**ASSIGNMENT NUMBER 2**

**STATEMENT**: 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.

**AIM**: To add and multiply two complex numbers using operator overloading.

**DESCRIPTION**: Create a class ‘Complex’ which consists of a constructor and a default constructor which creates the complex number. In this class, overload the respective operators to add, multiply, read and print the complex numbers.

Source Code:

#include<iostream>

using namespace std;

class complex

{

float r,i;

public:

complex() //Default Constructor

{

r=0;

i=0;

}

complex operator+(complex);

complex operator\*(complex);

friend istream &operator >>(istream &input,complex &t) //Constructor for taking user input & for creating values entered as input

{

cout<<"Enter the real part:";

input>>t.r;

cout<<"Enter the imaginary part:";

input>>t.i;

}

friend ostream &operator <<(ostream &output,complex &t)

{

output<<t.r<<"+"<<t.i<<"i\n";

}

};

complex complex::operator+(complex c) // + Operator Overloading

{

complex temp;

temp.r=r+c.r;

temp.i=i+c.i;

return(temp);

}

complex complex::operator\*(complex c) // \* Operator Overloading

{

complex temp2;

temp2.r=(r\*c.r)-(i\*c.i);

temp2.i=(i\*c.r)+(r\*c.i);

return (temp2);

}

int main()

{

complex c1,c2,c3,c4;

cout<<"Default constructor value =\n";

cout<<c1;

cout<<"\nFor 1st number\n";

cin>>c1;

cout<<"\nFor 2nd number\n";

cin>>c2;

c3=c1+c2;

c4=c1\*c2;

cout<<"\nThe first number is: ";

cout<<c1;

cout<<"\nThe second number is: ";

cout<<c2;

cout<<"\nThe addition of complex numbers is : ";

cout<<c3;

cout<<"\nThe multiplication of complex numbers is: ";

cout<<c4;

return 0;

}

**OOP CONCEPT USED**:

1. **Default constructor**-:A defaultconstructor is a constructor that either has no parameters, or if it has parameters, all the parameters have default values.
2. **Operator overloading**-:Operator overloading is a compile-time polymorphism in which the operator is overloaded to provide the special meaning to the user-defined data type. Operator overloading is used to overload or redefines most of the operators available in C++. It is used to perform the operation on the user-defined data type. **3.CONCLUSION**: In this assignment, we learned and implemented the concept of operator overloading to add and multiply two complex numbers.