* Object Oriented Programming (OOP) - Practical Number - 3 (Group - A)

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Title :-

Arithmetic operations on complex number using operator overloading.

Objective :-

1. To understand operator overloading overloading, constructor and data hiding.
2. To demonstrate overloading of binary operator, insertion and extraction operator.

Problem Statement :-

Implement a class complex which represent the complex Number data type. Implement the following operations :-

1. Constructor
2. Overload operator + to add two complex number.
3. Overload operator * to multiply two complex number.
4. Overload << and >> to print and read complex number.

Outcomes :-

1) Student will be able to demonstrate use of constructor.

2) Student will be able to demonstrate binary operator overloading.
3) Student will be able to demonstrate Overloading of Insertion and extraction operator using friend function.

Hardware requirement:-
Any CPU with Pentium Processor or similar, 256 MB RAM or more, 1GB Hard Disk or more.

Software requirement:-
64 bit Linux/ Windows Operating System, G++ compiler.

Prerequisite:-
Object Oriented Concepts.

Theory:-
Operator Overloading-
To define an additional task to an operator, we must specify what it means in relation to class to which the operator is applied. This is done with the help of a special functions, called operator function.

Unary Operator OverLoading-
The unary operators operate on a single operand and following are example of unary operators:-
1) Increament (++)
2) Decreament (--)
3) Unary minus (-)
4) Logical not (!)

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Binary Operator Overloading -

In overloading binary operator, a friend function will have arguments, while a member function will have one argument

Rules for overloading operators :-

1) Only existing operators can be overloaded. New cant be.

2) The overloaded operator must have at least one operand that is of user defined type.

3) Overloaded operators follow the syntax rules of the original operators. They cannot be overridden.

4) Binary operators overloaded through a member function take one explicit argument and those which are overloaded through a friend function takes two explicit arguments.

5) When using binary operators overload through a member function, the left hand operand must be an object of the relevant class.

Algorithm :-

1) Define class for complex number containing real and imaginary part.
2) Accept 2 complex number from user.
3) Display the menu.
4) Choose the operation on complex numbers.
5) Display the result.

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Test case:-

Enter real and img. part of 1st complex number :-
4 5
Enter real and img part of 2nd complex number :-
6 7.

1) Addition
2) Subtraction
3) Multiplication
4) Division
5) Exit.
Enter your choice:- 1.

Addition of complex numbers are :- 10+12i.

Enter your choic:- 3.

Multiplication of complex numbers are :- - 11 + 58i.

Enter your choise:- 5.

Thank You.

Conclusion:-

Here we have studied used and demonstrated use of binary operator overloading and insertion extraction operator overloding using friend function.