**//demonstration of classes**

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#include <iostream>

#include "complex.h"

using namespace std;

int main()

{

Complex a = Complex(3.0, 2.0); // complex number 3 + 21

Complex b = Complex(2.0,1.0); // complex number 2 + i1

a.print(); // print a using a.print()

b.print(); // print b using b.print()

Complex sum = b.add(a); // add a to b

cout << "Sum = ";

sum.print(); // print sum

Complex product = b.multiply(a); // multiply b by a

cout << "Product = ";

product.print(); // print product

Complex quotient = a.divide(b); // divide a by b

cout << "Quotient = ";

quotient.print(); // print quotient

Complex difference = a.subtract(b); // subtract b from a

cout << "Difference = ";

difference.print(); // print difference

}

/\*Output

3 + 2i

2 + 1i

Sum = 5 + 3i

Product = 4 + 7i

Quotient = 1.6 + 0.2i

Difference = 1 + 1i

\*/

**//complex.h**

**//Class definition file**

#ifndef COMPLEX\_H

#define COMPLEX\_H

class Complex

{

private:

double real;

double imag;

void conjugate();

public:

Complex();

Complex(double, double);

Complex add(Complex);

Complex subtract(Complex);

Complex multiply(Complex);

Complex divide(Complex);

void print();

};

#endif

**//complex.cpp**

**//Class implementation file**

#include <iostream>

#include "complex.h"

using namespace std;

Complex::Complex()

{

real = 0;

imag = 0;

}

Complex::Complex(double r, double i)

{

real = r;

imag = i;

}

void Complex::conjugate()

{

imag = -imag;

}

Complex Complex::add(Complex other)

{

Complex sum = Complex();

sum.real = real + other.real;

sum.imag = imag + other.imag;

return sum;

}

Complex Complex::subtract(Complex other)

{

Complex difference = Complex();

difference.real = real - other.real;

difference.imag = imag - other.imag;

return difference;

}

Complex Complex::multiply(Complex other)

{

Complex product = Complex();

product.real = real\*other.real - imag\*other.imag; //handle i^2 = -1

product.imag = real\*other.imag + imag\*other.real;

return product;

}

Complex Complex::divide(Complex other)

{

Complex quotient = Complex();

Complex conj = Complex(other.real, other.imag);

Complex num = Complex(real, imag);

Complex den = Complex(other.real, other.imag);

conj.conjugate();

num = num.multiply(conj);

den = den.multiply(conj);

double div = den.real;

quotient.real = num.real/div;

quotient.imag = num.imag/div;

return quotient;

}

void Complex::print()

{

if (imag >= 0)

cout << real << " + " << abs(imag) << "i" << endl;

else

cout << real << " - " << abs(imag) << "i" << endl;

}