Assignment-4

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Batch - C

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

class Complex {
    float real, imag;

public:
    //Default constructor
    Complex() {
        real = 0;
        imag = 0;
    }

    //Parameterized constructor
    Complex(float r, float i) {
        real = r;
        imag = i;
    }

    //Copy constructor
    Complex(const Complex &c) {
        real = c.real;
        imag = c.imag;
    }

    //Input function
    void input() {
        cout << "Enter real part: ";
        cin >> real;
        cout << "Enter imaginary part: ";
        cin >> imag;
```

```
    }

    //Display function
    void display() const {
        cout << real << " + " << imag << "i";
    }

    //Operator + (member function)
    Complex operator+(const Complex &c) {
        return Complex(real + c.real, imag + c.imag);
    }

    //Operator * (friend function)
    friend Complex operator*(const Complex &c1, const Complex &c2);
};

//Multiplication using friend function
Complex operator*(const Complex &c1, const Complex &c2) {
    return Complex((c1.real * c2.real - c1.imag * c2.imag),
                   (c1.real * c2.imag + c1.imag * c2.real));
}


int main() {
    Complex c1, c2, result;
    int choice;

    cout << "Enter first complex number:\n";
    c1.input();
    cout << "Enter second complex number:\n";
    c2.input();

    do {
        cout << "1. Addition\n";
        cout << "2. Multiplication\n";
        cout << "3. Display Numbers\n";
        cout << "4. Exit\n";
```

```
    cout << "Enter your choice: ";
    cin >> choice;

    switch (choice) {
    case 1:
        result = c1 + c2;
        cout << "Result of Addition = ";
        result.display();
        cout << endl;
        break;

    case 2:
        result = c1 * c2;
        cout << "Result of Multiplication = ";
        result.display();
        cout << endl;
        break;

    case 3:
        cout << "First Complex Number: ";
        c1.display();
        cout << endl;
        cout << "Second Complex Number: ";
        c2.display();
        cout << endl;
        break;

    case 4:
        cout << "Exiting program.\n";
        break;

    default:
        cout << "Invalid choice! Try again.\n";
    }
} while (choice != 4);

return 0;
```

}

OUTPUT:-

```
Enter first complex number:
Enter real part: 2
Enter imaginary part: 2
Enter second complex number:
Enter real part: 4
Enter imaginary part: 4
1. Addition
2. Multiplication
3. Display Numbers
4. Exit
Enter your choice: 1
Result of Addition = 6 + 6i
1. Addition
2. Multiplication
3. Display Numbers
4. Exit
Enter your choice: 2
Result of Multiplication = 0 + 16i
1. Addition
2. Multiplication
3. Display Numbers
4. Exit
Enter your choice: 3
First Complex Number: 2 + 2i
Second Complex Number: 4 + 4i
1. Addition
2. Multiplication
3. Display Numbers
4. Exit
Enter your choice: 5
Invalid choice! Try again.
1. Addition
2. Multiplication
3. Display Numbers
```

4. Exit
Enter your choice: 4
Exiting program.