EXPERIMENT 6

Aim :

Write a program to define a class Complex to represent set of all complex numbers. Overload '+' operator to add two complex numbers using member function of the class. Overload '*' operator to multiply two complex numbers using friend function of the class.

Code :

```
#include <iostream>
#include <cmath>
using namespace std;
class complex
{
private:
    float real;
    float img;
public:
    void getdata();
    void display();
    complex()
    { real = img = 0; }
    complex operator+(complex c1);
    friend complex operator*(complex c1, complex c2);
};
void complex::display()
{
    cout << "(" << real << ")"
         << "+"
         << "(" << img << ")"
         << "i";
}
void complex::getdata()
{
    cout << "\nEnter the Real and Img part of Complex Number\n";
    cout << "Real : ";
    cin >> real;
    cout << "Img : ";
    cin >> img;
}
complex complex::operator+(complex c1)
{
    complex add;
    add.real = real + c1.real;
    add.img = img + c1.img;
    return (add);
}
```

```
complex operator*(complex c1, complex c2)
{
    complex mul;
    mul.real = (c1.real * c2.real) - (c1.img * c2.img);
    mul.img = (c1.real * c2.img) + (c1.img * c2.real);
    return (mul);
}

int main()
{
    complex a, b, c;
    int opt;
    a.getdata();
    b.getdata();
    cout << "\n\t\t---Main Menu---\n\t1.Addition\n\t2.Multiplication";
    cout << "\n\t3.Exit\nEnter your choice---> ";
    cin >> opt;

    switch (opt)
    {
    case 1:
        c = a + b;
        cout << "\nResult : ";
        a.display();
        cout << " + ";
        b.display();
        cout << " = ";
        c.display();
        break;
    case 2:
        c = a * b;
        cout << "\nResult : ";
        a.display();
        cout << " * ";
        b.display();
        cout << " = ";
        c.display();
        break;
    case 3:
        return 0;
    default:
        cout << "\nInvalid choice\n";
        break;
    }

    return 0;
}
```

Output Screenshot :