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Batch : A Experiment no.: 02

Title : C++ program for Complex Number Arithmetic using Operator Overloading

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**//Program:** #include<iostream> #include<math.h> using namespace std; class complex

{

public: int real,imag;

complex()

{

int r=0,i=0; real=r; imag=i;

}

friend istream & operator >>(istream &,complex &);

friend ostream & operator <<(ostream &,const complex &); friend void operator +(complex &,complex &);

friend void operator -(complex &,complex &); friend void operator \*(complex &,complex &); friend void operator /(complex &,complex &);

};

istream & operator >>(istream &in,complex &c)

{

cout<<"Real part= "; in>>c.real; cout<<"Imaginary part= "; in>>c.imag;

}

ostream & operator <<(ostream &out,const complex &c)

{

out<<c.real; out<<"+i"<<"("<<c.imag<<")"<<endl;

}

void operator +(complex &c1,complex &c2)

{

int real,imag; real=c1.real+c2.real; imag=c1.imag+c2.imag;

cout<<"Addition of two complex obj= "<<real<<"+i"<<imag<<endl;

}

void operator -(complex&c1,complex&c2)

{

int real,imag,x; real=c1.real-c2.real; imag=c1.imag-c2.imag;

cout<<"Subtration of two complex objects.= "; cout<<real<<"+i"<<"("<<imag<<")"<<endl;

}

void operator \*(complex &c1,complex &c2)

{

int mul; mul=c1.real\*c2.real+c1.real\*c2.imag+c1.imag\*c2.real+c1.imag\*c2.imag; cout<<"Multiplication of two complex objects=

"<<c1.real\*c2.real<<"+i"<<"("<<c1.real\*c2.imag<<")"<<"+i"<<"("<<c1.imag\*c2.real<<"

)"<<"+"<<c1.imag\*c2.imag<<endl;

}

void operator /(complex &c1,complex &c2)

{

float div\_real; float div\_imag;

div\_real=(c1.real\*c2.real+c1.imag\*c2.imag)/(pow(c2.real,2)+pow(c2.imag,2)); div\_imag=(c1.imag\*c2.real-c1.real\*c2.imag)/(pow(c2.real,2)+pow(c2.imag,2));

cout<<"Division of two complex obj.= ("<<div\_real<<")+("<<div\_imag<<")i"<<endl;

}

int main()

{

complex c1; cin>>c1;

cout<<"the complex object = "; cout<<c1;

complex c2; cin>>c2;

cout<<"the complex object = "; cout<<c2;

int ch; while(1)

{

cout<<"1.ADDITION OF COMPLEX NO."<<endl; cout<<"2.SUBTRACTION OF COMPLEX NO."<<endl; cout<<"3.MULTIPLICATION OF COMPLEX NO."<<endl; cout<<"4.DIVISION OF COMPLEX NO."<<endl;

cout<<"Enter Your Choice"<<endl; cin>>ch;

switch(ch)

{

case 1:c1+c2; break;

case 2:c1-c2; break;

case 3:c1\*c2; break;

case 4:c1/c2; break;

}

}

}

/\*

**OUTPUT:**

Real part= -3

Imaginary part= 5

the complex object = -3+i(5) Real part= -3

Imaginary part= 1

the complex object = -3+i(1) 1.ADDITION OF COMPLEX NO.

1. SUBTRACTION OF COMPLEX NO.
2. MULTIPLICATION OF COMPLEX NO.
3. DIVISION OF COMPLEX NO.

Enter Your Choice 1

Addition of two complex obj= -6+i6 1.ADDITION OF COMPLEX NO.

1. SUBTRACTION OF COMPLEX NO.
2. MULTIPLICATION OF COMPLEX NO.
3. DIVISION OF COMPLEX NO.

Enter Your Choice 2

Subtration of two complex objects.= 0+i(4) 1.ADDITION OF COMPLEX NO.

1. SUBTRACTION OF COMPLEX NO.
2. MULTIPLICATION OF COMPLEX NO.
3. DIVISION OF COMPLEX NO.

Enter Your Choice 3

Multiplication of two complex objects= 9+i(-3)+i(-15)+5 1.ADDITION OF COMPLEX NO.

1. SUBTRACTION OF COMPLEX NO.
2. MULTIPLICATION OF COMPLEX NO.
3. DIVISION OF COMPLEX NO.

Enter Your Choice 4

Division of two complex obj.= (1.4)+(-1.2)i 1.ADDITION OF COMPLEX NO.

1. SUBTRACTION OF COMPLEX NO.
2. MULTIPLICATION OF COMPLEX NO.
3. DIVISION OF COMPLEX NO.

Enter Your Choice

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