CSDN 学院

C++语言基础

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本节主题：

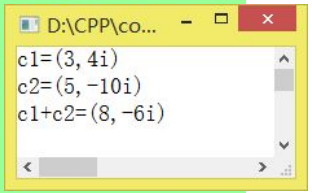
运算符重载的方法

以复数的加法为例：用成员函数实现复数加法

```
#include <iostream>
using namespace std;
class Complex
{
public:
   Complex( );
   Complex(double r,double i);
   Complex add(Complex &c2);
   void display( );
private:
   double real;
   double imag;
};
```

```
Complex::Complex( ){
   real=0;
   imag=0;
}
Complex::Complex(double r,double i){
    real=r;
    imag=i;
}
Complex Complex::add(Complex &c2){
   Complex c;
   c.real=real+c2.real;
   c.imag=imag+c2.imag;
   return c;
}
```

```
void Complex::display( ){
   cout<<"("<<real<<",";
   cout<<imag<<"i)"<<endl;
}
int main( ){
   Complex c1(3,4),c2(5,-10),c3;
   cout<<"c1=";
   c1.display( );
   cout<<"c2=";
   c2.display( );
   c3=c1.add(c2);
   cout<<"c1+c2=";
   c3.display( );
   return 0;
}
```



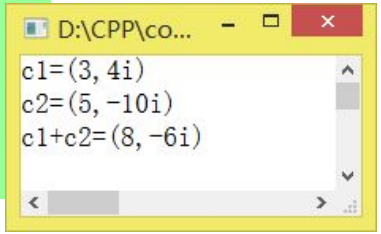
运算符重载的方法

```
class Complex
{
public:
   Complex operator+(Complex &c2);
private:
   double real;
   double imag;
};
Complex Complex::operator+(Complex &c2)
{
   Complex c;
   c.real=real+c2.real;
   c.imag=imag+c2.imag;
   return c;
}
```

函数类型 operator运算符名称（形参表列）
{ 对运算符的重载处理 }

```
int main( )
{
   Complex c1(3,4),c2(5,-10),c3,c4;
   cout<<"c1=";
   c1.display( );
   cout<<"c2=";
   c2.display( );
   c3=c1+c2;
   cout<<"c1+c2=";
   c3.display( );
   return 0;
}
```

```
c3=c1+c2;
等同于
c3=c1.operator+(c2);
等同于前述
c3=c1.add(c2);
```



对比

```
Complex Complex::add(Complex &c2)
{
   Complex c;
   c.real=real+c2.real;
   c.imag=imag+c2.imag;
   return c;
}
```

```
int main()
Complex c1(3,4),c2(5,-10)
Complex c3=c1.add(c2);
```

```
Complex Complex::operator+(Complex &c2)
{
   Complex c;
   c.real=real+c2.real;
   c.imag=imag+c2.imag;
   return c;
}
```

```
int main()
Complex c1(3,4),c2(5,-10)
Complex c3=c1+c2;
c3=c1.operator+(c2);
```

多种实现方法

- 成员函数实现

```
Complex Complex::operator+(Complex &c2){
    Complex c;
    c.real=real+c2.real;
    c.imag=imag+c2.imag;
    return c;
}
```

- 更简练的写法

```
Complex Complex::operator+(Complex &c2){
    return Complex(real+c2.real, imag+c2.imag);
}
```

- 非成员函数实现方案(友元函数、一般函数)

```
Complex operator+(Complex& c1,Complex& c2){
    ...
}
```

```
int main()
Complex c1(3,4),c2(5,-10)
Complex c3=c1+c2;
c3=c1.operator+(c2);
```

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THANKS

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