# complex

Generated by Doxygen 1.8.1.2

Mon Dec 8 2014 22:15:03

# **Contents**

1	Clas	s Index			1
	1.1	Class I	_ist		1
2	File	Index			3
	2.1	File Lis	st		3
3	Clas	s Docu	mentation		5
	3.1	Compl	ex Class F	Reference	5
		3.1.1	Detailed	Description	6
		3.1.2	Construc	tor & Destructor Documentation	6
			3.1.2.1	Complex	6
			3.1.2.2	Complex	6
			3.1.2.3	Complex	6
		3.1.3	Member	Function Documentation	6
			3.1.3.1	abs	6
			3.1.3.2	arg	7
			3.1.3.3	conj	7
			3.1.3.4	imag	7
			3.1.3.5	norm	7
			3.1.3.6	operator*=	7
			3.1.3.7	operator+=	7
			3.1.3.8	operator-=	7
			3.1.3.9	operator/=	7
			3.1.3.10	operator/=	7
			3.1.3.11	operator=	7
			3.1.3.12	operator=	7
			3.1.3.13	print	7
			3.1.3.14	real	8
		3.1.4	Friends A	And Related Function Documentation	8
			3.1.4.1	abs	8
			3.1.4.2	arg	8
			3143	coni	8

ii CONTENTS

		3.1.4.4	cos
		3.1.4.5	cosh
		3.1.4.6	exp
		3.1.4.7	imag
		3.1.4.8	log
		3.1.4.9	norm
		3.1.4.10	operator!=
		3.1.4.11	operator"""_i
		3.1.4.12	operator"""_i
		3.1.4.13	operator*
		3.1.4.14	operator+
		3.1.4.15	operator
		3.1.4.16	operator
		3.1.4.17	operator/
		3.1.4.18	operator/
		3.1.4.19	operator<<
		3.1.4.20	operator==
		3.1.4.21	operator>>
		3.1.4.22	polar
		3.1.4.23	pow
		3.1.4.24	pow
		3.1.4.25	pow
		3.1.4.26	real
		3.1.4.27	root
		3.1.4.28	sin
		3.1.4.29	sinh
		3.1.4.30	sqrt
	3.1.5	Member I	Data Documentation
		3.1.5.1	i
		3.1.5.2	r
3.2	TestCo	mplex Clas	ss Reference
	3.2.1	Detailed I	Description
	3.2.2	Member I	Function Documentation
		3.2.2.1	compare
		3.2.2.2	compute
		3.2.2.3	input
	3.2.3	Member I	Data Documentation
		3.2.3.1	a
		3.2.3.2	b
		3.2.3.3	operation

CONTENTS

			3.2.3.4	result	• •	12
4	File	Docum	entation			13
	4.1	include	e/complex.l	h File Reference		13
		4.1.1	Function	Documentation		14
			4.1.1.1	abs		14
			4.1.1.2	arg		14
			4.1.1.3	conj		14
			4.1.1.4	cos		14
			4.1.1.5	cosh		14
			4.1.1.6	exp		14
			4.1.1.7	imag		14
			4.1.1.8	log		15
			4.1.1.9	norm		15
			4.1.1.10	operator!=		15
			4.1.1.11	operator"""_i		15
			4.1.1.12	operator"""_i		15
			4.1.1.13	operator*		15
			4.1.1.14	operator+		15
			4.1.1.15	operator		15
			4.1.1.16	operator		15
			4.1.1.17	operator/		15
			4.1.1.18	operator/		16
			4.1.1.19	operator<<		16
			4.1.1.20	operator==		16
			4.1.1.21	operator>>		16
			4.1.1.22	polar		16
			4.1.1.23	pow		16
			4.1.1.24	pow	• •	16
			4.1.1.25	pow	• •	16
			4.1.1.26	real		16
			4.1.1.27	root	• •	17
			4.1.1.28	sin	• •	17
			4.1.1.29	sinh	• •	17
			4.1.1.30	sqrt	• •	17
	4.2	src/ma	in.cpp File	Reference		17
		4.2.1	Function	Documentation		17
			4.2.1.1	main		17
	4.3	test/Te	stComplex	c.cpp File Reference		17
		4.3.1	Function	Documentation		18

v	CONTENTS

# Chapter 1

# **Class Index**

4	4		NI.		1	:-4
1	. 1	(	แล	22		IST

Here are the classes, structs, unions and interfaces with brief descriptions:	
Complex	5
TestComplex	11

2 Class Index

# Chapter 2

# File Index

# 2.1 File List

Here	is a	list (	of all	files	with	brief	descri	ntions:

include/complex.h	13
src/main.cpp	17
test/TestComplex.cpp	17

File Index

# **Chapter 3**

# **Class Documentation**

# 3.1 Complex Class Reference

```
#include <complex.h>
```

#### **Public Member Functions**

- void operator+= (Complex)
- void operator-= (Complex)
- void operator\*= (Complex)
- void operator/= (Complex)
- void operator/= (double)
- Complex (double, double)
- Complex (double)
- Complex ()
- void operator= (Complex)
- void operator= (double)
- Complex conj ()
- double real ()
- double imag ()
- double abs ()
- double arg ()
- double norm ()
- void print ()

## **Public Attributes**

- double r
- double i

### **Friends**

- double abs (Complex)
- double arg (Complex)
- Complex conj (Complex)
- double real (Complex)
- double imag (Complex)
- double norm (Complex)

- Complex polar (double, double)
- Complex exp (Complex)
- Complex log (Complex)
- · Complex pow (double, Complex)
- Complex pow (Complex, double)
- Complex root (Complex, double)
- Complex pow (Complex, Complex)
- Complex sqrt (Complex)
- Complex sin (Complex)
- Complex cos (Complex)
- Complex sinh (Complex)
- Complex cosh (Complex)
- Complex operator- (Complex)
- bool operator== (Complex, Complex)
- bool operator!= (Complex, Complex)
- ostream & operator<< (ostream &, Complex &)</li>
- istream & operator>> (istream &, Complex &)
- Complex operator+ (Complex, Complex)
- Complex operator- (Complex, Complex)
- Complex operator\* (Complex, Complex)
- Complex operator/ (Complex, Complex)
- Complex operator/ (Complex, double)
- Complex operator""\_i (long double)
- Complex operator""\_i (unsigned long long)

## 3.1.1 Detailed Description

Definition at line 9 of file complex.h.

## 3.1.2 Constructor & Destructor Documentation

3.1.2.1 Complex::Complex ( double  $\_r$ , double  $\_i$  )

Definition at line 74 of file complex.h.

3.1.2.2 Complex::Complex ( double  $_r$  )

Definition at line 81 of file complex.h.

3.1.2.3 Complex::Complex ( )

Definition at line 88 of file complex.h.

## 3.1.3 Member Function Documentation

3.1.3.1 double Complex::abs ( )

Definition at line 256 of file complex.h.

References sqrt().

```
3.1.3.2 double Complex::arg ( )
Definition at line 212 of file complex.h.
3.1.3.3 Complex Complex::conj ( )
Definition at line 201 of file complex.h.
3.1.3.4 double Complex::imag ( )
Definition at line 234 of file complex.h.
3.1.3.5 double Complex::norm ( )
Definition at line 245 of file complex.h.
3.1.3.6 void Complex::operator*= ( Complex rhs )
Definition at line 185 of file complex.h.
3.1.3.7 void Complex::operator+= ( Complex rhs )
Definition at line 175 of file complex.h.
3.1.3.8 void Complex::operator-= ( Complex rhs )
Definition at line 180 of file complex.h.
3.1.3.9 void Complex::operator/= ( Complex rhs )
Definition at line 190 of file complex.h.
3.1.3.10 void Complex::operator/= ( double rhs )
Definition at line 195 of file complex.h.
3.1.3.11 void Complex::operator= ( Complex rhs )
Definition at line 148 of file complex.h.
References i, and r.
3.1.3.12 void Complex::operator= ( double _r )
Definition at line 142 of file complex.h.
3.1.3.13 void Complex::print ( )
Definition at line 333 of file complex.h.
```

```
3.1.3.14 double Complex::real ( )
Definition at line 223 of file complex.h.
3.1.4 Friends And Related Function Documentation
3.1.4.1 double abs ( Complex rhs ) [friend]
Definition at line 260 of file complex.h.
Referenced by abs(), log(), and operator/().
3.1.4.2 double arg ( Complex rhs ) [friend]
Definition at line 217 of file complex.h.
Referenced by arg(), and log().
3.1.4.3 Complex conj (Complex rhs) [friend]
Definition at line 206 of file complex.h.
Referenced by operator/().
3.1.4.4 Complex cos (Complex rhs) [friend]
Definition at line 327 of file complex.h.
3.1.4.5 Complex cosh ( Complex rhs ) [friend]
Definition at line 317 of file complex.h.
3.1.4.6 Complex exp (Complex rhs) [friend]
Definition at line 273 of file complex.h.
3.1.4.7 double imag ( Complex rhs ) [friend]
Definition at line 239 of file complex.h.
3.1.4.8 Complex log (Complex rhs) [friend]
Definition at line 279 of file complex.h.
3.1.4.9 double norm ( Complex rhs ) [friend]
Definition at line 250 of file complex.h.
Referenced by norm().
3.1.4.10 bool operator!= ( Complex a, Complex b ) [friend]
```

Definition at line 167 of file complex.h.

```
3.1.4.11 Complex operator""_i(long double_i) [friend]
Definition at line 94 of file complex.h.
3.1.4.12 Complex operator""_i( unsigned long long _i) [friend]
Definition at line 98 of file complex.h.
3.1.4.13 Complex operator* (Complex a, Complex b) [friend]
Definition at line 123 of file complex.h.
3.1.4.14 Complex operator+ (Complex a, Complex b) [friend]
Definition at line 111 of file complex.h.
3.1.4.15 Complex operator-( Complex rhs ) [friend]
Definition at line 154 of file complex.h.
3.1.4.16 Complex operator-( Complex a, Complex b) [friend]
Definition at line 117 of file complex.h.
3.1.4.17 Complex operator/(Complex a, Complex b) [friend]
Definition at line 129 of file complex.h.
3.1.4.18 Complex operator/( Complex a, double b) [friend]
Definition at line 136 of file complex.h.
3.1.4.19 ostream& operator << ( ostream & os, Complex & c ) [friend]
Definition at line 343 of file complex.h.
3.1.4.20 bool operator==( Complex a, Complex b) [friend]
Definition at line 159 of file complex.h.
3.1.4.21 istream & operator >> ( istream & is, Complex & c ) [friend]
Definition at line 353 of file complex.h.
3.1.4.22 Complex polar (double r, double t) [friend]
Definition at line 267 of file complex.h.
```

3.1.4.23 Complex pow (double a, Complex b) [friend]

Definition at line 285 of file complex.h.

3.1.4.24 Complex pow (Complex a, double b) [friend]

Definition at line 290 of file complex.h.

3.1.4.25 Complex pow (Complex a, Complex b) [friend]

Definition at line 295 of file complex.h.

3.1.4.26 double real ( Complex rhs ) [friend]

Definition at line 228 of file complex.h.

3.1.4.27 Complex root (Complex a, double b) [friend]

Definition at line 306 of file complex.h.

3.1.4.28 Complex sin (Complex rhs) [friend]

Definition at line 322 of file complex.h.

3.1.4.29 Complex sinh (Complex rhs) [friend]

Definition at line 312 of file complex.h.

3.1.4.30 Complex sqrt (Complex rhs) [friend]

Definition at line 301 of file complex.h.

#### 3.1.5 Member Data Documentation

3.1.5.1 double Complex::i

Definition at line 13 of file complex.h.

Referenced by conj(),  $\exp()$ , imag(), operator\*(), operator+(), operator-(), oper

3.1.5.2 double Complex::r

Definition at line 12 of file complex.h.

Referenced by conj(), exp(), operator\*(), operator-(), operator-(

The documentation for this class was generated from the following file:

· include/complex.h

# 3.2 TestComplex Class Reference

### **Public Member Functions**

- void input ()
- string compare ()
- Complex compute ()

### **Public Attributes**

- · Complex a
- · Complex b
- char operation
- string result

## 3.2.1 Detailed Description

Definition at line 7 of file TestComplex.cpp.

#### 3.2.2 Member Function Documentation

3.2.2.1 string TestComplex::compare ( )

Definition at line 44 of file TestComplex.cpp. Referenced by main().

3.2.2.2 Complex TestComplex::compute ( )

Definition at line 51 of file TestComplex.cpp. Referenced by main().

3.2.2.3 void TestComplex::input ( )

Definition at line 19 of file TestComplex.cpp. Referenced by main().

# 3.2.3 Member Data Documentation

### 3.2.3.1 Complex TestComplex::a

Definition at line 10 of file TestComplex.cpp.

# 3.2.3.2 Complex TestComplex::b

Definition at line 10 of file TestComplex.cpp.

3.2.3.3 char TestComplex::operation

Definition at line 11 of file TestComplex.cpp. Referenced by main().

# 3.2.3.4 string TestComplex::result

Definition at line 12 of file TestComplex.cpp.

The documentation for this class was generated from the following file:

• test/TestComplex.cpp

# **Chapter 4**

# **File Documentation**

# 4.1 include/complex.h File Reference

```
#include <iostream>
#include <cmath>
#include <string>
```

#### **Classes**

• class Complex

### **Functions**

- Complex operator""\_i (long double \_i)
- Complex operator""\_i (unsigned long long \_i)
- Complex operator+ (Complex a, Complex b)
- Complex operator- (Complex a, Complex b)
- Complex operator\* (Complex a, Complex b)
- Complex operator/ (Complex a, Complex b)
- Complex operator/ (Complex a, double b)
- Complex operator- (Complex rhs)
- bool operator== (Complex a, Complex b)
- bool operator!= (Complex a, Complex b)
- Complex conj (Complex rhs)
- double arg (Complex rhs)
- double real (Complex rhs)
- double imag (Complex rhs)
- double norm (Complex rhs)
- double abs (Complex rhs)
- Complex polar (double r, double t)
- · Complex exp (Complex rhs)
- Complex log (Complex rhs)
- Complex pow (double a, Complex b)
- Complex pow (Complex a, double b)
- Complex pow (Complex a, Complex b)
- Complex sqrt (Complex rhs)
- Complex root (Complex a, double b)
- · Complex sinh (Complex rhs)

14 File Documentation

- Complex cosh (Complex rhs)
- Complex sin (Complex rhs)
- Complex cos (Complex rhs)
- ostream & operator<< (ostream &os, Complex &c)</li>
- istream & operator>> (istream &is, Complex &c)

#### 4.1.1 Function Documentation

#### 4.1.1.1 double abs ( Complex rhs )

Definition at line 260 of file complex.h.

References Complex::abs.

Referenced by operator<<().

### 4.1.1.2 double arg ( Complex rhs )

Definition at line 217 of file complex.h.

References Complex::arg.

#### 4.1.1.3 Complex conj (Complex rhs)

Definition at line 206 of file complex.h.

References Complex::i, and Complex::r.

### 4.1.1.4 Complex cos (Complex rhs)

Definition at line 327 of file complex.h.

References cosh().

Referenced by exp(), and polar().

### 4.1.1.5 Complex cosh ( Complex rhs )

Definition at line 317 of file complex.h.

References exp().

Referenced by cos().

### 4.1.1.6 Complex exp (Complex rhs)

Definition at line 273 of file complex.h.

References cos(), Complex::i, Complex::r, and sin().

Referenced by cosh(), pow(), and sinh().

### 4.1.1.7 double imag ( Complex rhs )

Definition at line 239 of file complex.h.

References Complex::i.

```
4.1.1.8 Complex log (Complex rhs)
Definition at line 279 of file complex.h.
References Complex::abs, and Complex::arg.
Referenced by pow().
4.1.1.9 double norm ( Complex rhs )
Definition at line 250 of file complex.h.
References Complex::norm.
4.1.1.10 bool operator!= ( Complex a, Complex b)
Definition at line 167 of file complex.h.
4.1.1.11 Complex operator""_i ( long double _i )
Definition at line 94 of file complex.h.
4.1.1.12 Complex operator""_i ( unsigned long long _i )
Definition at line 98 of file complex.h.
4.1.1.13 Complex operator* ( Complex a, Complex b)
Definition at line 123 of file complex.h.
References Complex::i, and Complex::r.
4.1.1.14 Complex operator+ (Complex a, Complex b)
Definition at line 111 of file complex.h.
References Complex::i, and Complex::r.
4.1.1.15 Complex operator- (Complex a, Complex b)
Definition at line 117 of file complex.h.
References Complex::i, and Complex::r.
4.1.1.16 Complex operator- (Complex rhs)
Definition at line 154 of file complex.h.
References Complex::i, and Complex::r.
4.1.1.17 Complex operator/ (Complex a, Complex b)
Definition at line 129 of file complex.h.
References Complex::abs, and Complex::conj.
```

16 File Documentation

```
4.1.1.18 Complex operator/ (Complex a, double b)
Definition at line 136 of file complex.h.
References Complex::i, and Complex::r.
4.1.1.19 ostream & operator << (ostream & os, Complex & c)
Definition at line 343 of file complex.h.
References abs(), Complex::i, and Complex::r.
4.1.1.20 bool operator== ( Complex a, Complex b )
Definition at line 159 of file complex.h.
References Complex::i, and Complex::r.
4.1.1.21 istream & operator >> ( istream & is, Complex & c )
Definition at line 353 of file complex.h.
References Complex::i, and Complex::r.
4.1.1.22 Complex polar (double r, double t)
Definition at line 267 of file complex.h.
References cos(), and sin().
4.1.1.23 Complex pow (double a, Complex b)
Definition at line 285 of file complex.h.
References exp(), and log().
Referenced by main(), root(), and sqrt().
4.1.1.24 Complex pow (Complex a, double b)
Definition at line 290 of file complex.h.
References exp(), and log().
4.1.1.25 Complex pow (Complex a, Complex b)
Definition at line 295 of file complex.h.
References exp(), and log().
4.1.1.26 double real ( Complex rhs )
Definition at line 228 of file complex.h.
```

References Complex::r.

```
4.1.1.27 Complex root ( Complex a, double b )
Definition at line 306 of file complex.h.
References pow().
Referenced by main().
4.1.1.28 Complex sin ( Complex rhs )
Definition at line 322 of file complex.h.
References sinh().
Referenced by exp(), and polar().
4.1.1.29 Complex sinh ( Complex rhs )
Definition at line 312 of file complex.h.
References exp().
Referenced by sin().
4.1.1.30 Complex sqrt ( Complex rhs )
```

# 4.2 src/main.cpp File Reference

Definition at line 301 of file complex.h.

```
#include <iostream>
#include <cmath>
#include "complex.h"
```

Referenced by Complex::abs().

#### **Functions**

• int main ()

References pow().

### 4.2.1 Function Documentation

```
4.2.1.1 int main ( )
```

Definition at line 6 of file main.cpp.

References pow(), and root().

# 4.3 test/TestComplex.cpp File Reference

```
#include <iostream>
```

18 File Documentation

```
#include <string>
#include "complex.h"
```

### Classes

class TestComplex

## **Functions**

• int main ()

# 4.3.1 Function Documentation

```
4.3.1.1 int main ( )
```

Definition at line 61 of file TestComplex.cpp.

 $References\ Test Complex::compare(),\ Test Complex::compute(),\ Test Complex::input(),\ and\ Test Complex::operation.$ 

# Index

а			arg, 14
	TestComplex, 11		conj, 14
abs			cos, 14
	Complex, 6, 8		cosh, 14
	complex.h, 14		exp, 14
arg			imag, 14
	Complex, 6, 8		log, 14
	complex.h, 14		norm, 15
			operator<<, 16
b			operator>>, 16
	TestComplex, 11		operator*, 15
			operator+, 15
com	pare		operator-, 15
	TestComplex, 11		operator/, 15
Con	nplex, 5		operator==, 16
	abs, 6, 8		operator""_i, 15
	arg, 6, 8		polar, 16
	Complex, 6		pow, 16
	conj, 7, 8		real, 16
	cos, 8		root, 16
	cosh, 8		sin, 17
	exp, 8		sinh, 17
	i, 10		sqrt, 17
	imag, 7, 8	com	pute
	log, 8	COII	TestComplex, 11
	norm, 7, 8	oon	
	operator<<, 9	con	
	operator>>, 9		Complex, 7, 8
	operator*, 9		complex.h, 14
	operator*=, 7	cos	Compley 0
	operator+, 9		Complex, 8
	operator+=, 7		complex.h, 14
	operator-, 9	cosl	
	operator-=, 7		Complex, 8
	operator/, 9		complex.h, 14
	operator/=, 7	01/10	
	operator=, 7	exp	Campley
	operator==, 9		Complex, 8
	operator""_i, 8, 9		complex.h, 14
	polar, 9	i	
	pow, 9, 10	ı	Compley 10
	print, 7	:	Complex, 10
	•	ima	
	r, 10		Complex, 7, 8
	real, 7, 10 root, 10	!	complex.h, 14
			ude/complex.h, 13
	sin, 10	inpu	
	sinh, 10		TestComplex, 11
·-	sqrt, 10	l =	
com	plex.h	log	Commission 0
	abs, 14		Complex, 8

20 INDEX

complex.h,	14	real	Complex, 10
main		roui	Complex, 7, 10
main.cpp, 1	17		complex.h, 16
TestComple		resu	
main.cpp	,	1030	TestComplex, 11
main, 17		root	restoomplex, 11
mam, m		1001	Compley 10
norm			Complex, 10
Complex, 7	, 8		complex.h, 16
complex.h,		sin	
complex.m,	15	SIII	Complex 10
operation			Complex, 10
	ov 11	- ! !	complex.h, 17
TestComple	3X, 11	sinh	
operator<<			Complex, 10
Complex, 9			complex.h, 17
complex.h,	16	sqrt	
operator>>			Complex, 10
Complex, 9			complex.h, 17
complex.h,	16	src/r	nain.cpp, 17
operator*			
Complex, 9	)	test/	TestComplex.cpp, 17
complex.h,	15	Test	Complex, 11
operator*=			a, 11
Complex, 7	•		b, 11
operator+			compare, 11
Complex, 9			compute, 11
complex.h,			input, 11
operator+=			operation, 11
Complex, 7	,		result, 11
		Test	Complex.cpp
operator-		1000	main, 18
Complex, 9			main, To
complex.h,	15		
operator-=	_		
Complex, 7			
operator/			
Complex, 9			
complex.h,	15		
operator/=			
Complex, 7	<i>,</i>		
operator=			
Complex, 7	,		
operator==			
Complex, 9	)		
complex.h,	16		
operator""_i			
Complex, 8	3, 9		
complex.h,	15		
•			
polar			
Complex, 9	)		
complex.h,			
pow			
Complex, 9	). 10		
complex.h,			
print			
Complex, 7	,		
Complex, 7			