

C/C++程序设计案例实战

——超市收银系统

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案例分析



案例分析



收银台

商品编号/条形码: 小票流水号: 201012020001

编号/条形码	品名	单价	折扣率%	数量	金额
1 001	皮鞋	¥10.00	92.99	2.000	¥18.60
2 0023	广州单裤	¥128.00	92.99	2.000	¥238.06
3 002	吉氏超值装婴儿尿裤	¥3.60	92.78	1.000	¥3.34

共: **¥279.60** 折扣: ¥19.60

商品数量: 5

会员卡ID: 002 上次累计: 01.93 本次累计: 131.59

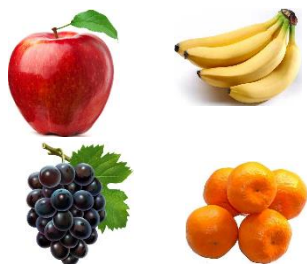
应收: 260.00 收款: 300.00 找零: 40.00

结账打印(F4) 退货(R)

商品名称: 小票 上次累计: 01.93 本次累计: 131.59

商品名称: 小票 上次累计: 01.93 本次累计: 131.59

水果



糕点



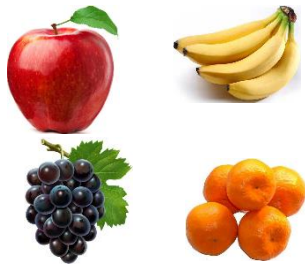
日用品



家电



水果



```
class fruit{  
    string id;  
    string name;  
    float price;  
    long date;  
    float discount;  
    string shape;  
    string color;  
public:  
    void ShowInfo();  
    void SetDiscount(float dc);  };
```

糕点



```
class cake{  
    string id;  
    string name;  
    float price;  
    long date;  
    float discount;  
    string taste;  
public:  
    void ShowInfo();  
    void SetDiscount(float dc);  
};
```


日用品



```
class commodity{  
    string id;  
    string name;  
    float price;  
    long date;  
    float discount;  
    string material;  
public:  
    void ShowInfo();  
    void SetDiscount(float dc);  
};
```

家电



```
class householdea{  
    string id;  
    string name;  
    float price;  
    long date;  
    float discount;  
    float power;  
public:  
    void ShowInfo();  
    void SetDiscount(float dc);  
};
```



```
class fruit{
    string id;
    string name;
    float price;
    long date;
    float discount;
    string shape;
    string color;
public:
    void ShowInfo();
    void SetDiscount(float dc);};
```

```
class cake{
    string id;
    string name;
    float price;
    long date;
    float discount;
    string taste;
public:
    void ShowInfo();
    void SetDiscount(float dc);
};
```

```
class commodity{
    string id;
    string name;
    float price;
    long date;
    float discount;
    string material;
public:
    void ShowInfo();
    void SetDiscount(float dc);
};
```

```
class householdea{
    string id;
    string name;
    float price;
    long date;
    float discount;
    float power;
public:
    void ShowInfo();
    void SetDiscount(float dc);
};
```

```

class fruit{
    string id;
    string name;
    float price;
    long date;
    float discount;
    string shape;
    string color;
public:
    void ShowInfo();
    void SetDiscount(float dc);
};

```

```

class commodity{
    string id;
    string name;
    float price;
    long date;
    float discount;
    string material;
public:
    void ShowInfo();
    void SetDiscount(float dc);
};

```

代码存在重复

```

class cake{
    string id;
    string name;
    float price;
    long date;
    float discount;
    string taste;
public:
    void ShowInfo();
    void SetDiscount(float dc);
};

```

```

class household{
    string id;
    string name;
    float price;
    long date;
    float discount;
    float power;
public:
    void ShowInfo();
    void SetDiscount(float dc);
};

```

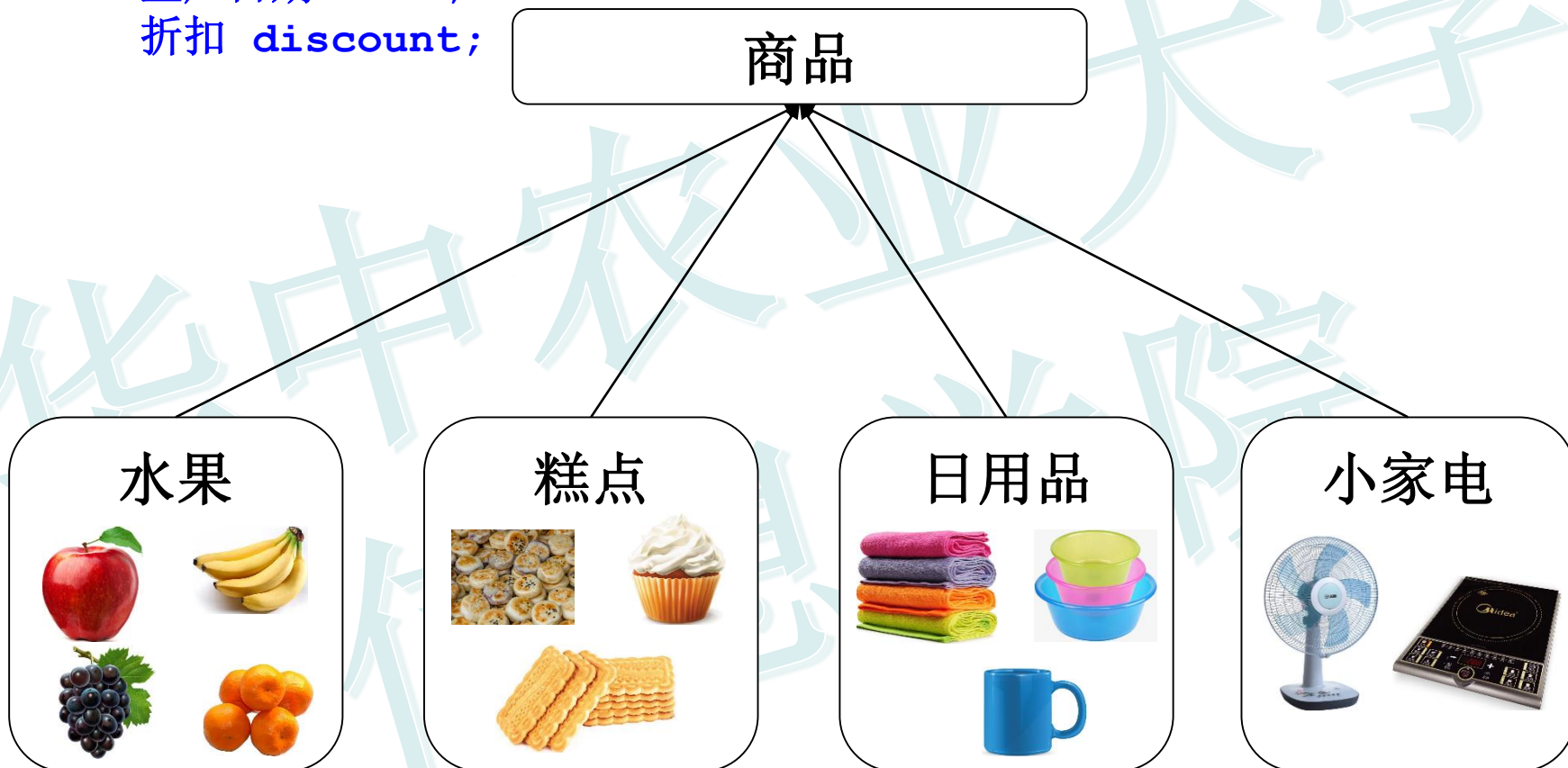


如何改进

??

条形码 id;
名称 name;
价格 price;
生产日期 date;
折扣 discount;

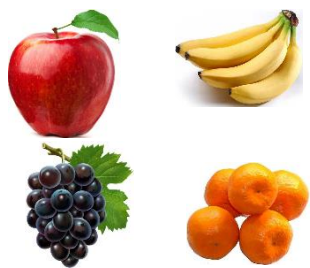
显示商品信息 ShowInfo
设置折扣 SetDiscount



父类/基类

商品

水果



糕点



日用品



家电



子类/派生类

如何实现继承？



```
class goods{
```

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```
class goods{  
    string id;  
    string name;  
    float price;  
    long date;  
    float discount;
```



```
class goods{
    string id;
    string name;
    float price;
    long date;
    float discount;
public:
    goods(string id,string
        name,float price,long
        date, float
discount);
    void ShowInfo();
    void SetDiscount(float
dc);
    string GetId();
    float GetPrice();
    float GetDiscount();
};
```

```
class goods{
    string id;
    string name;
    float price;
    long date;
    float discount;
public:
    goods(string id,string
        name,float price,long
        date, float
discount);
    void ShowInfo();
    void SetDiscount(float
dc);
    string GetId();
    float GetPrice();
    float GetDiscount();
};
```

```
goods::goods(string id,string name,float
price,long date, float discount){
    this->id=id;
    this->name=name;
    this->price=price;
    this->date=date;
    this->discount=discount;
}
```

构造函数实现

```
class goods{
    string id;
    string name;
    float price;
    long date;
    float discount;
public:
    goods(string id,string
        name,float price,long
        date, float
discount);
    void ShowInfo();
    void SetDiscount(float
dc);
    string GetId();
    float GetPrice();
    float GetDiscount();
};
```

```
void goods::ShowInfo(){
    cout<<"id: "<<id<<endl;
    cout<<"name: "<<name<<endl;
    cout<<"price: "<<price<<endl;
    cout<<"date: "<<date<<endl;
    cout<<"discount: "<<discount<<endl;
}
```

显示信息函数实现

```
void goods::SetDiscount(float dc){
    discount=dc;
}
```

设置折扣函数实现

```
class goods{
    string id;
    string name;
    float price;
    long date;
    float discount;
public:
    goods(string id,string
        name,float price,long
        date, float
discount);
    void ShowInfo();
    void SetDiscount(float
dc);
    string GetId();
    float GetPrice();
    float GetDiscount();
};
```

```
string goods::GetId(){
    return id;
}
```

获取id函数实现

```
float goods::GetPrice(){
    return price;
}
```

获取价格函数实现

```
float goods::GetDiscount(){
    return discount;
}
```

获取折扣函数实现

```
class fruit
```

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```
class fruit: public goods
```

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```
class fruit: public goods
{
    string shape;
    string color;
```

```
class fruit: public goods
{
    string shape;
    string color;
public:
    fruit(string id,string
        name,float price,long
        date, float
        discount,string
        shape,string color);
```

```
fruit::fruit(string id,string name,float price,long date, float
discount,string shape,string color):goods(id,name,price,date,discount)
{
    this->shape=shape;
    this->color=color;
}
```

构造函数实现

```
class fruit: public goods
{
    string shape;
    string color;
public:
    fruit(string id,string
        name,float price,long
        date, float
        discount,string
        shape,string color);
    void ShowInfo();
};
```

函数覆盖

```
class cake: public goods{
    string taste; //味道属性
public:
    cake(string id,string name,float price,long date,
        float discount,string taste); //构造函数
    void ShowInfo();
};
```

蛋糕类

```
class commodity: public goods{
    string material; //材质
public:
    commodity(string id,string name,float price,long
        date, float discount,string material);
    void ShowInfo();
};
```

日用品类

```
class householdea: public goods{
    float power; //功率
public:
    householdea(string id,string name,float price,long
        date, float discount,float power);
    void ShowInfo();
};
```

家电类

```
int main(){  
    fruit ft("101","apple",4,190730,0,"circle","red");  
    cake ck("102","cake",2,190730,0,"sweet");  
    commodity cd("103","commodity",15,190511,0,"cotton");  
    householdea hea("104","householdea",200,180605,0.1,55);  
}
```

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```
int main(){  
    fruit ft("101","apple",4,190730,0,"circle","red");  
    cake ck("102","cake",2,190730,0,"sweet");  
    commodity cd("103","commodity",15,190511,0,"cotton");  
    householdea hea("104","householdea",200,180605,0.1,55);  
    string id;
```

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```
int main(){  
    fruit ft("101","apple",4,190730,0,"circle","red");  
    cake ck("102","cake",2,190730,0,"sweet");  
    commodity cd("103","commodity",15,190511,0,"cotton");  
    householdea hea("104","householdea",200,180605,0.1,55);  
    string id;  
    int sum=0;  
    char ch;
```

```
int main(){  
    fruit ft("101","apple",4,190730,0,"circle","red");  
    cake ck("102","cake",2,190730,0,"sweet");  
    commodity cd("103","commodity",15,190511,0,"cotton");  
    householdea hea("104","householdea",200,180605,0.1,55);  
    string id;  
    int sum=0;  
    cout<<"请输入条形码:";
```

```
int main() {  
    fruit ft("101","apple",4,190730,0,"circle","red");  
    cake ck("102","cake",2,190730,0,"sweet");  
    commodity cd("103","commodity",15,190511,0,"cotton");  
    household ea("104","household",200,180605,0.1,55);  
    string id;  
    int sum=0;  
    cout<<"请输入条形码:";  
    while(1){  
        .....  
    }  
    return 0;  
}
```

开启扫码结账旅程

```
while(1){  
    cin>>id;  
}
```

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```
while(1){
    cin>>id;
    if(id==ft.GetId()){
        ft.ShowInfo();
        sum=sum+ft.GetPrice()*(1-ft.GetDiscount());}
    else if(id==ck.GetId()){
        ck.ShowInfo();
        sum=sum+ck.GetPrice()*(1-ck.GetDiscount());}
    else if(id==cd.GetId()){
        cd.ShowInfo();
        sum=sum+cd.GetPrice()*(1-cd.GetDiscount());}
    else if(id==hea.GetId()){
        hea.ShowInfo();
        sum=sum+hea.GetPrice()*(1-hea.GetDiscount());}
}
```

```
while(1){
    cin>>id;
    if(id==ft.GetId()){
        ft.ShowInfo();
        sum=sum+ft.GetPrice()*(1-ft.GetDiscount());}
    else if(id==ck.GetId()){
        ck.ShowInfo();
        sum=sum+ck.GetPrice()*(1-ck.GetDiscount());}
    else if(id==cd.GetId()){
        cd.ShowInfo();
        sum=sum+cd.GetPrice()*(1-cd.GetDiscount());}
    else if(id==hea.GetId()){
        hea.ShowInfo();
        sum=sum+hea.GetPrice()*(1-hea.GetDiscount());}
    else{
        cout<<"您输入的条形码有误，是否继续扫码？ y/n";
    }
}
```



```
while(1){
    cin>>id;
    if(id==ft.GetId()){
        ft.ShowInfo();
        sum=sum+ft.GetPrice()*(1-ft.GetDiscount());}
    else if(id==ck.GetId()){
        ck.ShowInfo();
        sum=sum+ck.GetPrice()*(1-ck.GetDiscount());}
    else if(id==cd.GetId()){
        cd.ShowInfo();
        sum=sum+cd.GetPrice()*(1-cd.GetDiscount());}
    else if(id==hea.GetId()){
        hea.ShowInfo();
        sum=sum+hea.GetPrice()*(1-hea.GetDiscount());}
    else{
        cout<<"您输入的条形码有误，是否继续扫码？ y/n";
        cin>>ch;
        if(ch!='y'){
            cout<<"应付款: "<<sum<<"元"<<endl;
            break;
        }
    }
}
```

小结

类的继承

类的派生

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类的继承

类的派生

延伸

请完善超市收银系统，编写代码实现。