```
/*****************************************************************************/
/*************************Name:- Divesh Uttamchandani*************************/
/*************************Class :- XII  A                 *********************/
/*************************Date  :- 07 July 2014           *********************/
/*************************Q-1)  :- Complex Numbers        *********************/
/*****************************************************************************/

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

//////////////////////////////////////////// Declaration & Definition of Class ////////////////////////////////////////////
class complex
{
private:
  float   r;
  float   i;

public:
  void   enter    ();
  void   display ();

  void   add_e  (complex c1,complex c2);
  complex       add_i   (complex c);

  void   mul_e  (complex c1,complex c2);
  complex       mul_i   (complex temp);

  void   sub_e  (complex c1,complex c2);
  complex       sub_i   (complex temp);
};


//_____________________________________________________________________________//
void complex::enter()
{
 cout<<"Enter Real Part\t\t";      cin>>r;
 cout<<"Enter Imaginary Part\t"; cin>>i;
}
//.............................................................................//
void complex::display()
{
 cout<<r;
 if(i>=0)cout<<"+";
 cout <<i<<"i";
}
//_____________________________________________________________________________//
```

```
//_____________________________________________________________________________//
void complex::add_e(complex c1,complex c2)
{
   r=c1.r+c2.r;
   i=c1.i+c2.i;
}
//.....//
complex complex::add_i(complex c)
{
 complex temp;
 temp.r=r+c.r;
 temp.i=i+c.i;
 return temp;
}
//_____________________________________________________________________________//
void complex::mul_e(complex c1,complex c2)
{
   r=c1.r*c2.r-c1.i*c2.i;
   i=c1.r*c2.i+c1.i*c2.r;
}
//.....//
complex complex::mul_i(complex c)
{
 complex temp;
 temp.r=r*c.r-i*c.i;
 temp.i=r*c.i+i*c.r;
 return temp;
}
//_____________________________________________________________________________//
void complex::sub_e(complex c1,complex c2)
{
   r=c1.r-c2.r;
   i=c1.i-c2.i;
}
//.....//
complex complex::sub_i(complex c)
{
 complex temp;
 temp.r=r-c.r;
 temp.i=i-c.i;
 return temp;
}
//_____________________________________________________________________________//
////////////////////////////////////////////////  End Of Class Defination ////////////////////////////////////////////////////////
```

```
//*********************************Void Main()*********************************//
void main()
{
  clrscr();
  int ch;
  complex c1,c2,r;

  cout<<"Enter First Number\n";            c1.enter();
  cout<<"\nEnter Second Number\n";      c2.enter();

  do
  {
   cout<<"\n\nMain Menu\n"
            <<"\n1)\tAdd"
            <<"\n2)\tMultiply"
            <<"\n3)\tSubtract"
            <<"\n4)\tExit"
            <<"\n\nEnter Choice...";    cin>>ch;
     switch(ch)
     {
     case 1:
          r.add_e(c1,c2);          //explicit call
          r.display();
          cout<<"\n";
          r=c1.add_i(c2);          //implicit call
          r.display();
          break;
     case 2:
          r.mul_e(c1,c2);          //explicit call
          r.display();
          cout<<"\n";
          r=c1.mul_i(c2);          //implicit call
          r.display();
          break;
     case 3:
          r.sub_e(c1,c2);          //explicit call
          r.display();
          cout<<"\n";
          r=c1.sub_i(c2);          //implicit call
          r.display();
          break;
     case 4:
          exit(0);
          break;
     default:
          cout<<"Invalid Choice";
     }
  cout<<"\n\nPress 'Y' to Continue...";
  }while(toupper(getche())=='Y');
}
//*********************************End Of Main*********************************//
```

OUTPUT

```
Enter First Number
Enter Real Part          3
Enter Imaginary Part     4

Enter Second Number
Enter Real Part          7
Enter Imaginary Part     3


Main Menu

1)      Add
2)      Multiply
3)      Subtract
4)      Exit

Enter Choice...1
10+7i
10+7i

Press 'Y' to Continue...y

Main Menu

1)      Add
2)      Multiply
3)      Subtract
4)      Exit

Enter Choice...2
9+37i
9+37i

Press 'Y' to Continue...y
Main Menu

1)      Add
2)      Multiply
3)      Subtract
4)      Exit

Enter Choice...3
-4+1i
-4+1i

Press 'Y' to Continue...n
```