Practical No - 01 (Group A)

Name: Atharva Bipin Iparkar   Date : 30/09/2024

Roll No: S211045

Div: A

Batch: A2

Problem Statement :

Implement a class Complex which represents the complex number. Implement the following : 1. Consider (including default constructor which creates a 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.

Program code :

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

class Complex {
private:    float
x, y; public:
Complex() {
    x = 0;
y = 0;
   }
   Complex operator+(Complex);
Complex operator*(Complex);

   friend istream &operator>>(istream &input, Complex &t) {
input >> t.x;       input >> t.y;       return input;
   }

   friend ostream &operator<<(ostream &output, Complex &t) {
output << t.x << "+" << t.y << "i \n";       return output;
   }
```

```cpp
};

Complex Complex::operator+(Complex c) {
Complex temp;    temp.x = x + c.x;
temp.y = y + c.y;    return temp;
}

Complex Complex::operator*(Complex c) {
Complex temp2;    temp2.x = (x * c.x) - (y
* c.y);    temp2.y = (x * c.y) + (y * c.x);
return temp2;
}

int main() {    Complex c1, c2, c3, c4;    cout <<
"Constructor is : " << c1 << endl;    cout <<
"Enter 1st number : " << endl;    cin >> c1;    cout
<< "Enter 2nd number : " << endl;    cin >> c2;
c3 = c1 + c2;    c4 = c1 * c2;    cout << "The 1st
number is : " << c1 << endl;    cout << "The 2nd
number is : " << c2 << endl;    cout << "The
Addition is : " << c3 << endl;    cout << "The
multiplication is : " << c4 << endl;    return 0;
}
```

Output :

```
user@user-VirtualBox:~/S211045_Atharva$ gedit complex.cpp
user@user-VirtualBox:~/S211045_Atharva$ g++ complex.cpp -o c
user@user-VirtualBox:~/S211045_Atharva$ ./c
Constructor is : 0+0i

Enter 1st number :
8
4
Enter 2nd number :
5
6
The 1st number is : 8+4i

The 2nd number is : 5+6i

The Addition is : 13+10i

The multiplication is : 16+68i

user@user-VirtualBox:~/S211045_Atharva$
```