

C++语言基础

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本节主题：

重载单目运算符

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- 单目运算符，只有一个运算量:

- `!a` , `-b` , `&c` , `*p` , `++i` 和 `i--` 等 ;

- 案例1：CFraction类中的一目运算

- `CFraction c1(3,5);`

- `cout<<-c1<<endl;`

- 案例2：Time类的前置++和后置++

- `Time t1(12,24,32);`

- `++t1;`

- `t1++;`

- 单目运算符重载函数作为成员函数

- 成员函数可以省略参数

- 为何不用友元函数和一般函数？

示例1：分数类对象的相反数

```
class CFraction
{
private:
    int nume; // 分子
    int deno; // 分母
public:
    CFraction(int nu=0,int de=1):nume(nu),deno(de) {}
    CFraction operator-(const CFraction &c); //分数相减
    CFraction operator-(); //取反一目运算
};
```

```
CFraction x,y,s;
.....
s = x-y; //s = x.operator-(y);
s = -x;  //s = x.operator-();
```

```
CFraction CFraction:: operator-(const CFraction &c)
{
    CFraction t;
    t.nume=nume*c.deno-c.nume*deno;
    t.deno=deno*c.deno;
    t.simplify();
    return t;
}

CFraction CFraction:: operator-()
{
    CFraction x;
    x.nume=-nume;
    x.deno=deno;
    return x;
}
```

案例：Time类的前置++

📁 i++ 和++i 的区别？

📁 int i=3, j;

📁 j = ++i;

📁 j = i++;

```
class Time{
public:
    Time( ){minute=0;sec=0;}
    Time(int m,int s): minute(m),sec(s){ }
    Time operator++( );
    void display( )
    {
        cout<<minute<<":";
        cout<<sec<<endl;
    }
private:
    int minute;
    int sec;
};
```

```
Time Time::operator++( )
{
    if((++sec)>=60)
    {
        sec-=60;
        ++minute;
    }
    return *this;
}
```

```
Time t1(12,24,32);
++t1;
```

案例：Time类的后置++(特别规定)

```
class Time{
public:
    Time operator++( );
    Time operator++(int);
    void display( )    {.....}
private:
    int minute;
    int sec;
};
```

```
Time t1(12,24,32);
++t1;
t1++;
```

```
Time Time::operator++( ){
    if(++sec>=60){
        sec-=60;
        ++minute;
    }
    return *this;
}

Time Time::operator++(int){
    Time temp(*this);
    sec++;
    if(sec>=60){
        sec-=60;
        ++minute;
    }
    return temp;
}
```

讨论：前置++和后置++的效率？

for (i=0; i<n; i++){...}

for (i=0; i<n; ++i){...}

THANKS

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