**NAME : MANGESH A. GHADWAJE**

**ROLL NO:24**

**BATCH : B2**

**COURSE: OOPs PRACTICAL**

**Assginment No. 3**

**Problem Statment:** Design a class ‘Complex ‘with data members for real and imaginary part.

Provide default and parameterized constructors. Write a program to perform

arithmetic operations of two complex numbers using operator overloading.

i. Addition and subtraction using friend functions

ii. Multiplication and division using member functions.

**CODE:**

#include<iostream>

using namespace std;

class Complex

{

private:

float real,img;

public:

Complex()

{

real=0;

img=0;

}

void accept()

{

cout<<"Enter the complex number:"<<"\n";

cout<<"Real:";

cin>>real;

cout<<"Imaginary:";

cin>>img;

}

void display()

{

cout<<"complex number is:";

cout<<real<<"+"<<img<<"i"<<"\n";

}

Complex(float a,float b)

{

real=a;

img=b;

}

friend Complex operator +(Complex c1,Complex c2)

{

c1.real=c1.real+c2.real;

c1.img=c1.img+c2.img;

return c1;

}

friend Complex operator -(Complex c1,Complex c2)

{

c1.real=c1.real-c2.real;

c1.img=c1.img-c2.img;

return c1;

}

Complex operator \*(Complex c2);

Complex operator /(Complex c2);

};

Complex Complex::operator \*(Complex c2)

{

Complex c3;

c3.real=(real\*c2.real)-(img\*c2.img);

c3.img=(real\*c2.img)+(img\*c2.real);

return c3;

}

Complex Complex::operator /(Complex c2)

{

Complex c3;

c3.real=((real\*c2.real)+(img\*c2.img))/((c2.real\*c2.real)+(c2.img\*c2.img));

c3.img=((real\*c2.img)+(img\*c2.real))/((c2.real\*c2.real)+(c2.img\*c2.img));

return c3;

}

int main()

{

int ch;

Complex c3;

Complex c4(4,5);

Complex c5;

c5.accept();

cout<<"1st";

c4.display();

cout<<"\n";

cout<<"2nd";

c5.display();

cout<<"\n";

do

{

cout<<"\n"<<"Enter your choice:";

cout<<"\n1.Addition"<<"\n"<<"2.Substraction"<<"\n"<<"3.Multiplication"<<"\n"<<"4.Division"<<"\n5.Exit"<<"\n";

cin>>ch;

switch(ch)

{

case 1: cout<<"Addition:";

//c3=c4+c5;

c3=operator+(c4,c5);

c3.display();

cout<<"\n";

break;

case 2: cout<<"Substraction:";

// c3=c4-c5;

c3=operator-(c4,c5);

c3.display();

cout<<"\n";

break;

case 3: cout<<"Multication:";

c3=c4\*c5;

//c3=c4.operator\*(c5);

c3.display();

cout<<"\n";

break;

case 4: cout<<"Division:";

// c3=c4/c5;

c3=c4.operator/(c5);

c3.display();

cout<<"\n";

break;

case 5:

break;

default:

cout<<"enter invalid choice";

}

}while(ch<=4);

return 0;

}

**OUTPUT:**

Enter the complex number:

Real:2

Imaginary:5

1stcomplex number is:4+5i

2ndcomplex number is:2+5i

Enter your choice:

1.Addition

2.Substraction

3.Multiplication

4.Division

5.Exit

1

Addition:complex number is:6+10i

Enter your choice:

1.Addition

2.Substraction

3.Multiplication

4.Division

5.Exit

2

Substraction:complex number is:2+0i

Enter your choice:

1.Addition

2.Substraction

3.Multiplication

4.Division

5.Exit

3

Multication:complex number is:-17+30i

Enter your choice:

1.Addition

2.Substraction

3.Multiplication

4.Division

5.Exit

4

Division:complex number is:1.13793+1.03448i

Enter your choice:

1.Addition

2.Substraction

3.Multiplication

4.Division

5.Exit

5