptr=new node;
        ptr->roll=a;
        ptr->next=NULL;
        returnptr;
        }

void push(node *np)
        {
        if(top==NULL)
                top=np;
        else
                {
                save=top;
                top=np;
                np->next=save;
                }
        }

void pop()
        {
        if(top==NULL)
        cout<<"\n Underflow!!!!";
        else
          {
        ptr=top;
        top=top->next;
        deleteptr;
          }
        }
```

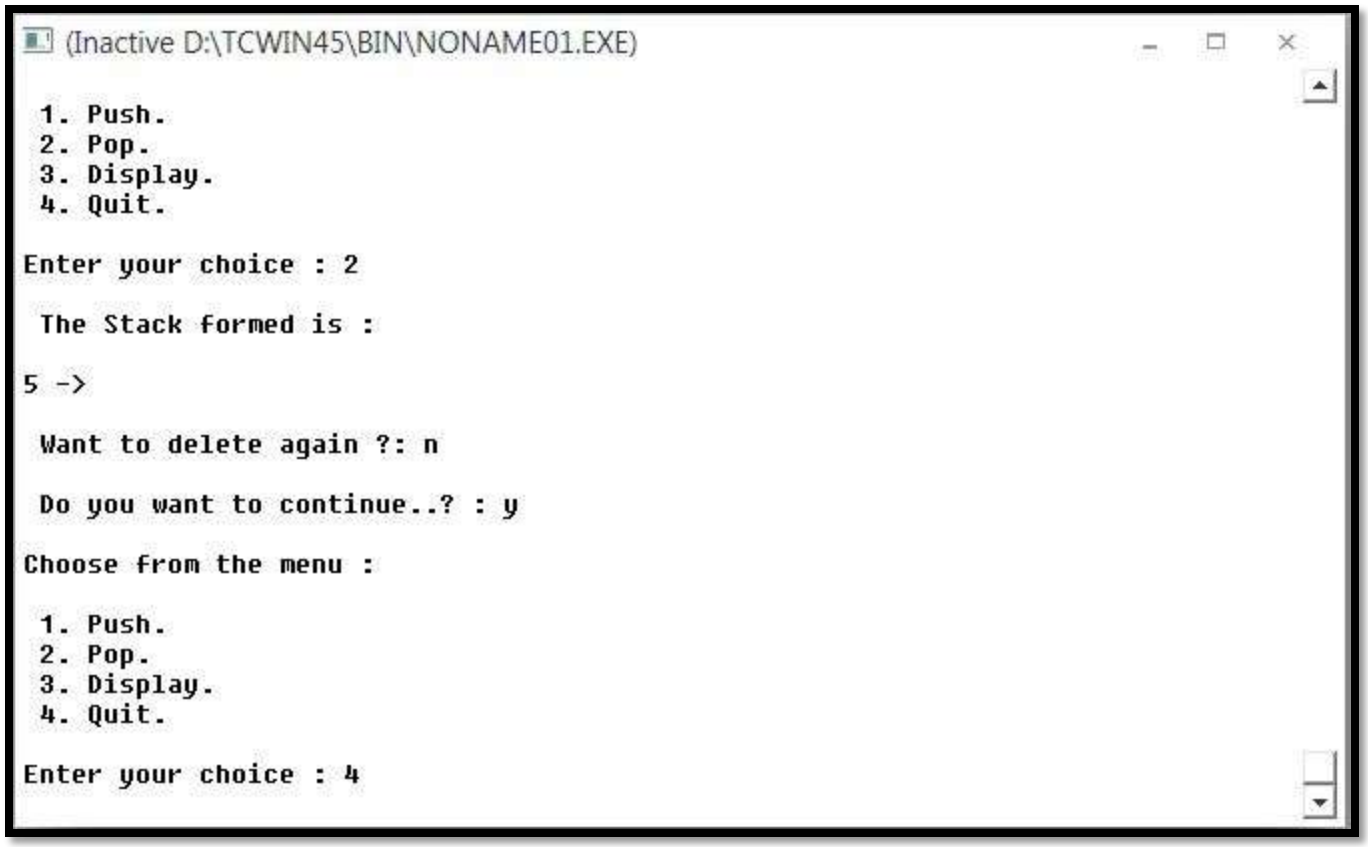
```
void display(node *np)
        {
        while(np!=NULL)
                {
                        cout<<np->roll<<" -> ";
                        np=np->next;
                }
        }

void main()
        {
        clrscr();
        top=NULL;
        intn,m;
        chark,ch;

        do {
        cout<<"\nChoose from the menu :\n"

                        <<"\n 1.Push."
                        <<"\n 2. Pop."
                        <<"\n 3.Display."
                        <<"\n 4. Quit."
                        <<"\n\nEnter your choice : ";
                        cin>>n;
        switch(n)
          {
        case 1:  k='y';
                while(k=='y'||k=='Y')
                    {
                        cout<<"\n Enter element to be inserted .";
                        cin>>m;

                        newptr=create(m);

                        if(newptr==NULL)
                                cout<<"\n Cannot create !!!!";

                        push(newptr);

                        cout<<"\n The Stack formed is : ";

                        display(top);
```

```
                cout<<"\n\n Want to enter again ?: ";
                cin>>k;
            }
        break;

    case 2: k='y';
        while(k=='y'||k=='Y')
            {
                pop();
                cout<<"\n The Stack formed is : \n\n";
                display(top);
                cout<<"\n\n Want to delete again ?: ";
                cin>>k;
            }
        break;

    case 3: cout<<"\n The Stack formed is : ";

        display(top);
        break;

    case 4: exit(0);
        break;

    default: cout<<"\n Please enter desired keyword : ";
       }

    cout<<"\n Do you want to continue..? : ";
    cin>>ch;

    }while(ch=='y'||ch=='Y');

getch();
}
```

Output:


D:\TCWIN45\BIN\NONAME01.EXE
Choose from the menu :
1. Push.
2. Pop.
3. Display.
4. Quit.
Enter your choice : 1
Enter element to be inserted .5
The Stack formed is : 5 ->
Want to enter again ?: y
Enter element to be inserted .8
The Stack formed is : 8 -> 5 ->
Want to enter again ?: n
Do you want to continue..? : y
Choose from the menu :


D:\TCWIN45\BIN\NONAME01.EXE
1. Push.
2. Pop.
3. Display.
4. Quit.
Enter your choice : 3
The Stack formed is : 8 -> 5 ->
Do you want to continue..? : y
Choose from the menu :
1. Push.
2. Pop.
3. Display.
4. Quit.
Enter your choice : 2
The Stack formed is :
5 ->
Want to delete again ?: _


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
1. Push.
2. Pop.
3. Display.
4. Quit.
Enter your choice : 2
The Stack formed is :
5 ->
Want to delete again ?: n
Do you want to continue..? : y
Choose from the menu :
1. Push.
2. Pop.
3. Display.
4. Quit.
Enter your choice : 4

27. Write a menu driven program with function to-

1) Insert a node in queue

2) Delete a node from queue

```
#include<iostream.h>

#include<conio.h>


struct node {

int roll;

                node* next;

        }*front,*rear,*ptr,*newptr,*np;


node *create(int a)

        {

ptr=new node;

                ptr->roll=a;

        ptr->next=NULL;

        returnptr;

}


void insert(node *np)

        {

if(front==NULL)

                        front=rear=np;

        else
```

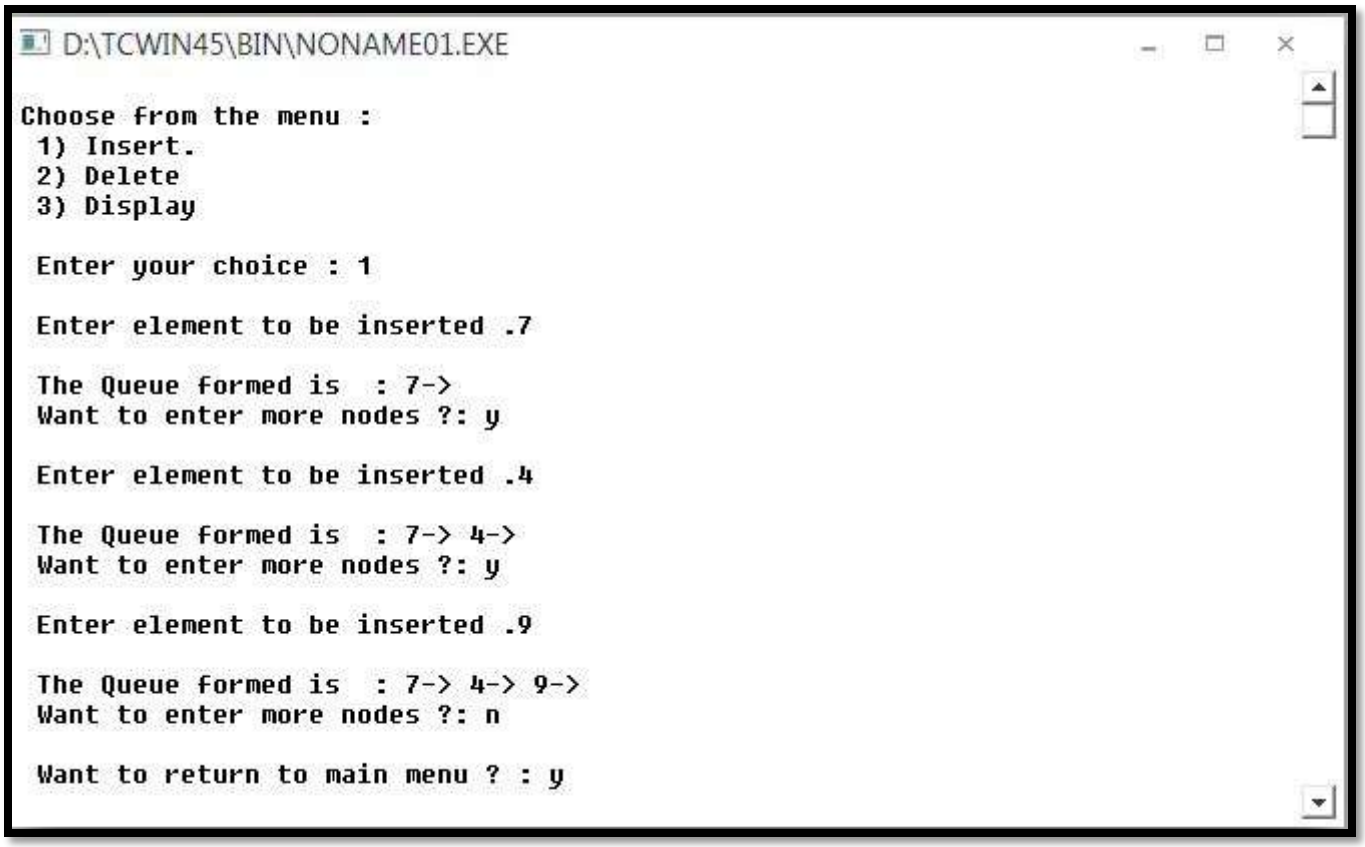
```
                {
rear->next=np;
                                rear=np;
}
        }

voiddelet()
        {
if(front==NULL)
                cout<<"\n Underflow!!!!";
        else
                {
ptr=front;
                        front=front->next;
                                deleteptr;
}
        }

void display(node *np)
        {
while(np!=NULL)
                {
cout<<np->roll<<"->";
                        np=np->next;
}
```

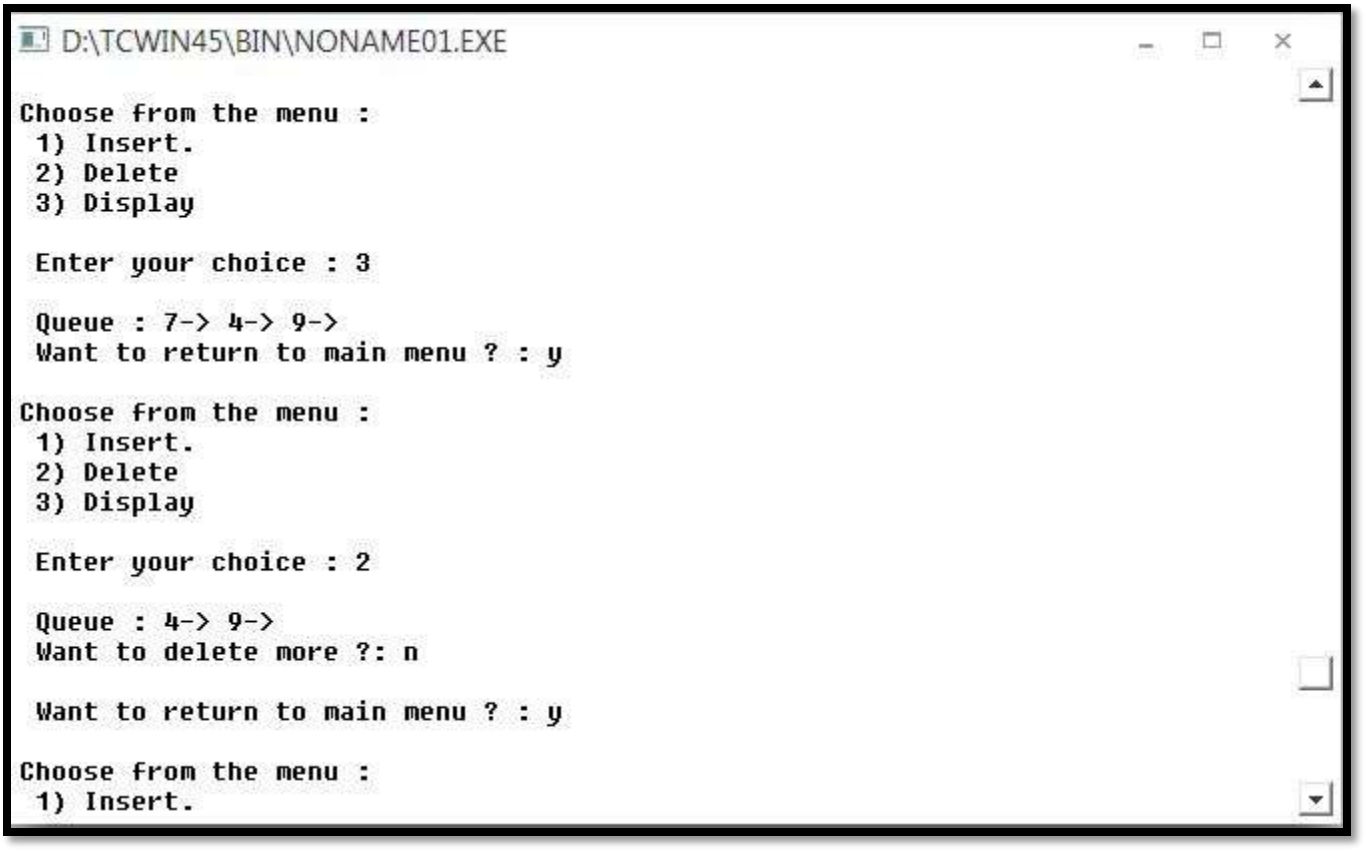
```
        }


void main()
        {
clrscr();
        front=rear=NULL;
        intn,m;
        charans,ch;
        do
        { cout<<"\nChoose from the menu : "
                <<"\n 1) Insert."
                <<"\n 2) Delete"
                <<"\n 3) Display"
                <<"\n\n Enter your choice : ";
                        cin>>n;
        switch(n)
          {
        case 1: ans='y';
                while(ans=='y'||ans=='Y')
                      {
cout<<"\n Enter element to be inserted .";
                        cin>>m;


                        newptr=create(m);
```

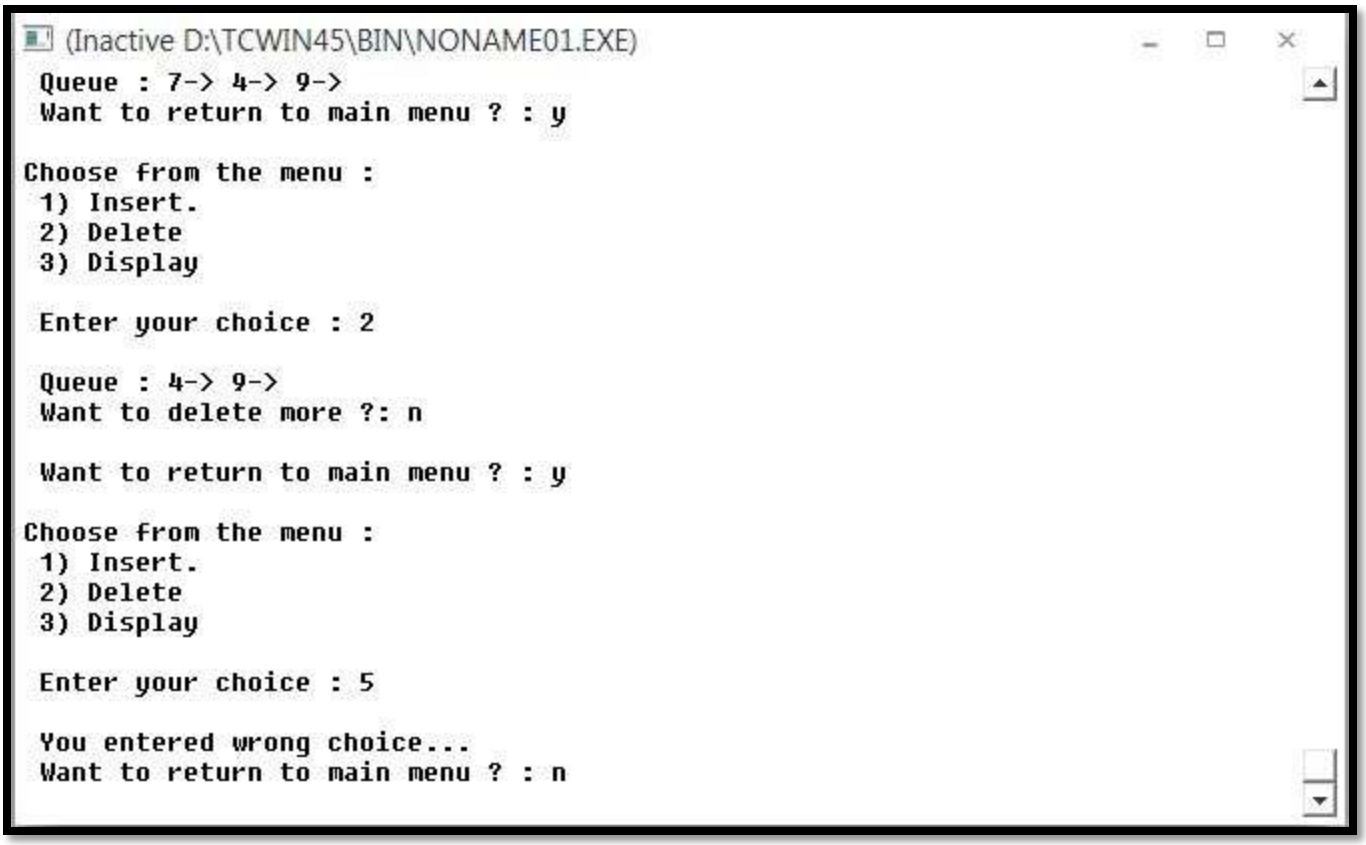
```
                        if(newptr==NULL)
                                cout<<"\n Cannot create !!!!";

                        insert(newptr);

                        cout<<"\n The Queue formed is : ";

                        display(front);

                        cout<<"\n Want to enter more nodes ?: ";
                        cin>>ans;
        }
                                break;

            case 2: ans='y';
                    while(ans=='y'||ans=='Y')
                                {
delet();
                        cout<<"\n Queue : ";
                        display(front);
                        cout<<"\n Want to delete more ?: ";
                        cin>>ans;
                    }
                    break;
```

```
                case 3: cout<<"\n Queue : ";
            display(front);
                        break;

            default: cout<<"\n You entered wrong choice...";
             }

        cout<<"\n Want to return to main menu ? : ";
        cin>>ch;
}while(ch=='y'||ch=='Y');
getch();
}
```

OUTPUT


D:\TCWIN45\BIN\NONAME01.EXE
Choose from the menu :
1) Insert.
2) Delete
3) Display
Enter your choice : 1
Enter element to be inserted .7
The Queue formed is : 7->
Want to enter more nodes ?: y
Enter element to be inserted .4
The Queue formed is : 7-> 4->
Want to enter more nodes ?: y
Enter element to be inserted .9
The Queue formed is : 7-> 4-> 9->
Want to enter more nodes ?: n
Want to return to main menu ? : y


D:\TCWIN45\BIN\NONAME01.EXE
Choose from the menu :
1) Insert.
2) Delete
3) Display
Enter your choice : 3
Queue : 7-> 4-> 9->
Want to return to main menu ? : y
Choose from the menu :
1) Insert.
2) Delete
3) Display
Enter your choice : 2
Queue : 4-> 9->
Want to delete more ?: n
Want to return to main menu ? : y
Choose from the menu :
1) Insert.


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Queue : 7-> 4-> 9->
Want to return to main menu ? : y
Choose from the menu :
1) Insert.
2) Delete
3) Display
Enter your choice : 2
Queue : 4-> 9->
Want to delete more ?: n
Want to return to main menu ? : y
Choose from the menu :
1) Insert.
2) Delete
3) Display
Enter your choice : 5
You entered wrong choice...
Want to return to main menu ? : n

28. Write a menu driven program with function to-

1) Insert an element in circular queue

2) Delete an element from the circular queue

```
#include<iostream.h>
#include<conio.h>
#define max 3
int q[10],front=0,rear=-1;
int main()
{
        intch;
        void insert();
        intdelet();
        int display();
        clrscr();
        cout<<"\nCircular Queue operations\n";
        cout<<"1.insert\n2.delete\n3.display\n4.exit\n";
        while(1)
         {
                cout<<"\nEnter your choice:\t";
                cin>>ch;
                switch(ch)
                 {
```

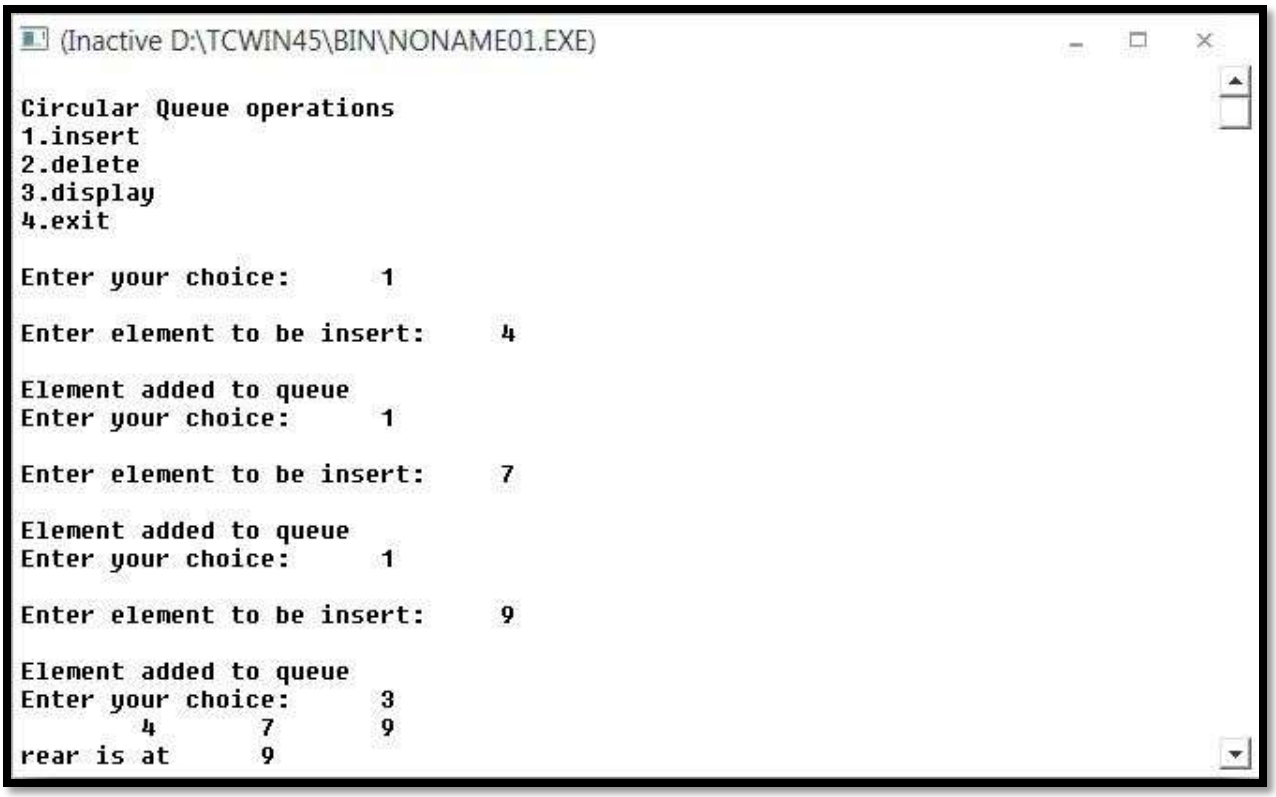
```
                case 1: insert();
                                break;
                case 2: delet();
                                break;
                case 3:display();
                                break;
                case 4:return 1;
                default:cout<<"\nInvalid option\n";
                 }
         }
}

void insert()
{
        int x;
        if((front==0&&rear==max-1)||(front>0&&rear==front-1))
                cout<<"\nQueue is overflow\n";
        else
        {
                cout<<"\nEnter element to be insert:\t";
                cin>>x;
                if(rear==max-1&&front>0)
                 {
                                rear=0;
```

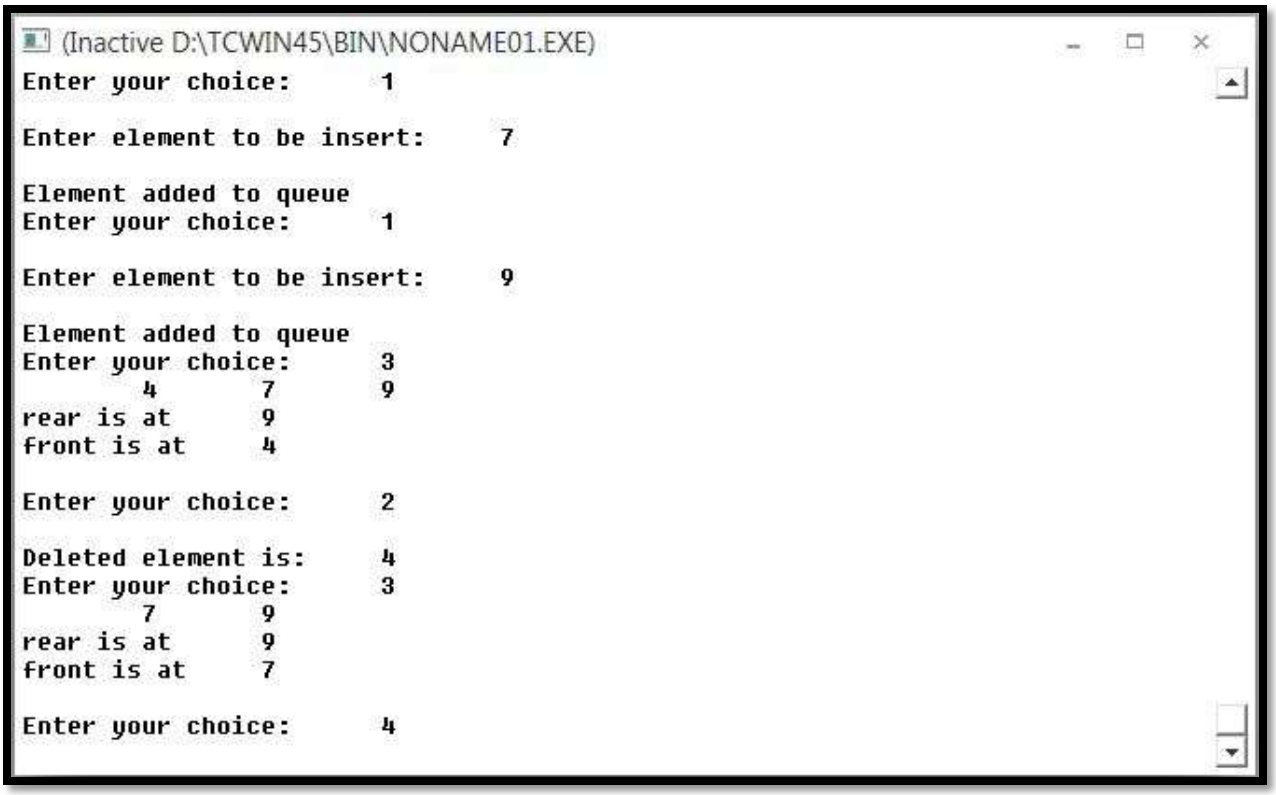
```
                        q[rear]=x;
                }
                else
                {
                        if((front==0&&rear==-1)||(rear!=front-1))
                                q[++rear]=x;
                }
                cout<<"\nElement  added to queue";
        }
}
intdelet()
{
        int a;
        if((front==0)&&(rear==-1))
        {
                cout<<"\nQueue  is underflow";
                getch();

        }
        if(front==rear)
        {
                 a=q[front];
                rear=-1;
                front=0;
```

```
        }
        else
                if(front==max-1)
                 {
                                a=q[front];
                                front=0;
                 }
                else a=q[front++];
                cout<<"\nDeleted element is:\t"<<a;
}

int display()
{
        inti,j;
        if(front==0&&rear==-1)
         {
                cout<<"\nQueue is underflow\n";
                getch();

         }
        if(front>rear)
         {
                for(i=0;i<=rear;i++)
                                cout<<"\t"<<q[i];
```

```
                for(j=front;j<=max-1;j++)
                                cout<<"\t"<<q[j];
                cout<<"\nrear is at\t"<<q[rear];
                cout<<"\nfront is at\t"<<q[front];
        }
        else
        {
                for(i=front;i<=rear;i++)
                 {
                                cout<<"\t"<<q[i];
                 }
                cout<<"\nrear is at\t"<<q[rear];
                cout<<"\nfront is at\t"<<q[front];
        }
        cout<<"\n";
}
getch();
```

OUTPUT:


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Circular Queue operations
1.insert
2.delete
3.display
4.exit
Enter your choice: 1
Enter element to be insert: 4
Element added to queue
Enter your choice: 1
Enter element to be insert: 7
Element added to queue
Enter your choice: 1
Enter element to be insert: 9
Element added to queue
Enter your choice: 3
4 7 9
rear is at 9


(Inactive D:\TCWIN45\BIN\NONAME01.EXE)
Enter your choice: 1
Enter element to be insert: 7
Element added to queue
Enter your choice: 1
Enter element to be insert: 9
Element added to queue
Enter your choice: 3
4 7 9
rear is at 9
front is at 4
Enter your choice: 2
Deleted element is: 4
Enter your choice: 3
7 9
rear is at 9
front is at 7
Enter your choice: 4

1. **Table : School Bus**

Rtno	Area_covered	Capacity	Noofstudents	Distance	Transporter	Charges
1	Vasantkunj	100	120	10	Shivamtravels	100000
2	HauzKhas	80	80	10	Anand travels	85000
3	Pitampura	60	55	30	Anand travels	60000
4	Rohini	100	90	35	Anand travels	100000
5	Yamuna Vihar	50	60	20	Bhalla Co.	55000
6	Krishna Nagar	70	80	30	Yadav Co.	80000
7	Vasundhara	100	110	20	Yadav Co.	100000
8	PaschimVihar	40	40	20	Speed travels	55000
9	Saket	120	120	10	Speed travels	100000
10	JankPuri	100	100	20	Kisan Tours	95000

(a) To show all information of students where capacity is more than the no of student in order of rtno.

(b) To show area_covered for buses covering more than 20 km., but charges less then 80000.

(c) To show transporter wise total no. of students traveling.

(d) To show rtno, area_covered and average cost per student for all routes where average cost per student is - charges/noofstudents.

(e) Add a new record with following data:

(11, " Moti bagh",35,32,10," kisan tours ", 35000);

(f) Give the output considering the original relation as given:

(i) select sum(distance) from schoolbus where transporter= " Yadav travels";

(ii) select min(noofstudents) from schoolbus;

(iii) selectavg(charges) from schoolbus where transporter= " Anand travels";

(iv) select distinct transporter from schoolbus;

1.

(a)SELECT *,FROM School Bus,WHERE Capacity>Noofstudents,ORDER BY Rtno;

(b)SELECT Area_covered,FROM School Bus,WHEREArea_covered>20 AND Charges<80000;

(c)SELECT Noofstudents,Transporter,FROM School Bus,GROUP BY Transporter;

(d)SELECT Rtno, Area_covered,Charges/Noofstudents,FROM School Bus;

(e) INSERT INTO School Bus,VALUES(11, " Moti bagh",35,32,10," kisan tours ", 35000);

(f)

(i)50

(ii)40

(iii)81666.66

(iv)Shivamtravels

Anand travels

Bhalla Co.

Yadav Co.

Speed travels

Kisan Tours

2. **TABLE : GRADUATE**

S.NO	NAME	STIPEND	SUBJECT	AVERAGE	DIV.
1	KARAN	400	PHYSICS	68	I
2	DIWAKAR	450	COMP. Sc.	68	I
3	DIVYA	300	CHEMISTRY	62	I
4	REKHA	350	PHYSICS	63	I
5	ARJUN	500	MATHS	70	I
6	SABINA	400	CEHMISTRY	55	II
7	JOHN	250	PHYSICS	64	I
8	ROBERT	450	MATHS	68	I
9	RUBINA	500	COMP. Sc.	62	I
10	VIKAS	400	MATHS	57	II

(a) List the names of those students who have obtained DIV 1 sorted by NAME.

(b) Display a report, listing NAME, STIPEND, SUBJECT and amount of stipend received in a year assuming that the STIPEND is paid every month.

(c) To count the number of students who are either PHYSICS or COMPUTER SC graduates.

(d) To insert a new row in the GRADUATE table:
(11,"KAJOL", 300, "computer sc", 75, 1)

(e) Give the output of following sql statement based on table GRADUATE:

(i) Select MIN(AVERAGE) from GRADUATE where SUBJECT="PHYSICS";

(ii) Select SUM(STIPEND) from GRADUATE WHERE div=2;

(iii) Select AVG(STIPEND) from GRADUATE where AVERAGE>=65;

(iv) Select COUNT(distinct SUBDJECT) from GRADUATE;

(f) Assume that there is one more table GUIDE in the database as shown below:

Table: GUIDE

MAINAREA	ADVISOR
PHYSICS	VINOD
COMPUTER SC	ALOK
CHEMISTRY	RAJAN
MATHEMATICS	MAHESH

What will be the output of the following query?
SELECT NAME, ADVISOR FROM GRADUATE, GUIDE WHERE SUBJECT= MAINAREA;

2.

(a) SELECT Name,FROMGraduate,WHERE DIV='I',ORDER BY Name;

(b)SELECT Name,STIPEND,Subject,STIPEND*12,FROM Graduate;

(c)COUNT(Name),FROM Graduate,WHERE Subject = Physics OR Subject=Computer Sc;

(d)INSERT INTO Graduate,VALUES(11,"KAJOL", 300, "computer sc", 75, 1);

(e)

(i)63

(ii)800

(iii)450

(iv)4

(f)

KARANVINOD

DIWAKARALOK

DIVYARAJAN

REKHAVINOD

ARJUNMAHESH

SABINARAJAN

JOHNVINOD

ROBERTMAHESH

RUBINAALOK

VIKASMAHESH