```
/*-------------------------------------------------------------------------------------------------
   PROGRAM TITLE :  FREQUENCY OF OCCURANCE OF A ELEMENT IN ARRAY
   PROGRAMMER    :  SHARATH SHETTY B.R.
   OBJECTIVE     :  COUNTS HOW MANY TOMES AN ELEMENT IS PRESENT
                    IN ARRAY AND DISPLAYS THE COUNT
-------------------------------------------------------------------------------------------------*/

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

class frequency
{
  int arr[10],n,ele,i,count;
public:
  void getData();
  void count_Ele();
  void display();
};

void frequency::getData()
{
  cout<<"Enter the number of elements : ";
  cin>>n;
  cout<<"Enter the array elements:"<<endl;
  for(i=0;i<n;i++)
  cin>>arr[i];
  cout<<"Enter the element to be counted :";
  cin>>ele;
}

void frequency::count_Ele()
{
   count=0;
   for(i=0;i<n;i++)
   {
     if(arr[i]==ele)
      count++;
   }

}
void frequency::display()
{
  if ( count > 0)
    cout<<"Element "<<ele<<" occurs "<<count<<"times";
  else
   cout<<"Element "<<ele<<" not found";
}
```

```
void main()
{
  frequency f;
  clrscr();
  f.getData();
  f.count_Ele();
  f.display();
  getch();
}

/***********OUTPUT**********************
Enter the number of elements : 5
Enter the array elements:
10
20
60
10
20
Enter the element to be counted :10
Element 10 occurs 2times
***************************************
Enter the number of elements : 5
Enter the array elements:
10
50
40
20
60
Enter the element to be counted :70
Element 70 not found
***************************************/
```

```
/*-------------------------------------------------------------------------------------------------------
  PROGRAM TITLE:   INSERT AN ELEMENT TO ARRAY
  PROGRAMMER    :  SHARATH SHETTY B.R.
  OBJECTIVE         :  INSERTS AN ELEMENT IN THE GIVEN POSITION AND
                       RETURNS THE ARRAY AFTER INSERTION
-------------------------------------------------------------------------------------------------------*/

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

class array_Insert
{
  int n,arr[10],ele,p;
public:
  void getData();
  void insert_Ele();
  void display();
};

void array_Insert::getData()
{
  cout<<"Enter the number of elements     :";
  cin>>n;
  cout<<"Enter the elements to the array  :";
  for(int i=0;i<n;i++)
  cin>>arr[i];
  cout<<"Enter the element to be inserted :";
  cin>>ele;
  cout<<"Enter the position less than "<<n<<":";
  cin>>p;
}

void array_Insert::insert_Ele()
{
  if(p>n)
   cout<<p<<" is an invalid position!!!";
  else
  {
   for(int i=n-1; i>=p;i--)
     arr[i+1] = arr[i];
   arr[p]=ele;
   n = n+1;
   cout<<ele<<"is successfully inserted at position "<<p<<endl;
  }
}
void array_Insert::display()
{
 cout<<"The array for insertion is"<<endl;
 for(int i=0;i<n;i++)
  cout<<setw(4)<<arr[i];
}
```

```
void main()
{
  array_Insert ai;
  clrscr();
  ai.getData();
  ai.insert_Ele();
  ai.display();
  getch();
}

/***********OUTPUT*********************************
Enter the number of elements     :5
Enter the elements to the array  :2
4
6
8
10
Enter the element to be inserted :99
Enter the position less than 5:3
99is successfully inserted at position 3
The array for insertion is
   2   4   6  99   8  10
**********************************************
Enter the number of elements     :5
Enter the elements to the array  :1
3
5
7
9
Enter the element to be inserted :6
Enter the position less than 5:8
8 is an invalid position!!!The array for insertion is
   1   3   5   7   9

**********************************************/
```

```
/*-------------------------------------------------------------------------------------------------------
  PROGRAM TITLE:      DELETE AN ELEMENT FROM ARRAY
  PROGRAMMER  :       SHARATH SHETTY B.R.
  OBJECTIVE       :   DELETES AN ELEMENT IN THE GIVEN POSITION AND
                      RETURNS THE ARRAY AFTER DELETION
-------------------------------------------------------------------------------------------------------*/

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

class array_Del
{
  int n,arr[10],ele,p;
public:
  void getData();
  void delete_Ele();
  void display();
};

void array_Del::getData()
{
  cout<<"Enter the number of elements     :";
  cin>>n;
  cout<<"Enter the elements to the array  :";
  for(int i=0;i<n;i++)
      cin>>arr[i];
  cout<<"Enter the position less than "<<n<<":";
  cin>>p;
}

void array_Del::delete_Ele()
{
  if(p<n)
  {
   ele = arr[p];
   for(int i=p;i<n;i++)
     arr[i] = arr[i+1];
   n = n-1;
   cout<<ele<<" at position "<<p<<" is successfully removed"<<endl;
  }
}
void array_Del::display()
{
  if(p>n)
    cout<<p<<" is an invalid position!!!";
 else{
    cout<<"The array atfer deletion is"<<endl;
    for(int i=0;i<n;i++)
      cout<<setw(4)<<arr[i];
  }
}
```

```
void main()
{
  array_Del ad;
  clrscr();
  ad.getData();
  ad.delete_Ele();
  ad.display();
  getch();
}

/***********OUTPUT*********************************
Enter the number of elements     :5
Enter the elements to the array  :1
2
3
4
5
Enter the position less than 5:3
4 at position 3 is successfully removed
The array atfer deletion is
   1   2   3   5
**********************************************
Enter the number of elements     :5
Enter the elements to the array  :1
2
3
4
5
Enter the position less than 5:6
6 is an invalid position!!!

**********************************************/
```

```
/*-------------------------------------------------------------------------------------------------------------
  PROGRAM TITLE:    SORT AN ARRAY USING INSERTION SORT
  PROGRAMMER  :     SHARATH SHETTY B.R.
  OBJECTIVE       :     SORTS THE ARRAY IN ASCENDING ORDER
-------------------------------------------------------------------------------------------------------------*/

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

class insertion_sort
{
  int arr[10],n,i;
public:
  void getData();
  void sort_Array();
  void display();
};

void insertion_sort::getData()
{
  cout<<"Enter the number of elements : ";
  cin>>n;
  cout<<"Enter the array elements:"<<endl;
  for(i=0;i<n;i++)
  cin>>arr[i];
}

void insertion_sort::sort_Array()
{
  int j,temp;
  for(i=1;i<n-1;i++)
  {
   j=i;
   while((j>=1)&&(arr[j]<arr[j-1]))
    {
        temp=arr[j];
        arr[j]=arr[j-1];
        arr[j-1]=temp;

      j=j-1;
    }
  }
}

void insertion_sort::display()
{
  cout<<"Elements after sorting are: "<<endl;
  for(i=0;i<n;i++)
    cout<<setw(4)<<arr[i];
}
```

```
void main()
{
  insertion_sort I;
  clrscr();
  I.getData();
  I.sort_Array();
  I.display();
  getch();
}


/*************OUTPUT*****************
Enter the number of elements : 5
Enter the array elements:
40
20
30
10
50
Elements after sorting are:
  10  20  30  40  50
************************************/
```

```
/*-----------------------------------------------------------------------------------------
  PROGRAM TITLE:   SEARCH AN ELEMENT IN ARRAY USING BINARY SEARCH
  PROGRAMMER   :   SHARATH SHETTY B.R.
  OBJECTIVE    :   SEARCHES FOR THE ELEMENT IN THE ARRAY AND IF
                   FOUND DISPLAYS THE LOCATION OF THE ELEMENT
-----------------------------------------------------------------------------------------*/

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

class binary_search
{
  int arr[10],n,ele,i,loc;
public:
  void getData();
  void search_Ele();
  void display();
};

void binary_search::getData()
{
  cout<<"Enter the number of elements : ";
  cin>>n;
  cout<<"Enter the array elements:"<<endl;
  for(i=0;i<n;i++)
  cin>>arr[i];
  cout<<"Enter the element to be searched :";
  cin>>ele;
}

void binary_search::search_Ele()
{
  int beg,end,mid;
  beg=0;
  end=n-1;
  loc=-1;
  while(beg<=end)
  {
   mid = (beg+end)/2;
   if ( ele == arr[mid])
     loc = mid;
   if ( ele < arr[mid])
     end = mid - 1;
   else
     beg = mid + 1;
  }
}
void binary_search::display()
{
  if ( loc >= 0)
    cout<<"Element "<<ele<<" found at "<<loc<<"location";
```

```
  else
   cout<<"Element "<<ele<<" not found";
}

void main()
{
  binary_search b;
  clrscr();
  b.getData();
  b.search_Ele();
  b.display();
  getch();
}

/***********OUTPUT************************
Enter the number of elements : 5
Enter the array elements:
10
20
30
40
50
Enter the element to be searched :40
Element 40 found at 3location
*****************************************
Enter the number of elements : 5
Enter the array elements:
10
20
30
40
50
Enter the element to be searched :66
Element 66 not found

**********************************/
```

```
/*--------------------------------------------------------------------------------------------
  PROGRAM TITLE :   SIMPLE INTEREST
  PROGRAMMER    :  SHARATH SHETTY B.R.
  OBJECTIVE     :  ENTER PRINCIPLE,RATE AND TIME, CALCULATE SI
                    USING SI=PTR/100
--------------------------------------------------------------------------------------------*/

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

class simple_interest
{
  int t;
  float p,r,si;
public:
  void getData();
  void interest_Cal();
  void display();
};

void simple_interest::getData()
{
  cout<<"Enter the priciple amount  :";
  cin>>p;
  cout<<endl;
  cout<<"Enter the time in years    :";
  cin>>t;
  cout<<endl;
  cout<<"Enter the rate of interest :";
  cin>>r;
}

void simple_interest::interest_Cal()
{
  si = (p*t*r)/100;
}
void simple_interest::display()
{

    cout<<"The simple interest for the given amount is "<<si;
}

void main()
{
  simple_interest S;
  clrscr();
  S.getData();
  S.interest_Cal();
  S.display();
  getch();
}
```

```
/***********OUTPUT*********************************
Enter the priciple amount  :10000

Enter the time in years    :2

Enter the rate of interest :12

The simple interest for the given amount is 2400

**********************************************/
```

```
/*-----------------------------------------------------------------------------------------
  PROGRAM TITLE:   ROOTS OF A QUADRATIC EQUATION
  PROGRAMMER  :  SHARATH SHETTY B.R.
  OBJECTIVE       :  ENTER THREE MEMBERS AND CALCULATE THE ROOTS.
                     CHECK WHETHER THE ROOTS ARE EQAUL, REAL AND
                     IMAGINARY
-----------------------------------------------------------------------------------------*/

#include<iostream.h>
#include<conio.h>
#include<iomanip.h>
#include<math.h>
#include<process.h>

class quadratic
{
  double a,b,c,r1,r2,d;
public:
  void getData();
  void calculate_Roots();
  void display();
};

void quadratic::getData()
{
  cout<<"Enter the value for a :";
  cin>>a;
  //cout<<endl;
  cout<<"Enter the value for b :";
  cin>>b;
 // cout<<endl;
  cout<<"Enter the value for c :";
  cin>>c;
  //cout<<endl;
}

void quadratic::calculate_Roots()
{
  d=b*b-4*a*c;
  if(d==0)
  {
        cout<<"Roots are equal"<<endl;
        r1=(-b-sqrt(d))/(2*a);
        r2=r1;
  }
  else if(d>0)
  {
        cout<<"Roots are real "<<endl;
        r1=(-b+sqrt(d))/(2*a);
        r2=(-b-sqrt(d))/(2*a);
  }
  else
```

```
  {
        cout<<"Roots are imaginary";
        exit(0);
  }
}

void quadratic::display()
{
    cout<<"The first root is : "<<r1<<endl;
    cout<<"The second root is: "<<r2<<endl;
}

void main()
{
  quadratic Q;
  clrscr();
  Q.getData();
  Q.calculate_Roots();
  Q.display();
  getch();
}

/***********OUTPUT*********************************
 Enter the value for a :3
Enter the value for b :6
Enter the value for c :3
Roots are equal
The first root is : -1
The second root is: -1
---------------------------------
Enter the value for a :2
Enter the value for b :3
Enter the value for c :1
Roots are real
The first root is : -0.5
The second root is: -1
---------------------------------
Enter the value for a :2
Enter the value for b :-2
Enter the value for c :1
Roots are imaginary
**********************************************/
```

```
/*--------------------------------------------------------------------------------
  PROGRAM TITLE:  AREA OF GEOMETRIC SHAPES USING FUNCTION
                  OVERLOADING
  PROGRAMMER   :  SHARATH SHETTY B.R.
  OBJECTIVE    :  CREATES FUNCTIONS WITH THE SAME NAME,
                  ARGUMENTS ARE CHANGED ACCORDING TO THE
                  FUNCTIONALITY.
--------------------------------------------------------------------------------*/

#include<iostream.h>
#include<conio.h>
#include<math.h>
#include<iomanip.h>

class area_overload
{
  float s;
public:
  double area(double);
  double area(double,double);
  double area(double,double,double);
};

double area_overload::area(double side)
{
  return( side * side);
}
double area_overload::area(double len, double brd)
{
  return( len * brd);
}
double area_overload::area(double s1, double s2, double s3)
{
  s=(s1+s2+s3)/2;
  return(sqrt(s*(s-s1)*(s-s2)*(s-s3)));
}


void main()
{
  area_overload A;
  int choice;
  double side,len,brd,s1,s2,s3;
  double areaS,areaT,areaR;
  clrscr();

  cout<<"Enter the number of inputs( 1, 2 or 3) : ";
  cin>>choice;

  switch(choice)
  {
   case 1:cout<<"Enter the side:";
```

```
            cin>>side;
            areaS=A.area(side);
            cout<<"The area of the square is:"<<areaS;
            break;
   case 2:cout<<"Enter the length:";
            cin>>len;
            cout<<"Enter the breadth:";
            cin>>brd;
            areaR=A.area(len,brd);
            cout<<"The area of the rectangle is:"<<areaR;
            break;
   case 3:cout<<"Enter the first side:";
            cin>>s1;
            cout<<"Enter the second side:";
            cin>>s2;
            cout<<"Enter the third side:";
            cin>>s3;
            areaT=A.area(s1,s2,s3);
            cout<<"The area of triangle with 3 sides is:"<<areaT;
            break;
   default:cout<<"Invalid choice!!!Enter option between 1 - 3";
  }
  getch();
}

/***************OUTPUT*****************************
Enter the number of inputs( 1, 2 or 3) : 1
Enter the side:9.9
The area of the square is:98.01
************************************************
Enter the number of inputs( 1, 2 or 3) : 2
Enter the length:2.5
Enter the breadth:5.0
The area of the rectangle is:12.5
*****************************************
Enter the number of inputs( 1, 2 or 3) : 3
Enter the first side:1.2
Enter the second side:1.3
Enter the third side:1.5
The area of triangle with 3 sides is:0.748331
*****************************************
Enter the number of inputs( 1, 2 or 3) : 6
Invalid choice!!!Enter option between 1 - 3

************************************************/
```

```
/*-------------------------------------------------------------------------------------------
  PROGRAM TITLE:   CUBE USING INLINE FUNCTIONS
  PROGRAMMER  :    SHARATH SHETTY B.R.
  OBJECTIVE       :    FINDS THE CUBE OF A NUMBER
                       USING INLINE FUNCTION
-------------------------------------------------------------------------------------------*/

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

class Num_cube
{
  int a,res;
public:
  void getData();
  inline int cube();
  void display(int);
};

void Num_cube::getData()
{
  cout<<"Enter the number:";
  cin>>a;
}

inline int Num_cube::cube()
{
  res= a*a*a;
  return (res);
}
void Num_cube::display(int res)
{
    cout<<"The cube of "<<a<<" is "<<res;
}

void main()
{
  Num_cube c;
  int ans;
  clrscr();
  c.getData();
  ans=c.cube();
  c.display(ans);
  getch();
}


/*******************OUTPUT**********
Enter the number:5
The cube of 5 is 125
**************************************/
```

```
/*-------------------------------------------------------------------------------------
   PROGRAM TITLE:      SUM OF SERIES 1+X+X^2+...+X^N
   PROGRAMMER  :       SHARATH SHETTY B.R.
   OBJECTIVE       :    FINDS THE SUM OF THE GIVEN SERIES
                        USING CONSTRUCTORS
-------------------------------------------------------------------------------------*/
#include<iostream.h>
#include<conio.h>
#include<iomanip.h>

class series
{
  int x,n;
public:
  series(int,int);
  int calculate();
};
series::series(int xx, int nn)
{
 x=xx;
 n=nn;
}
int series::calculate()
{
 int t,sum=1;
 t=x;
 for(int i=1;i<=n;i++)
 {
   sum=sum+t;
   t=t*x;
 }
 return sum;
}
void main()
{
  int n,x;
  clrscr();
  cout<<"Enter the values for x and n:";
  cin>>x>>n;
  series s(x,n);
  series r=s; //copying the object instance to another object
  int res=s.calculate();
  int res1=r.calculate();
  cout<<"The sum of the given series is:"<<res<<endl;
  cout<<"The sum of the given series is:"<<res1<<endl;
  getch();
}
/*****************OUTPUT*****************************
Enter the values for x and n:5 3
The sum of the given series is:156
The sum of the given series is:156
**************************************************/
```

```
/*-------------------------------------------------------------------------------------------
 PROGRAM TITLE:   DISPLAY THE DETAILS OF STUDENT(INHERITANCE)
 PROGRAMMER   :   SHARATH SHETTY B.R.
 OBJECTIVE    :   CREATES TWO CLASSES AND DISPLAYS THE STUDENT
                  DETAILS USING SINGLE LEVEL INHERITANCE.
-------------------------------------------------------------------------------------------*/

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

class student
{
  int reg_num;
  char std_name[25];
public:
  void Get_std_details()
  {
   cout<<"Enter the register number:";
   cin>>reg_num;
   cout<<"Enter the student name   :";
   cin>>std_name;
  }
  void Display_std_details()
  {
   cout<<"Register Number :"<<reg_num<<endl;
   cout<<"Student Name    :"<<std_name<<endl;
  }
};
class marks:public student
{
    int m1,m2,total;
  public:
    void Get_mark_details()
    {
     cout<<"Enter marks in English :";
     cin>>m1;
     cout<<"Enter marks in Kannada :";
     cin>>m2;
    }
    void Calculate()
    {
     total=m1+m2;
    }
    void display_mark_details()
    {
     cout<<"English         : "<<m1<<endl;
     cout<<"Kannada         : "<<m2<<endl;
     cout<<"----------------------"<<endl;
     cout<<"          Total : "<<total;
    }
   };
```

```
void main()
{
  marks M;
  clrscr();
  M.Get_std_details();
  M.Get_mark_details();
  cout<<"******Student Details***********"<<endl;
  M.Display_std_details();
  M.Calculate();
  M.display_mark_details();

  getch();
}


/*****************OUTPUT**********************
Enter the register number:1001
Enter the student name   :sharath
Enter marks in English :99
Enter marks in Kannada :98
******Student Details***********
Register Number :1001
Student Name    :sharath
English         : 99
Kannada         : 98
----------------------
          Total : 197
*********************************************/
```

```
/*-------------------------------------------------------------------------------------------
  PROGRAM TITLE:   DISPLAY THE DETAILS OF STUDENT
  PROGRAMMER  :   SHARATH SHETTY B.R.
  OBJECTIVE       :   CREATES CLASS AND DISPLAYS THE STUDENT
                      DETAILS USING POINTERS
-------------------------------------------------------------------------------------------*/

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

class school
{
  int reg_num;
  char std_name[25];
  float fees;
public:
  void Get_details()
  {
   cout<<"Enter the register number:";
   cin>>reg_num;
   cout<<"Enter the student name   :";
   cin>>std_name;
   cout<<"Enter the fees          :";
   cin>>fees;
  }
  void Display_details()
  {
   cout<<"Register Number  :"<<reg_num<<endl;
   cout<<"Student  Name    :"<<std_name<<endl;
   cout<<"Fees             :"<<fees<<endl;
  }
};
void  main()
{
  school s,*s1;
  clrscr();
  s1=&s;
  s1->Get_details();
  cout<<"******Fees Details**********"<<endl;
  s1->Display_details();
  getch();
}
/*************OUTPUT**************************
 Enter the register number:1001
Enter the student name   :santhosh
Enter the fees          :45670.75
******Fees Details**********
Register Number  :1001
Student  Name    :santhosh
Fees            :45670.75
**********************************************/
```

```
/*-------------------------------------------------------------------------------------------
  PROGRAM TITLE:  PUSH OPERATION ON STACK
  PROGRAMMER   :  SHARATH SHETTY B.R.
  OBJECTIVE        :  INSERTS ELEMENTS TO THE STACK AND
                      DISPLAYS THEM.
-------------------------------------------------------------------------------------------*/
#include<iostream.h>
#include<conio.h>
#include<iomanip.h>
#include<ctype.h>
#define MAX 10
class Stack
{
    int arr[MAX],top,n;
  public:
    Stack();
    void Push(int);
    void Print();
};
Stack::Stack()
{
top =-1;
}
void Stack::Push(int item)
{
   if( top == MAX-1)
     cout<<"Stack is Full";
   top=top+1;
   arr[top]=item;
   cout<<"The item"<<item<<"is pushed into the stack"<<endl;
}
void Stack::Print()
{
  if(top!=-1)
  {
   cout<<"The contents of the stack are"<<endl;
   for(int i=0;i<=top;i++)
     cout<<setw(3)<<arr[i];
     cout<<endl;
  }
  else
  cout<<"The stack is Empty"<<endl;
}
```

```
void main()
{
 Stack S;
 char ch;
 int item;
 clrscr();
 S.Print();
 cout<<endl;
 cout<<"Do you want to push an item(Y/N)? ";
 cin>>ch;
 while(toupper(ch) == 'Y')
 {
   cout<<"Enter the ITEM:";
   cin>>item;
   S.Push(item);
   S.Print();
   cout<<"Do you want to Push another ITEM (Y/N)? ";
   cin>>ch;
 }
}
```

```
/***********************OUTPUT*****************
The stack is Empty

Do you want to push an item(Y/N)? y
Enter the ITEM:10
The item10is pushed into the stack
The contents of the stack are
 10
Do you want to Push another ITEM (Y/N)? y
Enter the ITEM:20
The item20is pushed into the stack
The contents of the stack are
 10 20
Do you want to Push another ITEM (Y/N)? y
Enter the ITEM:30
The item30is pushed into the stack
The contents of the stack are
 10 20 30
Do you want to Push another ITEM (Y/N)? y
Enter the ITEM:40
The item40is pushed into the stack
The contents of the stack are
 10 20 30 40
Do you want to Push another ITEM (Y/N)? n
*************************************************************/
```

```
/*-----------------------------------------------------------------------------------------
  PROGRAM TITLE:   POP OPERATION ON STACK
  PROGRAMMER   :  SHARATH SHETTY B.R.
  OBJECTIVE        :  PUSHES THE ELEMENTS TO THE STACK
                        TILL USER CHOICE IS Y, AND POPS ALL
                         ELEMENTS WHEN CHOICE IS N.
-----------------------------------------------------------------------------------------*/
#include<iostream.h>
#include<conio.h>
#include<iomanip.h>
#include<ctype.h>
#define MAX 10
class Stack
{
    int arr[MAX],top,ctr;
  public:
    Stack();
    void Push(int);
    void Pop();
    int is_Empty();
    void Print();
};
Stack::Stack()
{
top =-1;
}
void Stack::Push(int item)
{
   if( top == MAX-1)
     cout<<"Stack is Full";
   top=top+1;
   arr[top]=item;
   cout<<"The item"<<item<<"is pushed into the stack"<<endl;
}
void Stack::Print()
{
  if(top!=-1)
  {
    cout<<"The contents of the stack are"<<endl;
    for(int i=0;i<=top;i++)
      cout<<setw(3)<<arr[i];
      cout<<endl;
  }
  else
  cout<<"The stack is Empty"<<endl;
}
void Stack::Pop()
{
 if(top == -1)
   cout<<"Stack is empty";
 else
  {
```

```
   int item = arr[top];
   top=top-1;
   cout<<"The element "<<item<<"is removed from the stack"<<endl;
   }
}
int Stack::is_Empty()
{
  if(top == -1)
    return 1;
  else
    return 0;
}

void main()
{
 Stack S;
 char ch;
 int item;
 clrscr();
 S.Print();
 cout<<endl;
 cout<<"Do you want to push an item(Y/N)? ";
 cin>>ch;
 while(toupper(ch) == 'Y')
 {
   cout<<"Enter the ITEM:";
   cin>>item;
   S.Push(item);
   S.Print();
   cout<<"Do you want to Push another ITEM (Y/N)? ";
   cin>>ch;

   if(ch=='N' || ch=='n')
   {
     while(S.is_Empty()!=1)
     {
       S.Pop();
       S.Print();
     }
   }
 }
 getch();
}
```

```
/**********OUTPUT**********************************************
Do you want to push an item(Y/N)? y
Enter the ITEM:2
The item2is pushed into the stack
The contents of the stack are
  2
Do you want to Push another ITEM (Y/N)? y
Enter the ITEM:4
The item4is pushed into the stack
The contents of the stack are
  2  4
Do you want to Push another ITEM (Y/N)? y
Enter the ITEM:6
The item6is pushed into the stack
The contents of the stack are
  2  4  6
Do you want to Push another ITEM (Y/N)? n
The element 6is removed from the stack
The contents of the stack are
  2  4
The element 4is removed from the stack
The contents of the stack are
  2
The element 2is removed from the stack
The stack is Empty
*****************************************************/
```

```
/*-------------------------------------------------------------------------------------------
   PROGRAM TITLE:   ENQUEUE AND DEQUEUE
  PROGRAMMER   :  SHARATH SHETTY B.R.
  OBJECTIVE      :  INSERTS THE ELEMENTS TO THE
                    QUEUE AND DELETES THE ELEMENTS
-------------------------------------------------------------------------------------------*/
#include<iostream.h>
#include<conio.h>
#include<iomanip.h>
#include<ctype.h>
#define MAX 10
class Queue
{
    int arr[MAX],front,rear,count,tot;
  public:
    Queue();
    void Ins_Que(int item);
    int Del_Que();
    int Qsize();
    void display();
};
Queue::Queue()
{
 front=0;
 rear=MAX-1;
 count=0;
}
void Queue::Ins_Que(int item)
{
   rear=(rear+1)%MAX;
   arr[rear]=item;
   cout<<"The item"<<item<<"is inserted into the Queue"<<endl;
   count++;
}
int Queue::Del_Que()
{
 int ele = arr[front];
 front=(front+1)%MAX;
 count--;
 cout<<"The item "<<ele<<" is deleted from the Queue"<<endl;
 return ele;
}
void Queue::display()
{
 if(count>0)
 {
   cout<<"The elements in the Queue are:"<<endl;
   for(int i=front;i<=rear;i++)
      cout<<setw(4)<<arr[i];
   cout<<endl;
 }
}
```

```
int Queue::Qsize()
{
   tot=0;
   for(int i=front;i<=rear;i++)
     tot++;
   return (tot);
}
void main()
{
 Queue Q;
 char ch;
 int item;
 clrscr();
 cout<<"Do you want to insert elements into Queue (Y/N):";
 cin>>ch;
 while(toupper(ch) == 'Y')
 {
        cout<<"Enter the item:";
        cin>>item;
        Q.Ins_Que(item);

        cout<<"Do you want to insert elements into Queue (Y/N):";
        cin>>ch;
        if(ch=='N'||ch=='n')
        {
           Q.display();
           int n=Q.Qsize();
           for(int j=0;j<n;j++)
             Q.Del_Que();
        }
 }

 getch();
}

/***********OUTPUT*********************************
Do you want to insert elements into Queue (Y/N):y
Enter the item:1
The item1is inserted into the Queue
Do you want to insert elements into Queue (Y/N):y
Enter the item:2
The item2is inserted into the Queue
Do you want to insert elements into Queue (Y/N):y
Enter the item:3
The item3is inserted into the Queue
Do you want to insert elements into Queue (Y/N):n
The elements in the Queue are:
  1   2   3
The item 1 is deleted from the Queue
The item 2 is deleted from the Queue
The item 3 is deleted from the Queue
***********************************************/
```

```
/*-----------------------------------------------------------------------------------------
  PROGRAM TITLE:   INSERT A NODE TO LINKED LIST
  PROGRAMMER   :   SHARATH SHETTY B.R.
  OBJECTIVE    :   INSERTS A NEW NODE TO THE LIST
                   USING CLASS AND OBJECTS
-----------------------------------------------------------------------------------------*/
#include<iostream.h>
#include<stdlib.h>
#include<ctype.h>
#include<conio.h>
class Link_List
{
 struct Node
 {
    int data;
    Node *link;
 }*START;
 public:
    Link_List();
    void Insert_End(int);
    void Count_Nodes();
    void Display_List();
};
Link_List::Link_List()
{
 START=NULL;
}
void Link_List::Insert_End(int num)
{
 Node *newNode;
 newNode = new Node;
 newNode->data = num;
 newNode->link = NULL;
 if( START == NULL)
 {
  START = newNode;
  cout<<endl<<num<<" is inserted at the first position"<<endl;
 }
 else
 {
  Node *temp = START;
  while(temp->link != NULL )
      temp = temp->link;
  temp ->link = newNode;
  cout<<endl<<num<< "is inserted to the list"<<endl;
 }
}
```

```
void Link_List::Count_Nodes()
{
  Node *temp;
  int c=0;
  for(temp = START; temp !=NULL;temp=temp->link)
    c++;
 cout<<"The number of nodes in the list :"<<c<<endl;
}

void Link_List::Display_List()
{
 if (START == NULL)
 {
   cout<<"List is empty"<<endl;
   return;
 }
 cout<<"Linked List contains:"<<endl;
 Node *temp = START;
 while(temp != NULL)
 {
  cout<<temp->data<<"  ";
  cout<<endl;
  temp = temp->link;
 }
 cout<<"NULL"<<endl;
}

void main()
{
 Link_List *L = new Link_List();
 clrscr();
 L->Display_List();
 int ele;
 char ch;
 do{
   cout<<"Enter the data field of node:";
   cin>>ele;
   L->Insert_End(ele);
   cout<<"Do you wish to enter another node Y/N:";
   cin>>ch;
 }while(toupper(ch)=='Y');
 L->Display_List();
 L->Count_Nodes();
 getch();
}
```

```
/***************OUTPUT*****************************
List is empty
Enter the data field of node:6

6 is inserted at the first position
Do you wish to enter another node Y/N:y
Enter the data field of node:66

66is inserted to the list
Do you wish to enter another node Y/N:y
Enter the data field of node:666

666is inserted to the list
Do you wish to enter another node Y/N:n
Linked List contains:
6
66
666
NULL
The number of nodes in the list :3
************************************************************/
```