**************************************Assignment No1********************************

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Implement a class Complex which represents the Complex Number data type.
Implement the following operations:
1. 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.

```
#include<iostream>
using namespace std;

class Complex {
public:
   float x;
   float y;

   Complex()
   {
      x = 0;
      y = 0;
   }

   friend istream& operator>>(istream&, Complex&);
   friend ostream& operator<<(ostream&, const Complex&);
   Complex operator+(const Complex&);
   Complex operator*(const Complex&);
};

Complex Complex::operator+(const Complex& c)
{
   Complex add;
   add.x = x + c.x;
   add.y = y + c.y;
   return add;
}

Complex Complex::operator*(const Complex& c)
{
   Complex mul;
   mul.x = (x * c.x) - (y * c.y);
```

```
    mul.y = (y * c.x) + (x * c.y);
    return mul;
}

istream& operator>>(istream& in, Complex& t)
{
    cout << "\n Enter the Real Part: ";
    in >> t.x;
    cout << " Enter the Imaginary Part: ";
    in >> t.y;
    return in;
}

ostream& operator<<(ostream& out, const Complex& t)
{
    out << t.x;
    if (t.y >= 0)
        out << " + " << t.y << "i";
    else
        out << " - " << -t.y << "i";
    return out;
}

int main()
{
    Complex c1, c2, c3, c4;
    cout << "\n Default Constructor: ";
    cout << c1;
    cout << "\n Enter 1st complex number: ";
    cin>>c1;
    cout<<"\n Enter 2nd complex number:";
  cin>>c2;
  cout<<"\n 1st Complex Number:"<<c1;
  cout<<"\n 2nd Complex number:"<<c2;
   c3=c1+c2;
  cout<<"\n Addition of two complex number:"<<c3;
  c4=c1*c2;
  cout<<"\n Multiplication of two complex     number:"<<c4;
return 0;
}
```

Output:

Assignment1.cpp
~/srushti oop practicals

Assignment4.cpp | Assignment1.cpp | Assignment5.cpp

```cpp
#include<iostream>
using namespace std;
class complex
{
    float x;
    float y;
    public :
           complex()
           {
              x=0;
              y=0;
           }
            friend istream &operator>>(istream & , complex &);
            friend ostream &operator<<(ostream & , complex &);
            complex operator+(complex &);
            complex operator*(complex &);

};
complex complex::operator+(complex &c)
{
     complex add;
     add.x=x+c.x;
     add.y=y+c.y;
     return add;
}
complex complex::operator*(complex &c)
{
```

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```
(base) stes@stes:~/srushti oop practicals$ g++ Assignment1.cpp -o Assignment1
(base) stes@stes:~/srushti oop practicals$
(base) stes@stes:~/srushti oop practicals$ ./Assignment1

 Default Constructor: 0 + 0i
 Enter 1st complex number:
 Enter the Real Part: 2
 Enter the Imaginary Part: 3

 Enter 2nd complex number:
 Enter the Real Part: 4
 Enter the Imaginary Part: 5

 1st Complex Number:2 + 3i
 2nd Complex number:4 + 5i
 Addition of two complex number:6 + 8i
 Multiplication of two complex     number:-7 + 22i(base) stes@stes:~/srushti oop practicals$
```