

边学边做的C++

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本节主题：

this 指针

this 指针

定义Box类

```
class Box
{
    double height;
    double width;
    double length;...
}
int Box::volume( )
{
    return (height*width*length);
}
```

问：不同对象如何做到引用各自的数据成员？

```
Box a, b;.....
a.volume( );
b.volume( );
```

每个对象都可以利用一个自己的特殊指针
this——指向当前对象的指针。



this指针隐式起作用

```
int Box::volume( ){ return (height*width*length); }
```

调用a.volume(), this值为对象a起始地址, 实际执行

```
return ((*this).height*(*this).width*(*this).length);
```

```
retrun (this->height)*(this->width)*(this->length)
```

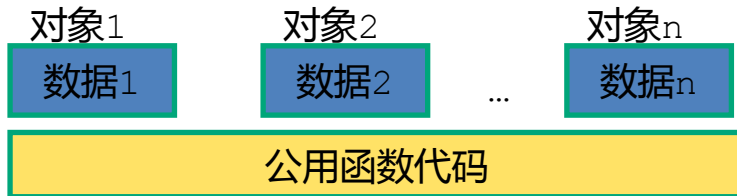
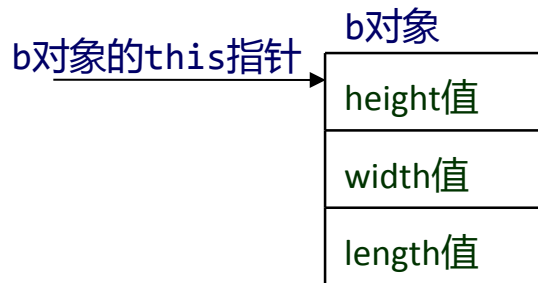
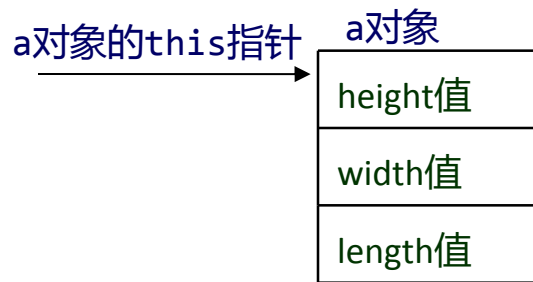
```
retrun (a.height)*(a.width)*(a.length)
```

理解: 调用不同对象的同一成员函数

```
Box a,b;.....
```

```
a.volume( );
```

```
b.volume( );
```



this指针内幕

```
int Box::volume( ){return (height*width*length);}
```

❏ C++在处理时，在成员函数的形参表列中增加一个this指针

```
int Box::volume(Box *this)
```

```
{
```

```
    return(this->height*this->width*this->length);
```

```
}
```

调用时，将对象的地址传给形参this指针，
然后按this的指向去引用其他成员。

❏ 程序中的调用：

```
a.volume( );
```

❏ 实际的调用方式是：

```
a.volume(&a);
```

```
Box a,b;.....
```

```
a.volume( );
```

```
b.volume( );
```

内幕: 每个对象有个自己的this指针

```
class Time
{
public:
    void set_time(int,int,int);
    void show_time();
private:
    int hour;
    int minute;
    int sec;
};

int main( )
{
    Time t1,t2;
    t1.set_time(12,45,32);
    t2.set_time(21,32,15);
    t1.show_time( );
    t2.show_time( );
    return 0;
}
```

```
void Time::set_time(int h, int m,int s)
{
    this->hour=h;
    this->minute=m;
    this->sec=s;
}

void Time::show_time()
{
    cout<<this->hour<<":";
    cout<<this->minute<<":";
    cout<<this->sec<<endl;
}
```

```
void Time::set_time(Time* this, int h, int m,int s)
{
    this->hour=h;
    this->minute=m;
    this->sec=s;
}

void Time::show_time(Time* this)
{
    cout<<this->hour<<":";
    cout<<this->minute<<":";
    cout<<this->sec<<endl;
}
```

```
class Time
{
public:
    void set_time(Time*, int,int,int);
    void show_time(Time*);
private:
    int hour;
    int minute;
    int sec;
};

int main( )
{
    Time t1,t2;
    t1.set_time(&t1,12,45,32);
    t2.set_time(&t2,21,32,15);
    t1.show_time(&t1);
    t2.show_time(&t2);
    return 0;
}
```

分清你我

```
class CPoint
{
private:
    double x,y;
public:
    double Distance(CPoint p);
};
// 求两点之间的距离
double CPoint::Distance(CPoint p)
{
    double dx, dy;
    dx=p.x-x;
    dy=p.y-y;
    d=sqrt(dx*dx+dy*dy);
    return d;
}
```

dx=p.x-this->x;
dy=p.y-this->y;

```
class CPoint
{
private:
    double x,y;
public:
    double Distance(CPoint p);
    void setxy(double x, double y);
};
// 求两点之间的距离
void CPoint::setxy(double x, double y)
{
    this->x = x;
    this->y = y;
}
```

THANKS

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