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**OBJECT ORIENTED PROGRAMMING LABORATORY**
**LAB ASSIGNMENT 1**

Problem Statement:
Implement a class Complex which represents the Complex Number data type. Implement the following operations:
1. A constructor (including a default constructor which creates the complex number 0+0i).
2. Overloaded operator+ to add two complex numbers.
3. Overloaded operator* to multiply two complex numbers.
4. Overloaded << and >> to print and read Complex Numbers.

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**Main Program**

```
#include<iostream>
using namespace std;
class complex
{
	float x;
	float y;

	public:
	complex()
	{
		x=0;
		y=0;
	}

	complex operator+(complex);
	complex operator*(complex);
	friend istream &operator>>(istream &input, complex &t)
	{
		cout<<"Enter the REAL part: \n";
		input>>t.x;
		cout<<"Enter the IMAGINARY part: \n";
		input>>t.y;
	}
	friend ostream &operator<<(ostream &output, complex &t)
	{
		output<<t.x<<"+"<<t.y<<"i"<<endl;
	}
};

	complex complex::operator+(complex c)
	{
		complex temp;
		temp.x=x+c.x;
		temp.y=y+c.y;

		return (temp);
```

```
        }

        complex complex::operator*(complex c1)
        {
                complex temp2;
                temp2.x=(x*c1.x)-(y*c1.y);
                temp2.y=(x*c1.y)+(y*c1.x);

                return (temp2);
        }

int main()
{
        complex c1,c2,c3,c4;

        cout<<"Default constructor value is: \n";
        cout<<c1;
        cout<<"Enter the first number: \n";
        cin>>c1;
        cout<<"Enter the second number: \n";
        cin>>c2;
        c3=c1+c2;
        c4=c1*c2;
        cout<<"The first number is: "<<c1<<endl;
        cout<<"The second number is: "<<c2<<endl;
        cout<<"The Addition is: "<<c3<<endl;
        cout<<"The Multiplication is: "<<c4<<endl;

        return 0;
}
```

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**OUTPUT:**

```
Default constructor value is:
0+0i

Enter the first number:
Enter the REAL part:
2
Enter the IMAGINARY part:
3

Enter the second number:
Enter the REAL part:
4
Enter the IMAGINARY part:
5

The first number is: 2+3i

The second number is: 4+5i
```

The Addition is: 6+8i

The Multiplication is: -7+22i