

PROGRAM –TO ACCEPT TWO COMPLEX NUMBERS BY USER AND PERFORMING ADDITION , SUBTRACTION, MULTIPLICATION USING OVERLOADING OF INSERTION , EXTRACTION , +, -, X OPERATORS AND DISPLAY THE RESULT.

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//ADDITION , SUBTRACTION AND MULTIPLICATION OF TWO COMPLEX NUMBERS

```
#include<iostream>
```

```
using namespace std;
```

```
class complex
```

```
{
```

```
    float real;
```

```
    float imag;
```

```
    public:
```

```
    //OVERLOADING OF INSERTION AND EXTRACTION OPERATORS
```

```
    friend ostream & operator << (ostream &out, const complex &o);
```

```
    friend istream & operator >> (istream &in, complex &o);
```

```
    //OVERLOADING OF MULTIPLICATION OPERATOR
```

```
    complex operator*(complex c)
```

```
{
```

```
        //(a+ib)(c+id)=(ac-bd)+i(ad+bc)
```

```
        float real1,real2;
```

```
        real1=real;
```

```
        real2=c.real;
```

```
        //VALUE FOR COMPLEX NUMBER 3 AFTER MULTIPLICATION OF COMPLEX NO.1  
AND COMPLEX NO.2
```

```
        real=(real*c.real)-(imag*c.imag);
```

```
        imag=(real1*c.imag)+(imag*real2);
```

```
        complex obj;
```

```
        obj.real=real;
```

```
        obj.imag=imag;
```

```
        return obj;
```

```
}
```

```
    //OVERLOADING OF + OPERATOR
```

```
    complex operator+(complex c)
```

```
{
```

```
        //(a+ib)+(c+id)=(a+c)+i(d+b)
```

//VALUE FOR COMPLEX NUMBER 3 AFTER ADDITION OF COMPLEX NO.1 AND
COMPLEX NO.2

```
real=real+c.real;
imag=c.imag+imag;
complex obj;
obj.real=real;
obj.imag=imag;
return obj;
```

```
}
```

//OVERLOADING OF - OPERATOR

complex operator-(complex c)

```
{
```

```
    //(a+ib)-(c+id)=(a-c)+i(b-d)
```

//VALUE FOR COMPLEX NUMBER 3 AFTER SUBTRACTION OF COMPLEX NO.1
AND COMPLEX NO.2

```
real=real-c.real;
imag=imag-c.imag;
complex obj;
obj.real=real;
obj.imag=imag;
return obj;
```

```
}
```

```
};
```

ostream & operator << (ostream &out, const complex &o)

```
{
```

```
    out << "\ncomplex number : " <<o.real << "+ i" << o.imag;
```

```
    return out;
```

```
}
```

istream & operator >> (istream &in, complex &o)

```
{
```

```
    in >> o.real;
```

```
    in >> o.imag ;
```

```
    return in;
```

```
}
```

```

int main()
{
    complex o1, o2, o3, a1, a2, b1, b2;

    cout<<"\nENTER VALUE FOR REAL AND IMAGINARY PART OF COMPLEX NUMBER 1
(a+ib)- "<<endl;

    cin>>o1;

    cout<<o1;

    cout<<"\nENTER VALUE FOR REAL AND IMAGINARY PART OF COMPLEX NUMBER 2
(a+ib)- "<<endl;

    cin>>o2;

    cout<<o2;

    a1=o1;
    a2=o2;
    b1=o1;
    b2=o2;

    cout<<"\nTHE TWO COMPLEX NUMBERS ARE MULTIPLIED AND RESULT IS - "<<endl;
    o3=o1*o2;

    cout<<o3;

    cout<<"\nTHE TWO COMPLEX NUMBERS ARE ADDED AND RESULT IS - "<<endl;
    o3=a1+a2;

    cout<<o3;

    cout<<"\nTHE TWO COMPLEX NUMBERS ARE SUBTRACTED AND RESULT IS - "<<endl;
    o3=b1-b2;

    cout<<o3;

    return 0;
}

```

ENTER VALUE FOR REAL AND IMAGINARY PART OF COMPLEX NUMBER 1 (a+ib)-
2 3

complex number : $2 + i3$

ENTER VALUE FOR REAL AND IMAGINARY PART OF COMPLEX NUMBER 2 (a+ib)-
4 5

complex number : $4 + i5$

THE TWO COMPLEX NUMBERS ARE MULTIPLIED AND RESULT IS -

complex number : $-7 + i22$

THE TWO COMPLEX NUMBERS ARE ADDED AND RESULT IS -

complex number : $6 + i8$

THE TWO COMPLEX NUMBERS ARE SUBTRACTED AND RESULT IS -

complex number : $-2 + i-2$

Process exited after 7.652 seconds with return value 0

Press any key to continue . . .