//SE 47(Complex Number)

#include<iostream>

using namespace std;

class complex

{

int x,y;

public:

complex()

{

x=0;

y=0;

}

friend void operator >>(complex &u,complex &v)

{

cout<<"Please enter the real value for first no. (x1) => "<<endl;

cin>>u.x;

cout<<"Enter the imaginary value of the first no. (y1)"<<endl;

cin>>u.y;

cout<<"Please enter the real value for second no. (x2) => "<<endl;

cin>>v.x;

cout<<"Enter the imaginary value of the second no. (y2)"<<endl;

cin>>v.y;

}

friend void operator <<(complex &u,complex &v)

{

cout<<"First complex no is => "<<u.x<<"+"<<u.y<<"i"<<endl;

cout<<"Second complex no is => "<<v.x<<"+"<<v.y<<"i"<<endl;

}

friend void operator +(complex &u,complex &v)

{

complex add;

add.x=u.x+v.x;

add.y=u.y+v.y;

if(add.y>0)

cout<<"addition of the given complex nos. is => "<<add.x<<"+"<<add.y<<"i"<<endl;

else

cout<<"addition of the given complex nos. is => "<<add.x<<(-1)\*add.y<<"-i"<<endl;

}

friend void operator-(complex &c1,complex &c2)

{complex c;

c.x=c1.x-c2.x;

c.y=c1.y-c2.y;

cout<<"Subtraction of two complex numbers is "<<c.x<<"+"<<c.y<<"i"<<endl;

}

friend void operator \*(complex &u,complex &v)

{

complex mul;

mul.x=(u.x\*v.x)-(u.y\*v.y);

mul.y =(u.x\*v.y)+(v.x\*u.y);

if(mul.y>0)

cout<<"Multiplication of the given complex nos. is => "<<mul.x<<"+"<<mul.y<<"i"<<endl;

else

cout<<"Multiplication of the given complex nos. is => "<<mul.x<<(-1)\*mul.y<<"-i"<<endl;

}

};

int main()

{char ch;

char des;

complex s1,s2;

operator >>(s1,s2);

operator <<(s1,s2);

do

{

cout<<"Choose the operation to be performed=> "<<endl;

cout<<"(+)addition"<<endl;

cout<<"(-)subtraction"<<endl;

cout<<"(\*)Multiplication"<<endl;

cin>>ch;

switch(ch)

{

case '+':

s1+s2;

break;

case '-':

s1-s2;

break;

case '\*':

s1\*s2;

break;

default:

cout<<"Invalid Operation"<<endl;

}

cout<<"Do you Wish To Perform Operation Again ? => (Y/N)";

cin>>des;

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

}

OUTPUT:

Please enter the real value for first no. (x1) =>

1

Enter the imaginary value of the first no. (y1)

2

Please enter the real value for second no. (x2) =>

3

Enter the imaginary value of the second no. (y2)

4

First complex no is => 1+2i

Second complex no is => 3+4i

Choose the operation to be performed=>

(+)addition

(-)subtraction

(\*)Multiplication

-

Subtraction of two complex numbers is -2+-2i

Do you Wish To Perform Operation Again ? => (Y/N)y

Choose the operation to be performed=>

(+)addition

(-)subtraction

(\*)Multiplication

+

addition of the given complex nos. is => 4+6i

Do you Wish To Perform Operation Again ? => (Y/N)y

Choose the operation to be performed=>

(+)addition

(-)subtraction

(\*)Multiplication

\*

Multiplication of the given complex nos. is => -5+10i

Do you Wish To Perform Operation Again ? => (Y/N)n