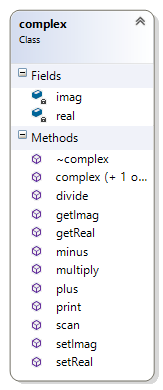
# Lab 6

Problem: Create and define a complex number class

UML Diagram:



## Source Files:

Main.cpp:

/\*Main.cpp

Here to test Complex class

\*/

#include "complex.h"

int main()

{

complex c;

complex d;

cout<<"Enter a complex number in the form a+bi: ";

c.scan(cin);

cout<<"Enter another complex number in the form a+bi: ";

d.scan(cin);

complex e=c.multiply(d);

cout<<endl<<"The first complex multiplied by the second complex is: ";

e.print(cout);

complex f=c.divide(d);

cout<<endl<<"The first complex divided by the second complex is ";

f.print(cout);

complex g=c.plus(d);

cout<<endl<<"The first complex plus the second complex is ";

g.print(cout);

complex h=c.minus(d);

cout<<endl<<"The first complex minus the second complex is ";

h.print(cout);

cout<<endl<<endl;

return 0;

}

complex.h:

#pragma once

#include <iostream>

#include <fstream>

using namespace std;

class complex

{

public:

complex(void); //default constructor

complex(double rp, double ip); //initializing constructor

~complex(void); //destructor

private:

double real;

double imag;

public:

void print(ostream & out);

void scan(istream & in);

double getReal(void);

void setReal(double rv);

double getImag(void);

void setImag(double iv);

complex multiply(const complex & second)const;

complex divide(const complex & second)const;

complex plus(const complex & second);

complex minus(const complex & second);

};

complex.cpp:

#include "complex.h"

complex::complex(void)

: real(0)

, imag(0)

{

}

complex::~complex(void)

{

cout<<"Destructor called for ";

print(cout);

cout<<endl;

}

complex::complex(double rp, double ip)

{

real=rp;

imag=ip;

}

void complex::print(ostream & out)

{

if(imag>=0)

out<<real<<"+"<<imag<<"i";

else

out<<real<<imag<<"i";

}

void complex::scan(istream & in)

{

char junk;

in>>real>>imag>>junk;

}

double complex::getReal(void)

{

return real;

}

void complex::setReal(double rv)

{

real=rv;

}

complex complex::multiply(const complex & second)const

{

return complex(real\*second.real-imag\*second.imag ,real\*second.imag+imag\*second.real);

}

complex complex::divide(const complex & second)const

{

return complex((real\*second.real+imag\*second.imag)/(second.real\*second.real+second.imag\*second.imag),(imag\*second.real-real\*second.imag)/(second.real\*second.real+second.imag\*second.imag));

}

complex complex::plus(const complex & second)

{

return complex(real+second.real,imag+second.imag);

}

complex complex::minus(const complex & second)

{

return complex(real-second.real,imag-second.imag);

}

double complex::getImag(void)

{

return imag;

}

void complex::setImag(double iv)

{

imag=iv;

}

## Sample Run:

Enter a complex number in the form a+bi: 5+4i

Enter another complex number in the form a+bi: 4+8i

The first complex multiplied by the second complex is: -12+56i

The first complex divided by the second complex is 0.65-0.3i

The first complex plus the second complex is 9+12i

The first complex minus the second complex is 1-4i

Destructor called for 1-4i

Destructor called for 9+12i

Destructor called for 0.65-0.3i

Destructor called for -12+56i

Destructor called for 4+8i

Destructor called for 5+4i

Press any key to continue . . .