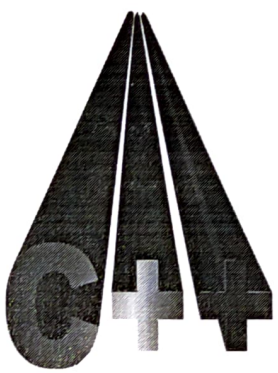
Department of Computer Application

MARWARI COLLEGE, BHAGALPUR

TILKAMANJHI BHAGALPUR UNIVERSITY, BHAGALPUR

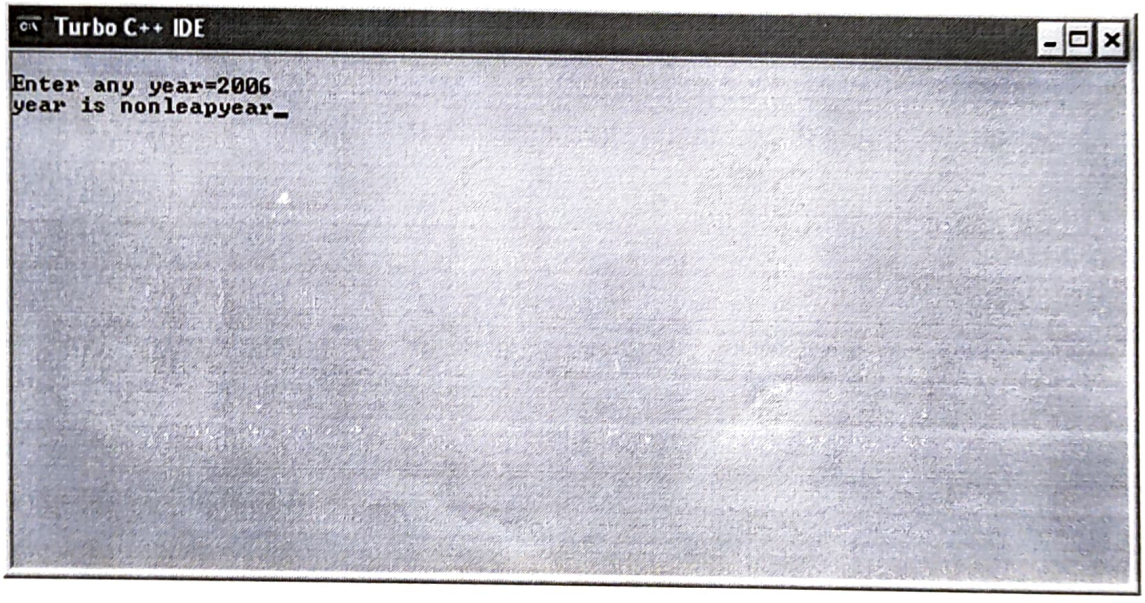


/*(Q.1) Write a program to check whether the entered year is a leap year or not leap year*/

```
#include<iostream.h>
#include<conio.h>
void main()
{
int year;
cout<<"\nEnter any year=";
cin>>year;
if((year%4==0 && year%100!=0) ||(year%400==0))
goto leapyear;
else
goto nonleapyear;
leapyear:
csout<<"year is leapyear";
return;
```

```
nonleapyear:

cout<<"year is nonleapyear";

getch();

}
```

Output

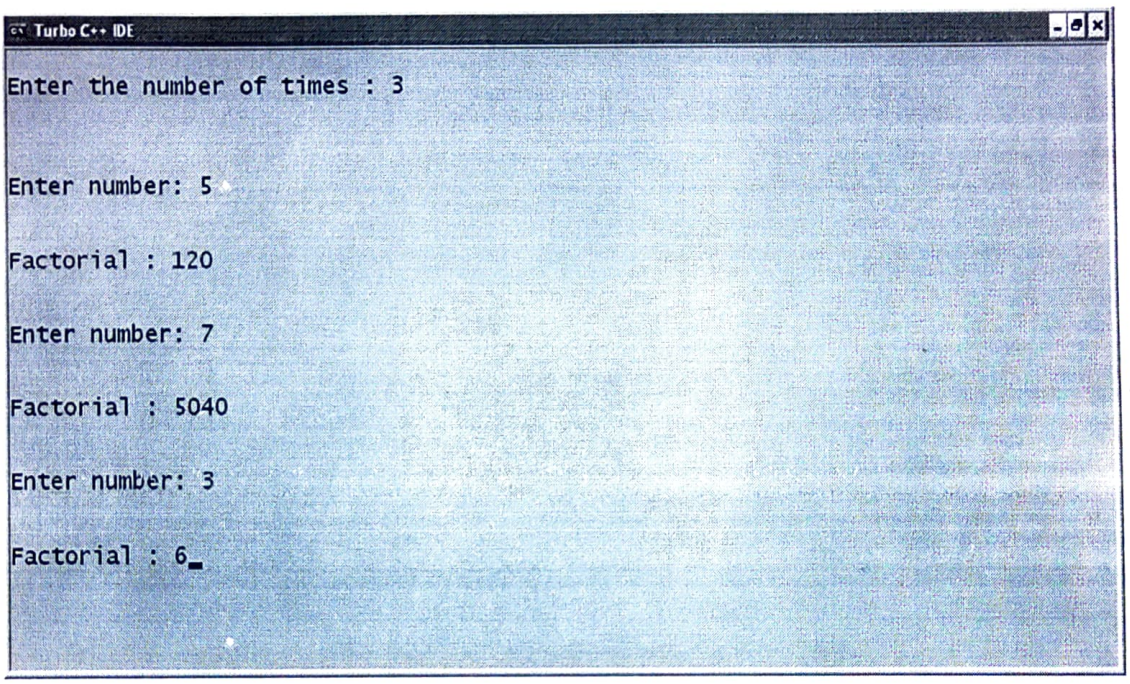


```
/*** (Q.2) To print the factorial of the number  ******/


#include<iostream.h>
#include<conio.h>
class factorial
{
private:
 int f,a;
public:
 void input();
 void display();
};
void factorial :: input()
{
 cout<<"\n\n\nEnter number: ";
 cin>>f;
```

```
}
void factorial :: display()
{
 if(f==1)
 {
  cout<<"\n\nThe factorial of entered no. is 1.";
 }
 else
 {
 a=1;
 for(int i=f;i>=1;i--)
  a=a*i;
 cout<<"\n\nFactorial : "<<a;
 }
 }
 void main()
 {
```

```
int j;
clrscr();
cout<<"\nEnter the number of times : ";
cin>>j;
factorial n;
for(int i=1;i<=j;i++)
{
n.input();
n.display();
}
getch();
}
```

Output

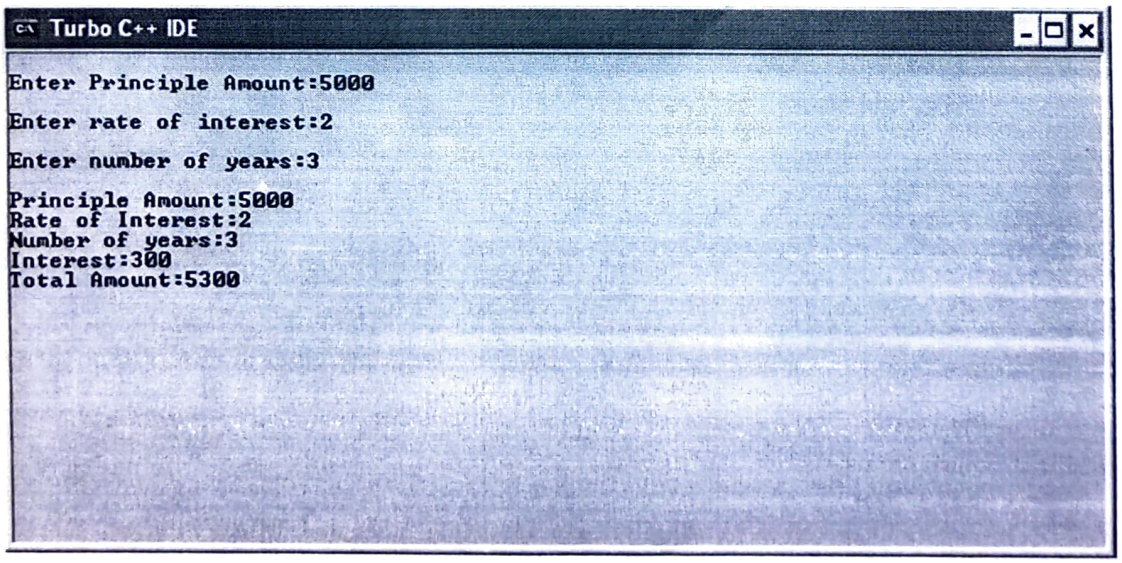

Turbo C++ IDE
Enter the number of times : 3
Enter number: 5
Factorial : 120
Enter number: 7
Factorial : 5040
Enter number: 3
Factorial : 6

```
/***(Q.3) A program to find simple interest and total amount
using classes and object with data hiding **/

#include<iostream.h>

#include<conio.h>

class Interest

{

 private:

       float p_amount;

       float rate;

       float period;

       float interest;

       float t_amount;

 public :

       void input()

       {

        cout<<"\nEnter Principle Amount:";

        cin>>p_amount;
```

```
cout<<"\nEnter rate of interest:";
cin>>rate;
cout<<"\nEnter number of years:";
cin>>period;
interest=(p_amount*period*rate)/100;
t_amount=interest+p_amount;
}
void show()
{
cout<<"\nPrinciple Amount:"<<p_amount;
cout<<"\nRate of Interest:"<<rate;
cout<<"\nNumber of years:"<<period;
cout<<"\nInterest:"<<interest;
cout<<"\nTotal Amount:"<<t_amount;
}
};
```

```
void main()
{
 clrscr();
 Interest r;
 r.input();
 r.show();
 }
```

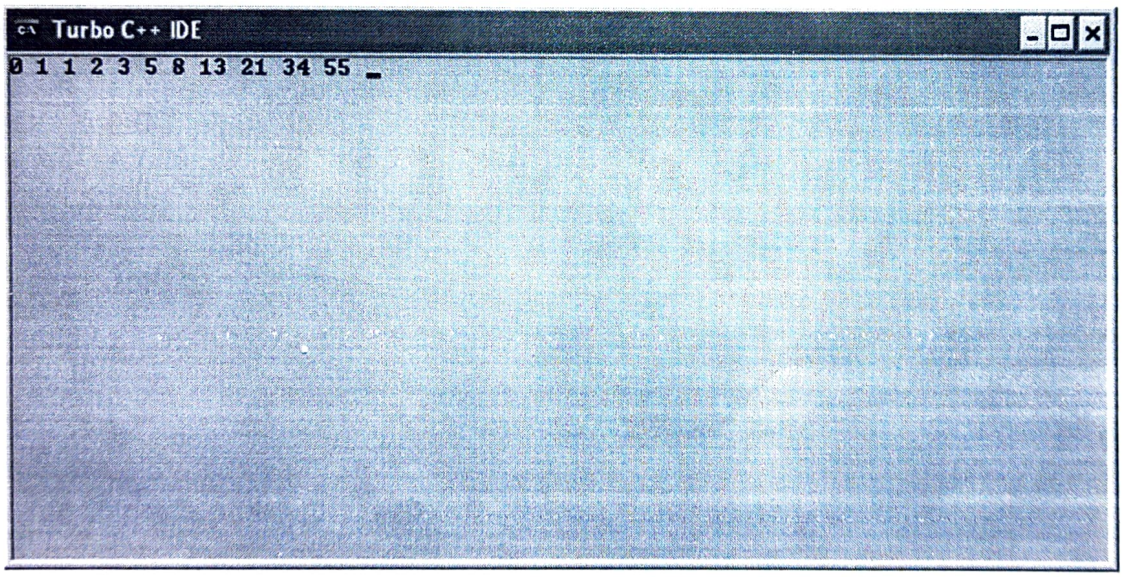
Output



```
/**(Q.4) Write a program to generate Fibonacci series
***************

 0 1  1  2  3  5  8  13  21  34  55

**********************************/

#include<iostream.h>

#include<conio.h>

void main()

{

int a=0,b=1,c=0,i=1;

clrscr();

cout<<a<<" ," <<b;


while(c <=50)

{

c=a+b;

cout<<c<<" ";

a=b;
```

```
b=c;

}

getch();

}
```

Output



```
/**(Q.5) Write a program to create objects of Point class and
display co-ordinates using constructor overloading *****/

#include<iostream.h>

#include<conio.h>


class Point

{

 private:

       int x_coord;

       int y_coord;

 public:

      static int c;

       Point();

       Point(int x,int y_coord);

       ~Point();

       Point(Point &p);
```

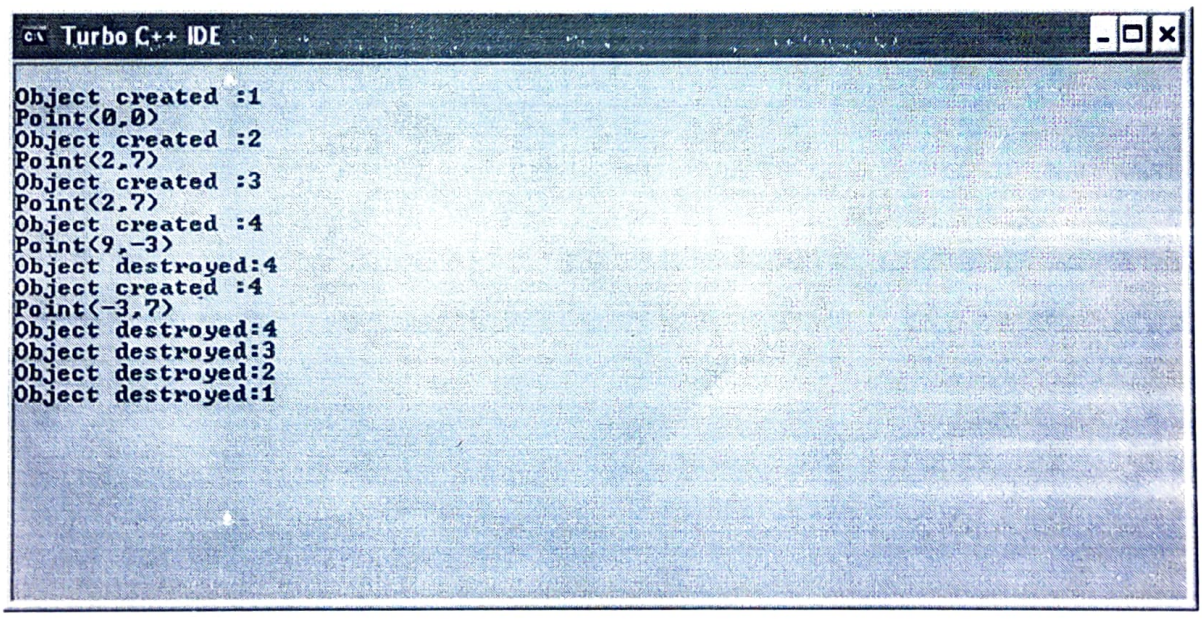
```
    void showPoint();
};


  Point::Point() //default constructor
    {
     x_coord=0;
     y_coord=0;
     c=c+1;
     cout<<"\nObject created :"<<c;
     }
  Point::Point(int x,int y_coord) // Parameterized constructor
     {
      x_coord=x;
      this->y_coord=y_coord;
      c=c+1;
     cout<<"\nObject created :"<<c;
     }
```

```
Point::Point(Point &p)
  {
   x_coord=p.x_coord;
   y_coord=p.y_coord;
   c=c+1;
   cout<<"\nObject created :"<<c;
   }
 void Point::showPoint()
   {
    cout<<"\nPoint("<<x_coord<<","<<y_coord<<")";
    }
  Point::~Point()
  {
   cout<<"\nObject destroyed:"<<c;
   c=c-1;
   }
int Point::c=0;
```

```
void main()
{
clrscr();
 Point p;
      p.showPoint();

      Point p1(2,7);
         p1.showPoint();
       {Point p2(p1);
         p2.showPoint();
       {
        Point p3(9,-3);
         p3.showPoint();
       }
       Point p4(-3,7);

       p4.showPoint();
```

```
    }
getch();
}
```

Output



/**(Q.6)A program to overload a function swap()

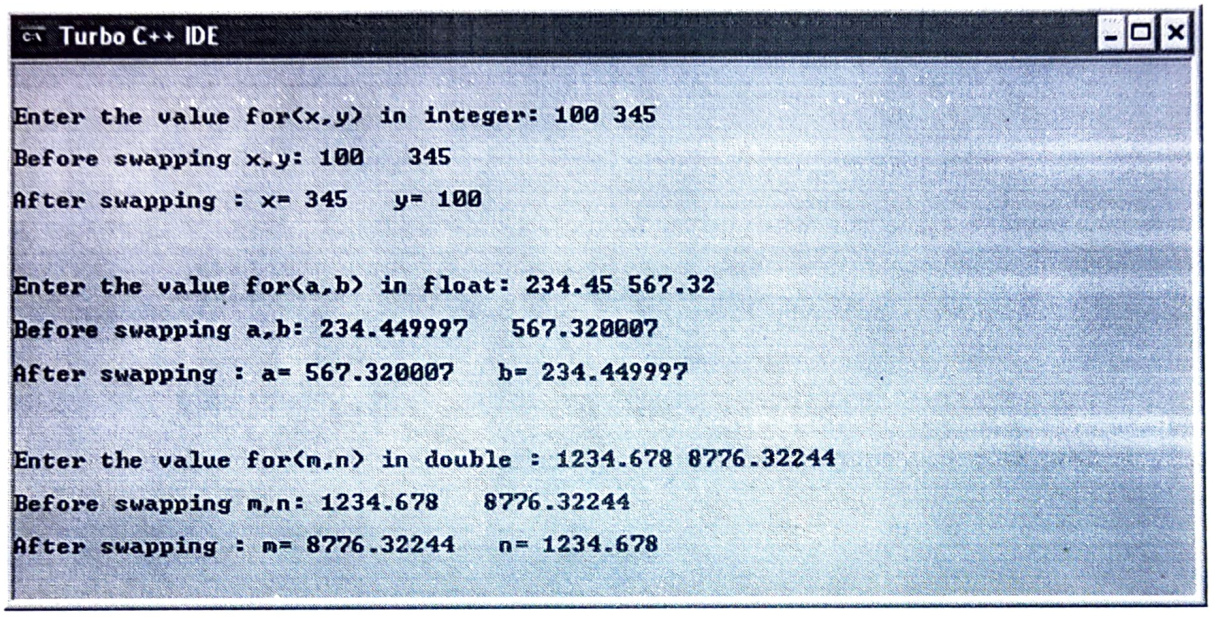
```
#include<iostream.h>
#include<conio.h>
void swap(char,char);
void swap(int,int);
void swap(float,float);
void swap(double,double);
void swap(char ch1,char ch2){
char t;
t=ch1;
ch1=ch2;
ch2=t;
cout<<"\nAfter swapping : ch1= "<<ch1<<"   ch2=
"<<ch2<<endl<<endl;
}
void swap(int a,int b){
```

```
int t1;
t1=a;
a=b;
b=t1;
cout<<"\nAfter swapping : x= "<<a<<"   y= "<<b<<endl<<endl;


}
void swap(float c, float d){
float t2;
t2=c;
c=d;
d=t2;
cout<<"\nAfter swapping : a= "<<c<<"   b= "<<d<<endl<<endl;
}
void swap(double e, double f){
double t3;
t3=e;
```

```
e=f;
f=t3;
cout<<"\nAfter swapping : m= "<<e<<"   n= "<<f<<endl<<endl;
}
void main()
{
clrscr();
char ch1,ch2;
cout<<"\nEnter the value for(ch1,ch2) in character:";
cin>>ch1>>ch2;
cout<<"\nBefore swapping ch1,ch2:"<<ch1<<"   "<<ch2<<endl;
swap(ch1,ch2);
int x,y;
cout<<"\n\nEnter the value for(x,y) in integer: ";
cin>>x>>y;
cout<<"\nBefore swapping x,y: "<<x<<"   "<<y<<endl;
swap(x,y);
```

```
float a,b;
cout<<"\n\nEnter the value for(a,b) in float: ";
cin>>a>>b;
cout<<"\nBefore swapping a,b: "<<a<<"   "<<b<<endl;
swap(a,b);
double m,n;
cout<<"\n\nEnter the value for(m,n) in double : ";
cin>>m>>n;
cout<<"\nBefore swapping m,n: "<<m<<"   "<<n<<endl;
swap(m,n);
getch();
}
```

Output


Turbo C++ IDE
Enter the value for(x,y) in integer: 100 345
Before swapping x,y: 100 345
After swapping : x= 345 y= 100
Enter the value for(a,b) in float: 234.45 567.32
Before swapping a,b: 234.449997 567.320007
After swapping : a= 567.320007 b= 234.449997
Enter the value for(m,n) in double : 1234.678 8776.32244
Before swapping m,n: 1234.678 8776.32244
After swapping : m= 8776.32244 n= 1234.678

/**(Q.7) Write a program to access members of both base and derived classes using pointer object of both classes */

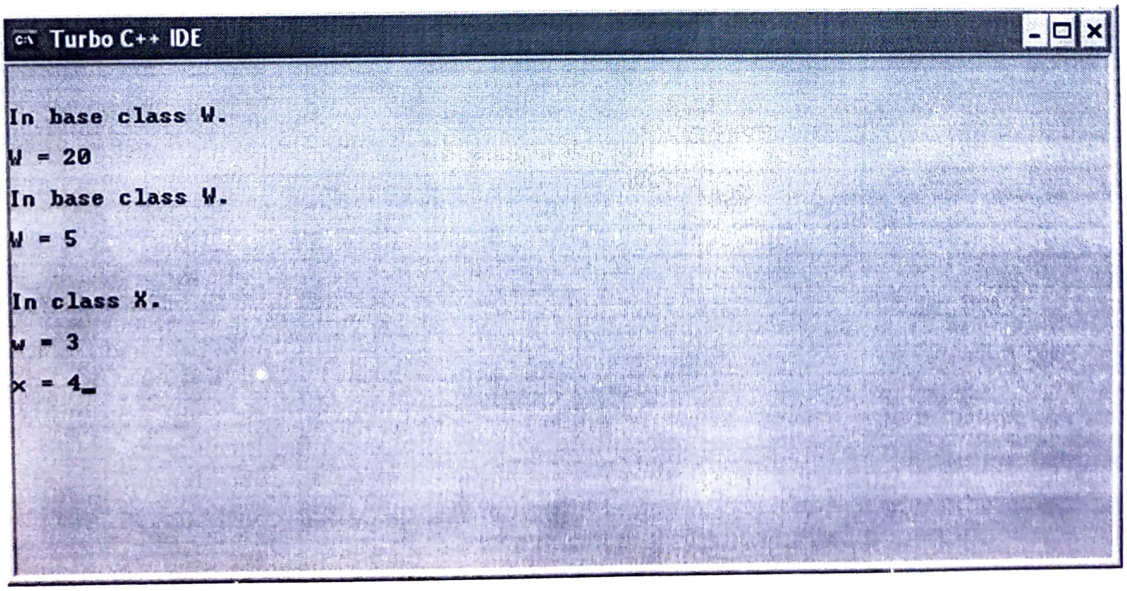
```
#include<iostream.h>
#include<conio.h>
class W
{
protected:
 int w;
public:
 W(int k) { w=k; }
 void show()
 {
 cout<<"\n\nIn base class W.";
 cout<<"\n\nW = "<<w;
 }
};
```

```
class X:public W
{
protected:
 int x;
public:
 X(int j, int k):W(j)
 {
 x=k;
 }
 void show()
 {
 cout<<"\n\n\nIn class X.";
 cout<<"\n\nw = "<<w;
 cout<<"\n\nx = "<<x;
 }
 };
 class Y:public X
```

```
{
protected:
 int y;
public:
 void show()
 {
 cout<<"\n\nIn class Y, y = "<<y;
 }
};
void main()
{
clrscr();
W *b;
b=new W(20);
b->show();
delete b;
b=new X(5,2);
```

```
b->show();
delete b;
X x(3,4);
X *d=&x;
d->show();
getche();
}
```

Output

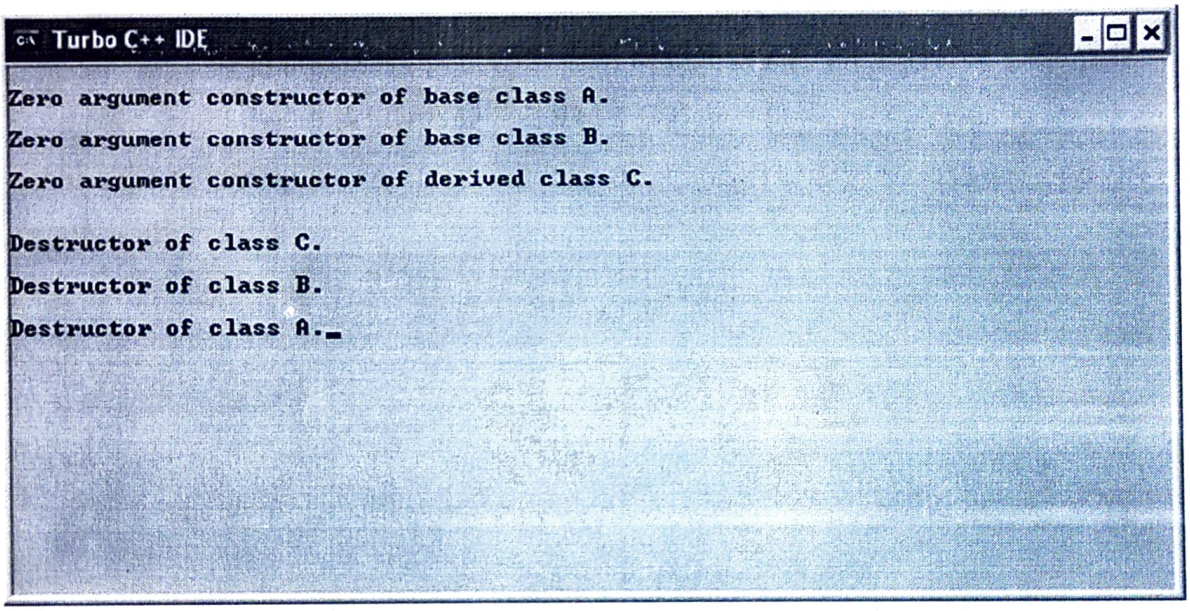


```
/**(Q.8)Write a program to show the use of constructor
and destructor in Multiple
Inheritance**********************/

#include<iostream.h>
#include<constream.h>
 class A
 {
 public:
  A()
  {
  cout<<"\nZero argument constructor of base class A.";
  }
  ~A()
  {
  cout<<"\n\nDestructor of class A.";
  }
```

```
};
class B
{
public:
 B()
 {
 cout<<"\n\nZero argument constructor of base class B.";
 }
 ~B()
 {
 cout<<"\n\nDestructor of class B.";
 }
};
class C:public A,public B
{
public:
 C()
```

```
{
cout<<"\n\nZero argument constructor of derived class C.";
}
~C()
{
cout<<"\n\n\nDestructor of class C.";
}
};
void main()
{
clrscr();
C c;
getche();
}
```

Output

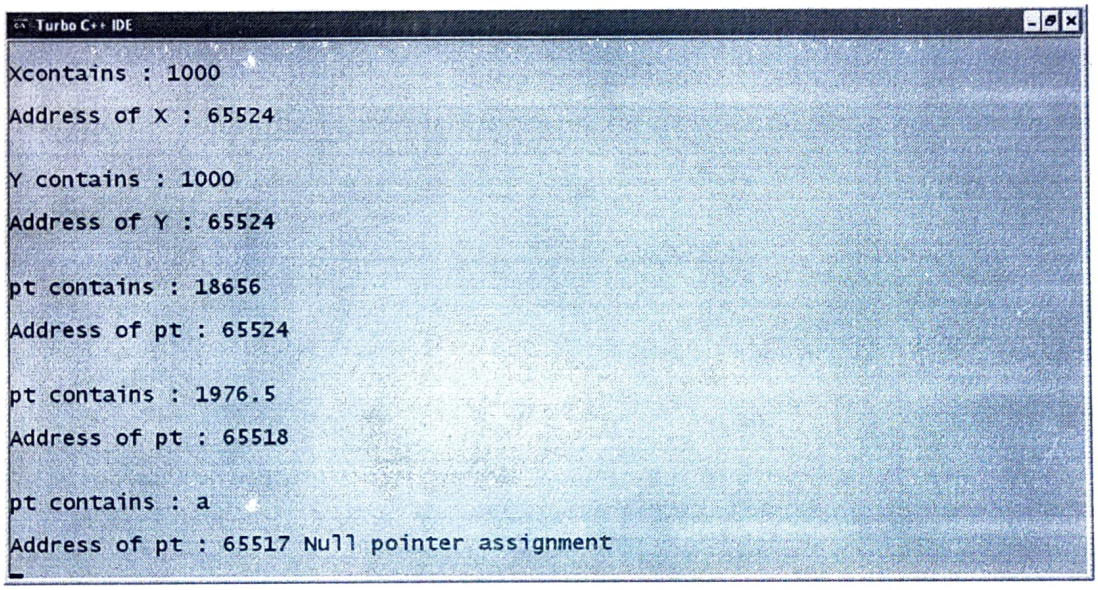

Turbo C++ IDE
Zero argument constructor of base class A.
Zero argument constructor of base class B.
Zero argument constructor of derived class C.
Destructor of class C.
Destructor of class B.
Destructor of class A.

/**(Q.9) Write a program to show how pointer variable holds address of any data variable and display that.
**********/

```
#include<iostream.h>
#include<constream.h>
void main()
{
clrscr();
int p=1000,*x,*y;
float d=2000.50;
char s='a';
void *pt;
x=&p;
cout<<"\nXcontains : "<<*x;
cout<<"\n\nAddress of X : "<<(unsigned)x;
delete x;
y=&p;
```

```
cout<<"\n\n\nY contains : "<<*y;
cout<<"\n\nAddress of Y : "<<(unsigned)y;
delete y;
pt=&p;
cout<<"\n\n\npt contains : "<<*(int *)pt;
cout<<"\n\nAddress of pt : "<<(unsigned)pt;
delete pt;
pt=&d;
cout<<"\n\n\npt contains : "<<*((float *)pt);
cout<<"\n\nAddress of pt : "<<(unsigned)pt;
pt=&s;
cout<<"\n\n\npt contains : "<<*(char*)pt;
cout<<"\n\nAddress of pt : "<<(unsigned)pt;
getche();
}
```

Output


Turbo C++ IDE
Xcontains : 1000
Address of X : 65524
Y contains : 1000
Address of Y : 65524
pt contains : 18656
Address of pt : 65524
pt contains : 1976.5
Address of pt : 65518
pt contains : a
Address of pt : 65517 Null pointer assignment

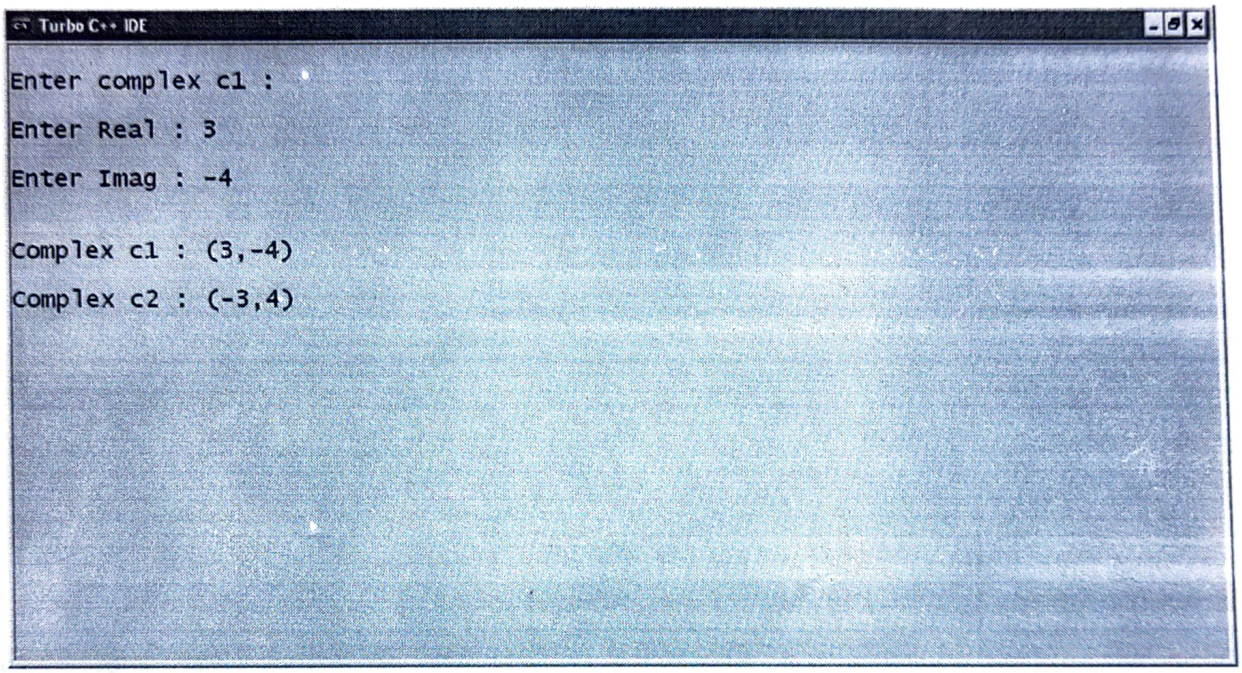
/**(Q.10)Write a program to overload unary operator using friend function*/

```
#include<iostream.h>
#include<conio.h>
 class Complex
 {
 double real;
 double imag;
 public:
 Complex()
{
 real=imag=0.0;
 }
 void getdata();
 void outdata(char *msg);
 friend Complex operator-(Complex c1)
```

```
{
 Complex c;
 c.real=-c1.real;
 c.imag=-c1.imag;
 return c;
 }
};
void Complex::getdata()
{
cout<<"\n\nEnter Real : ";
cin>>real;
cout<<"\nEnter Imag : ";
cin>>imag;
}
void Complex::outdata(char *msg)
{
cout<<msg;
```

```
cout<<"("<<real;
cout<<","<<imag<<")";
}
void main()
{
clrscr();
Complex c1,c2;
cout<<"\nEnter complex c1 : ";
c1.getdata();
c2=-c1;
c1.outdata("\n\nComplex c1 : ");
c2.outdata("\n\nComplex c2 : ");
getche();
}
```

Output


Turbo C++ IDE
Enter complex c1 :
Enter Real : 3
Enter Imag : -4
Complex c1 : (3,-4)
Complex c2 : (-3,4)

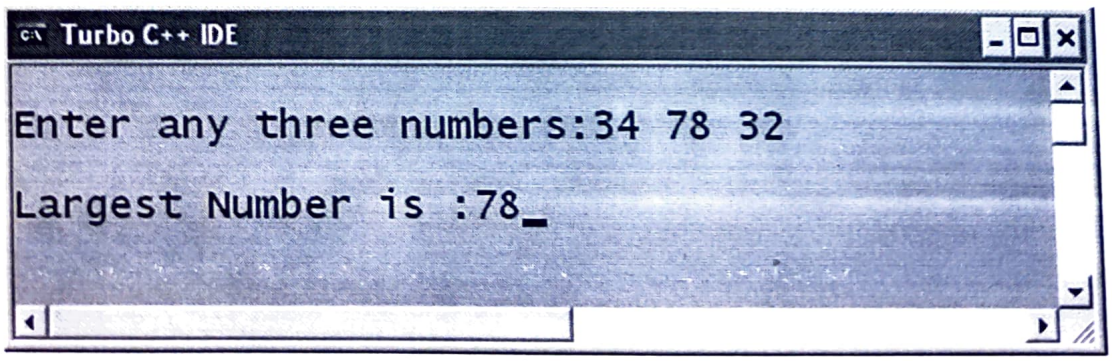
/**(Q.11)Write a C++ Program to print the largest of three given number using function
**********?

```
#include<iostream.h>
#include<conio.h>
int largest(int x,int y,int z); //Function Prototype
void main()
{
 clrscr();
 int a,b,c,large=0;
 cout<<"\nEnter any three numbers:";
  cin>>a>>b>>c;
large=largest(a,b,c);   // Function calling
cout<<endl<<"Largest Number is :";
cout<<large;
getch();
}
```

```
int largest(int x,int y,int z)     //Start of largest function
definition
  { int temp=0;
    if(x>y)
     {
       if(x>z)
        {
         temp=x;
        }
       else
        {
         temp=y;
        }
      }
     else
      {
       if(y>z)
```

```
        {
         temp=y;
         }
         else
         {
         temp=z;
         }
        }
    return(temp);
  }//end of largest function definition
//output:
```

Output



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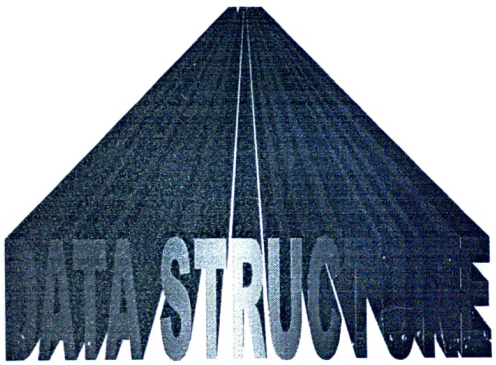


Question: WAP to input range and number and arrange it using linked list?

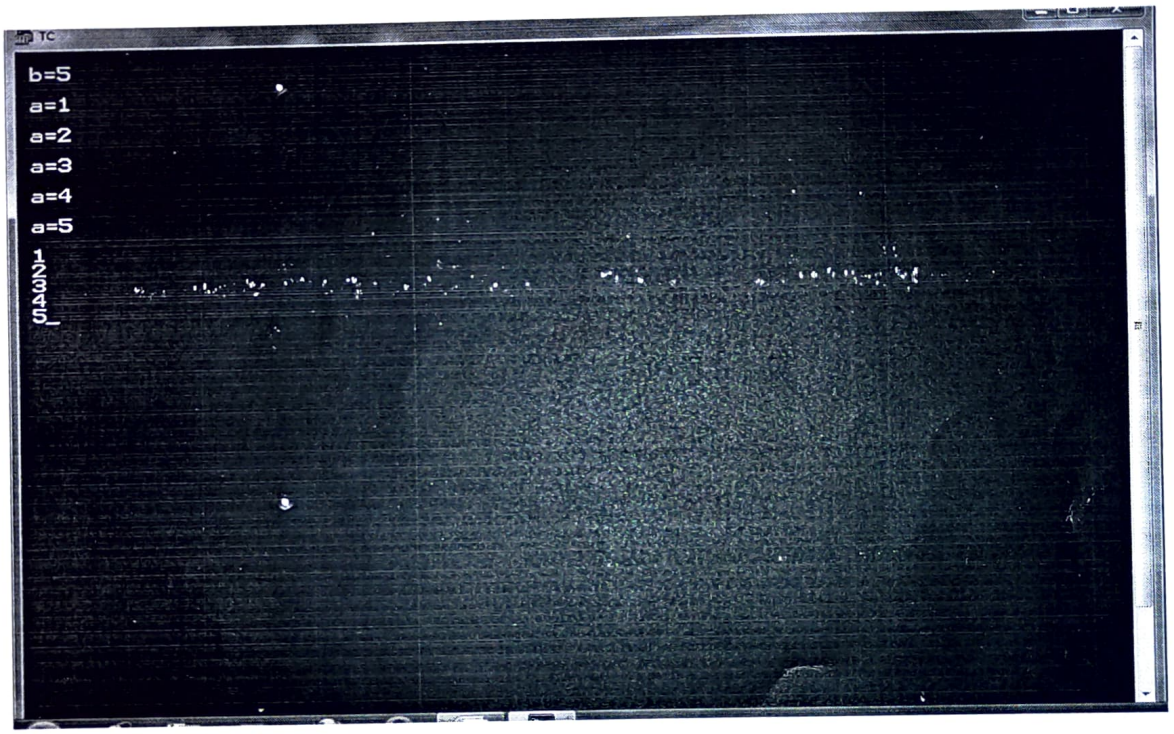
SOLU:

```
#include<stdio.h>
#include<alloc.h>
Struct node
{
int data;
struct node *link;
};
main()
{
Struct node *p,*q,*r,*s,*t;
Int i=0,a,b;
clrscr();
p=NULL;
printf("\n b=";
scanf("%d",&b);
while(i!=b)
{
i++;
printf("\n a=");
scanf("%d",&a);
```

```
if(p==NULL)
{
r=maloc(sizeof(struct node));
r->data=a;
r->link=NULL;
p=r;
}
else
{
s=p;
while(s->link!=NULL)
s=s->link;
t=malloc(sizeof(struct node));
t->data=a;
t->link=NULL;
s->link=t;
}
}
While(p!=NULL)
{
Printf("\n %d",p->data);
P=p->link;
}
getch();
```

```
}
```

OUTPUT:



Question : WAP to n iput any number and print in ascending order using linked list?

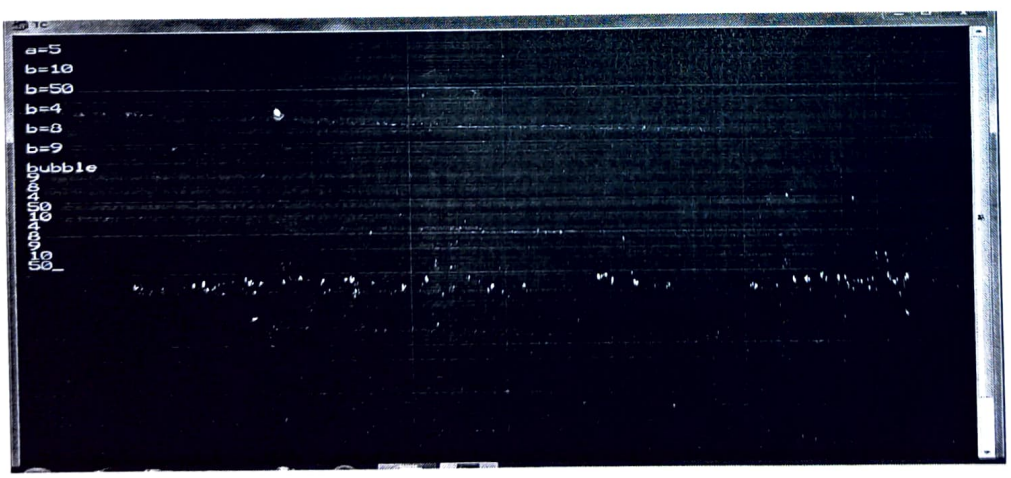
SOLU:

```
#include<stdio.h>
#include<alloc.h>
Struct node
{
int data;
struct node *link;
};
main()
{
struct node *p,*q,*r,*s,*t;
int i=0,y,n=0,k,temp,b,a;
clrscr();
p=NULL;
printf("\n a=");
scanf("%d",&a);
while(i!=a)
{
i++;
printf("\n b=");
scanf("%d",&b);
```

```
q=malloc(sizeof(struct node));
q->data=b;
q->link=p;
p=q;
}
Printf("\n bubble";
r=p;
while(r!=NULL)
{
Printf("\n %d",r->data);
r=r->link;
n++;
}
K=n;
For(i=0;i<n-1;i++,k--)
{
s=p;
t=s->link;
for(y=1;y<k;y++)
{
If(s->data>t->data)
{
Temp=s->data;
s->data=t->data;
```

```
t->data=temp;
}
s=s->link;
t=t->link;
}
}
While(p!=NULL)
{
Printf("\n %d",p->data);
P=p->link;
}
getch();
}
```

OUTPUT:



Question: WAP to input data can be insert, delete, display and exit to a program?

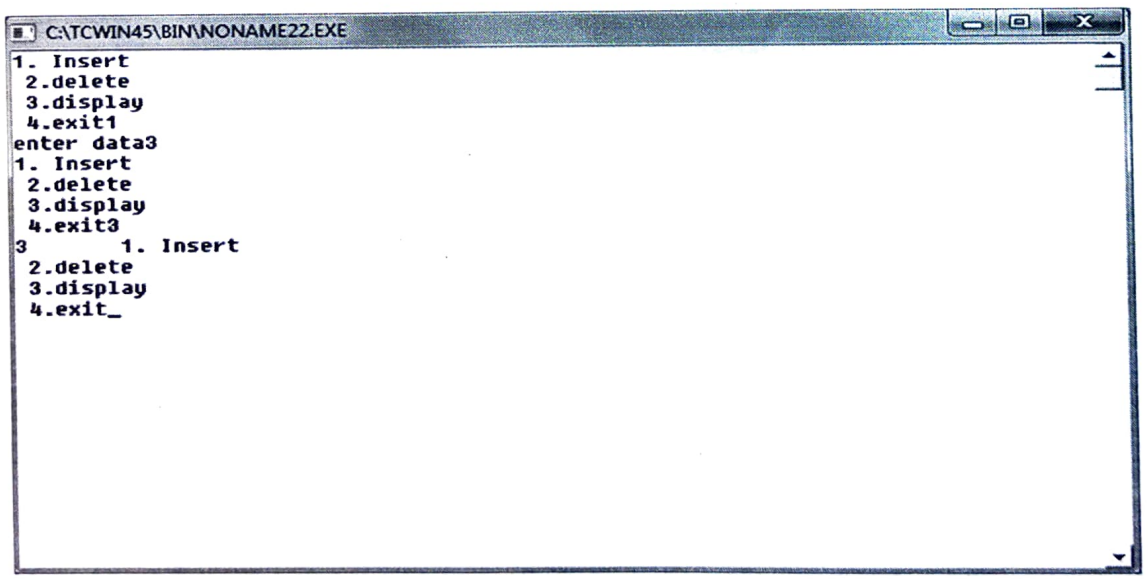
SOLU:

```
#include<iostream.h>
#include<conio.h>
#include<process.h>
Class queue
{
int a[10],fr,rear;
public:
void insert();
void del();
void display();
queue();
};
Void queue::insert()
Cout<<"enter data";
Cin>>a[rear];
rear++;
}
Queue::queue()
{
fr=0;
rear=0;
```

```
}
Void queue::del()
{
Cout<<"deleted item="<<a[fr];
fr++;
}
Void queue::display()
{
int i;
for(i=fr;i<rear;i++)
cout<<a[i]<<"\t";
}
Void main()
{
Int ch;
Queue q;
do
{
Cout<<"1. Insert\n 2.delete\n 3.display\n 4.exit";
Cin>>ch;
Switch(ch)
{
Case 1:
q.insert();
```

```
break;
case 2:
q.delete();
break;
case 3:
q.display();
break;
case 4:
exit(0);
}
}while(1);
}
```

OUTPUT:



Question: WAP to push, pop, display and exit in a stack?

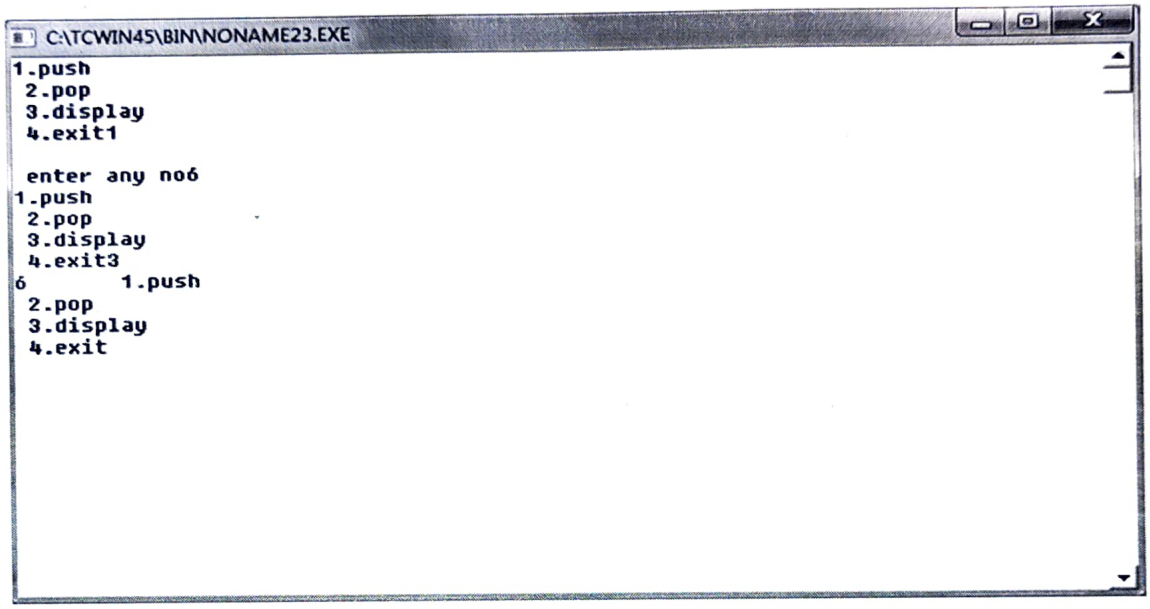
SOLU:

```
#include<iostream.h>
#include<conio.h>
#include<process.h>
Class stack
{
int a[20],top;
public:
void push()
{
top++;
if(top<20)
{
Cout<<"\n enter any no";
Cin>>a[top];
}
else
cout<<"\n stack is full";
}
Stack()
```

```
{
top=-1;
}
Void pop()
{
if(top>=0)
{
Cout<<"\n deleted item="<<a[top];
top--;
}
else
cout<<"\n stack is empty";
}
Void display()
{
for(int i=0;i<=top;i++)
{
Cout<<a[i]<<"\t";
}
}
};
Void main()
{
Stack st;
```

```
int ch;
do
{
Cout<<"1.push\n 2.pop\n 3.display\n 4.exit";
Cin>>ch;
Switch(ch)
{
Case 1:
St.push();
Break;
Case 2:
St.pop();
Break;
Case 3:
St.display();
Break;
Case 4:
exit(0);
}
}while(1);
}
```

OUTPUT:


C:\TCWIN45\BIN\NONAME23.EXE
1.push
2.pop
3.display
4.exit1
enter any no6
1.push
2.pop
3.display
4.exit3
6 1.push
2.pop
3.display
4.exit

Question: WAP to insert, delete, display and exit to a program?

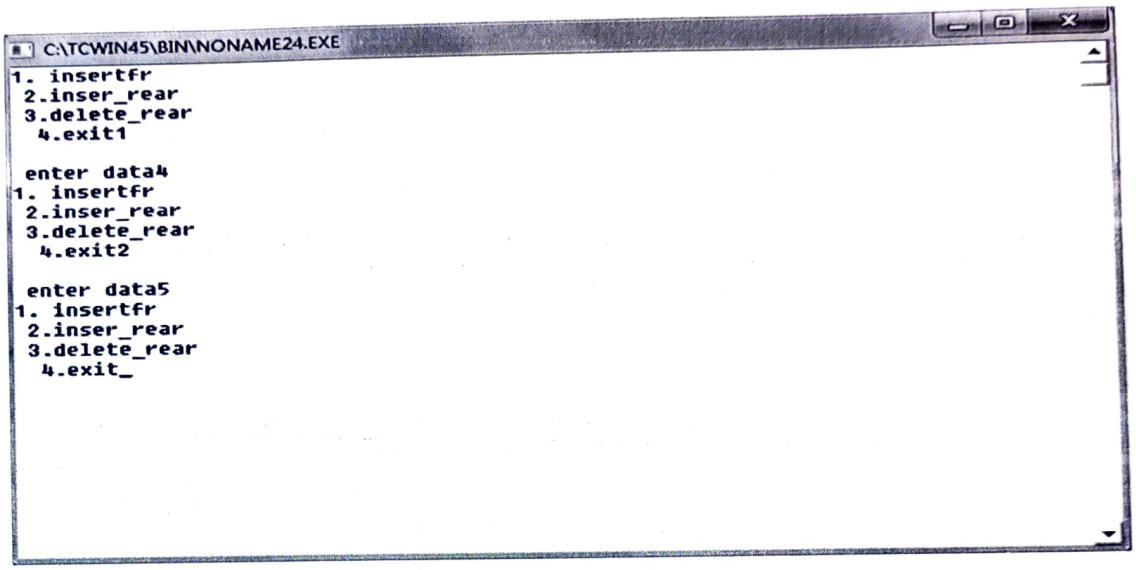
SOLU:

```
#include<iostream.h>
#include<conio.h>
Class dequeue
{
int dq[20],fr,rear;
public:
void insertfr()
{
Cout<<"\n enter data";
Cin>>dq[fr];
fr--;
}
Void inser_rear()
{
Cout<<"\n enter data";
Cin>>dq[rear];
rear++;
}
Void delete_rear()
{
```

```
rear--;
cout<<"deleted item="<<dq[fr];
fr++;
}
dequeue()
{
fr=0;
rear=0;
}
Void display()
{
int i;
for(i=fr;i<rear;i++)
cout<<dq[i];
}
}
Void main()
{
dequeue d;
int ch;
do
{
Cout<<"1. Insertfr\n 2.inser_rear\n 3.delete_rear\n 4.display\n 5.exit";
Cin>>ch;
```

```
Switch(ch)
{
Case 1:
d.insertfr();
break;
case 2:
d.inser_rear();
break;
case 3:
d.delete_rear();
break;
case 4:
display();
break;
case 5:
exit(0);
}
}while(1);
}
```

OUTPUT:


C:\TCWIN45\BIN\NONAME24.EXE
1. insertfr
2.inser_rear
3.delete_rear
4.exit1
enter data4
1. insertfr
2.inser_rear
3.delete_rear
4.exit2
enter data5
1. insertfr
2.inser_rear
3.delete_rear
4.exit_

Question: WAP to input range and number of element and also add in first position and desire position?

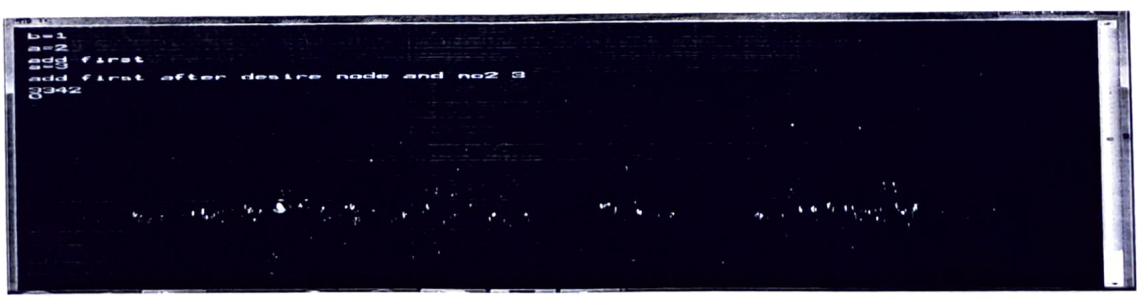
SOLU:

```
#include<stdio.h>
#include<malloc.h>
Struct node
{
Struct node *link;
};
main()
{
Struct node *u,*temp,*v,*p,*r,*s,*t;
int i=0,a,b,d;
clrscr();
p=NULL:
printf("\n b=");
scanf("%d",&b);
while(i!=b)
{
i++;
printf("\n a=");
scanf("%d",&a);
```

```
i(p==NULL)
{
r=malloc(sizeof(struct node));
r->data=a;
r->link=NULL;
p=r;
}
else
{
Suman=p;
While(s->link!=NULL);
S=s->link;
t=malloc(sizeof(struct node));
t->data=a;
t->link=NULL;
s->link=t;
}
}
Printf("\n add first");
Scanf("%d",&a);
u=malloc(sizeof(struct node));
u->data=a;
u->link=p;
prntf("\n add after desire node anmd number");
```

```
scanf("%d%d",&u,&b);
i=0;
temp=u;
for(i=1;i<a;i++)
temp=temp->link;
v=malloc(sizeof(struct node));
v->data=d;
v->link=temp->link;
temp->link=v;
while(u!-NULL)
{
Printf("\nm %d",u->data);
u=u->data;
}
getch();
}
```

OUTPUT:



Question: WAP to check whether the word is palindrome or not using stack?

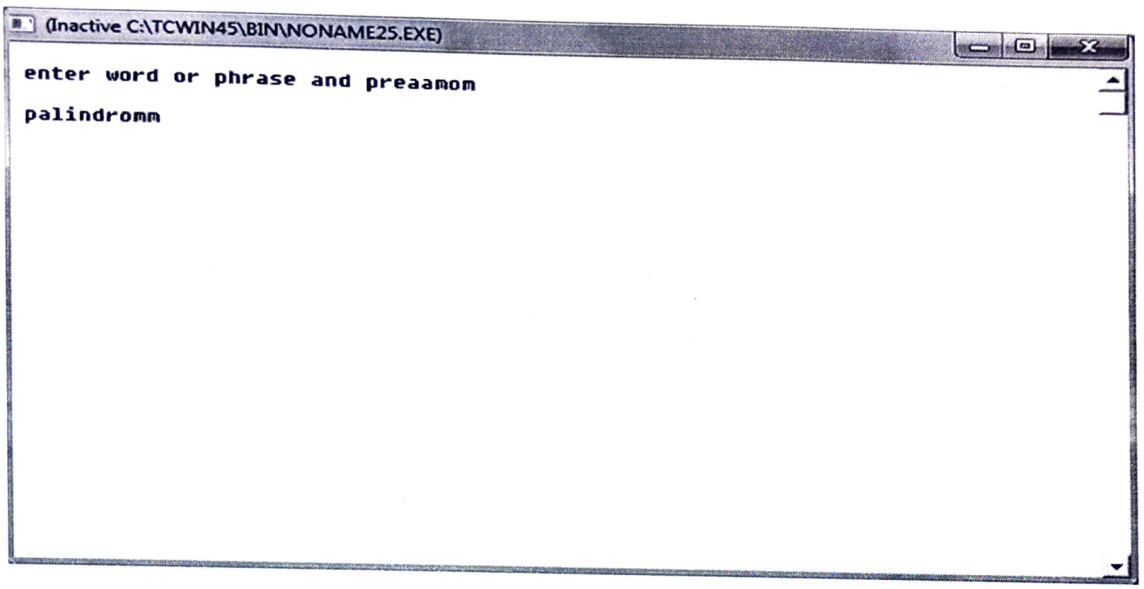
SOLU:

```
#include<stdio.h>
#include<conio.h>
int top=-1;
void push(char s[],char c)
{
top++;
s[top]=c;
}
Char pop(char s[])
{
Char c;
C=s[top];
top--;
return(c);
}
Void palin()
{
int n;
char c,w[80],palin='t';
printf("\n enter word or phrase and preaa");
while((c=getchar())!='\n')
```

```
push(w,c);
w[top+1]='\0';
n=0;
while(n<top)
{
If(pop(w)!=w[n])
{
Palin='f';
Break;
}
n++;
}

If(palin=='t');
Printf("\n palindromm");
Else
Printf("\n not palinmdromm");
}
int main()
{
Palin();
return(0);
}
```

OUTPUT:


(Inactive C:\TCWIN45\BIN\NONAME25.EXE)
enter word or phrase and preaamom
palindromm

Question: WAP to check proper nesting of parenthesis?

SOLU:

```
#include<stdio.h>
#include<string.h>
int len, top=0;
void push(char s[],char c)
{
top++;
s[top]=c;
}
Char pop(char s[])
{
Char c;
C=s[top];
top--;
return(c);
}
int main()
{
int n;
char valid='t',c1,c2,s[40];
printf("\n expression with():");
```

```
scanf("%s",s);
len=strlen(s);
n=0;
while(n<len)
{
C1=s[n];
if(c1==')')
push(s,c1);
if(c1==')')
{
{
C2=pop(s);
If(c2!='(')
Valid='f';
}
}
n++;
}
if(s[top]=='t')
valid='f';
if(valid=='t')
printf("\n parenthesis match\n");
else
printf("\n parenthesis do not match\n");
```

```
return(0);
}
```

OUTPUT: