JAVA 编程进阶上机报告

学　　院 智能与计算学部

专　　业 软件工程

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一、实验要求

1. 需求描述：

某计算机组装公司主要销售各类组装计算机，计算机一般由 CPU、内存、主板、硬盘等组件构成。具体组件信息如下：

组件名	组件品牌	组件属性
CPU	Intel、AMD	Name， coreNum， price
内存	Samsung, Kingston	Name, volume, price
硬盘	Seagate, WestDigitals	Name, volume, price
主板	Asus、Gigabyte	Name， speed, price

每个组件都有自己的工作方式，简单起见，每个组件的工作内容为打印“组件名+work”。

2. 实现功能：

具体要求：

1）针对每个组件的每个品牌，设计一个类，并画成整体的类图

2）设计计算机类（Computer.java），由上述四类组件组装而成，包括计算机的名称、计算机的描述（包括各个组件名）以及总价格等

3）设计计算机销售主类（ComputerStore.java），包括 3 个由不同组件组装在一起的计算机实例，可实现计算机商品一览表，可展示每台计算机的描述、价格、工作等。

4）设计时基于抽象类和接口，要尽可能的实现高内聚、低耦合。

二、源代码

```
package Computer;

public class Computer_sell {

    public Computer_sell() {
        // TODO Auto-generated constructor stub
    }

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        CPU_Intel intel = new CPU_Intel("i7-8750H", 6, 2500.0);
        CPU_AMD amd = new CPU_AMD("Ryzen-7-3800X", 8, 2799.0);
        Memory_Kingston kingston = new Memory_Kingston("kingston", 8, 200.0);
        Memory_Samsung samsung = new Memory_Samsung("samsung", 16, 400.0);
        Disk_Seagate seagate = new Disk_Seagate("seagate", 250, 200.0);
        Disk_WestDigitals westdigitals = new Disk_WestDigitals("westdigitals",
500, 350.0);
        Mainboard_Asus asus = new Mainboard_Asus("asus", 2400, 800.0);
```

```
        Mainboard_Gigabyte gigabyte = new Mainboard_Gigabyte("gigabyte", 3600,
1100.0);

        Computer pc1 = new Computer("pc1", intel, kingston, asus, westdigitals);
        Computer pc2 = new Computer("pc2", intel, samsung, asus, seagate);
        Computer pc3 = new Computer("pc3", amd, samsung, gigabyte, seagate);
        Computer [] pc = {pc1, pc2, pc3};

        System.out.printf("%-5s","Name");
        System.out.printf("%-7s","Price");
        System.out.printf("%-14s","CPU");
        System.out.printf("%-9s","Memory");
        System.out.printf("%-10s","Mainboard");
        System.out.printf("%-13s","Disk");
        System.out.println("Work");

        for(int i=0; i<pc.length; i++) {
            System.out.printf("%-5s",pc[i].getName());
            System.out.printf("%-7s",pc[i].getPrice());
            System.out.printf("%-14s",pc[i].getCpu().getName());
            System.out.printf("%-9s",pc[i].getMemory().getName());
            System.out.printf("%-10s",pc[i].getMainboard().getName());
            System.out.printf("%-13s",pc[i].getDisk().getName());
            System.out.println(pc[i].getWork());
        }


    }

}


package Computer;

public class Computer {

    public Computer() {
        // TODO Auto-generated constructor stub
        cpu = null;
        memory = null;
        mainboard = null;
        disk = null;
        price = 0.0;
        work = null;
```

```
    }

    public Computer(String name, CPU cpu, Memory memory, Mainboard mainboard,
Disk disk) {
        price = cpu.getPrice() + memory.getPrice() + mainboard.getPrice() +
disk.getPrice();
        work = cpu.getWork() +" "+ memory.getWork() +" "+ mainboard.getWork()
+" "+ disk.getWork();
        this.Name = name;
        this.cpu = cpu;
        this.disk = disk;
        this.mainboard = mainboard;
        this.memory = memory;
    }

    private String Name;
    private double price;
    private CPU cpu;
    private Memory memory;
    private Mainboard mainboard;
    private Disk disk;
    private String work;
    public String getName() {
        return Name;
    }

    public double getPrice() {
        return price;
    }

    public String getWork() {
        return work;
    }

    public CPU getCpu() {
        return cpu;
    }

    public Memory getMemory() {
        return memory;
    }

    public Mainboard getMainboard() {
        return mainboard;
```

```
    }

    public Disk getDisk() {
        return disk;
    }



}


package Computer;

public class CPU_AMD extends CPU {

    public CPU_AMD() {
        // TODO Auto-generated constructor stub
    }

    public CPU_AMD(String name, int coreNum, double price) {
        this.Name = name;
        this.coreNum = coreNum;
        this.price = price;
    }

    private String Name;
    private int coreNum;
    private double price;
    private String work = "CPU work";

    public String getWork() {
        return work;
    }
    public String getName() {
        return Name;
    }
    public int getCoreNum() {
        return coreNum;
    }
    public double getPrice() {
        return price;
    }
}
```

```java
package Computer;

public class CPU_Intel extends CPU {

    public CPU_Intel() {
        // TODO Auto-generated constructor stub
    }

    public CPU_Intel(String name, int coreNum, double price) {
        this.Name = name;
        this.coreNum = coreNum;
        this.price = price;
    }

    private String Name;
    private int coreNum;
    private double price;
    private String work = "CPU work";

    public String getWork() {
        return work;
    }
    public String getName() {
        return Name;
    }
    public int getCoreNum() {
        return coreNum;
    }
    public double getPrice() {
        return price;
    }

}
```

```java
package Computer;


public class CPU {

    public CPU() {
        // TODO Auto-generated constructor stub
    }
```

```
    private String Name;
    private int coreNum;
    private double price;
    private String work = "CPU work";

    public String getName() {
        return Name;
    }
    public int getCoreNum() {
        return coreNum;
    }
    public double getPrice() {
        return price;
    }
    public String getWork() {
        return work;
    }



}


package Computer;

public class Disk_Seagate extends Disk {

    public Disk_Seagate() {
        // TODO Auto-generated constructor stub
    }

    public Disk_Seagate(String name, int volume, double price) {
        this.Name = name;
        this.volume = volume;
        this.price = price;
    }

    private String Name;
    private int volume;
    private double price;
    private String work = "Disk work";

    public String getWork() {
        return work;
```

```
    }
    public String getName() {
        return Name;
    }

    public int getVolume() {
        return volume;
    }
    public double getPrice() {
        return price;
    }

}


package Computer;

public class Disk_WestDigitals extends Disk {

    public Disk_WestDigitals() {
        // TODO Auto-generated constructor stub
    }

    public Disk_WestDigitals(String name, int volume, double price) {
        this.Name = name;
        this.volume = volume;
        this.price = price;
    }

    private String Name;
    private int volume;
    private double price;
    private String work = "Disk work";

    public String getWork() {
        return work;
    }
    public String getName() {
        return Name;
    }

    public int getVolume() {
        return volume;
    }
```

```
    public double getPrice() {
        return price;
    }


}


package Computer;

public class Disk {

    public Disk() {
        // TODO Auto-generated constructor stub
    }

    private String Name;
    private int volume;
    public String getName() {
        return Name;
    }
    public int getVolume() {
        return volume;
    }
    public double getPrice() {
        return price;
    }
    public String getWork() {
        return work;
    }

    private double price;
    private String work = "Disk work";

}


package Computer;

public class Mainboard_Asus extends Mainboard {

    public Mainboard_Asus() {
        // TODO Auto-generated constructor stub
    }
```

```java
    public Mainboard_Asus(String name, int speed, double price) {
        this.Name = name;
        this.speed = speed;
        this.price = price;
    }

    private String Name;
    private int speed;
    private double price;
    private String work = "Mainboard work";

    public String getWork() {
        return work;
    }
    public String getName() {
        return Name;
    }
    public int getSpeed() {
        return speed;
    }
    public double getPrice() {
        return price;
    }

}


package Computer;

public class Mainboard_Gigabyte extends Mainboard {

    public Mainboard_Gigabyte() {
        // TODO Auto-generated constructor stub
    }

    public Mainboard_Gigabyte(String name, int speed, double price) {
        this.Name = name;
        this.speed = speed;
        this.price = price;
    }

    private String Name;
    private int speed;
```

```
    private double price;
    private String work = "Mainboard work";

    public String getWork() {
        return work;
    }
    public String getName() {
        return Name;
    }
    public int getSpeed() {
        return speed;
    }
    public double getPrice() {
        return price;
    }


}


package Computer;

public class Mainboard {

    public Mainboard() {
        // TODO Auto-generated constructor stub
    }

    private String Name;
    private int speed;
    private double price;
    private String work = "Mainboard work";
    public String getName() {
        return Name;
    }
    public int getSpeed() {
        return speed;
    }
    public double getPrice() {
        return price;
    }
    public String getWork() {
        return work;
    }
```

```
}
```

```
package Computer;

public class Memory_Kingston extends Memory {

    public Memory_Kingston() {
        // TODO Auto-generated constructor stub
    }

    public Memory_Kingston(String name, int volume, double price) {
        this.Name = name;
        this.volume = volume;
        this.price = price;
    }

    private String Name;
    private int volume;
    private double price;
    private String work = "Memory work";

    public String getWork() {
        return work;
    }
    public String getName() {
        return Name;
    }
    public int getVolume() {
        return volume;
    }
    public double getPrice() {
        return price;
    }

}
```

```
package Computer;

public class Memory_Samsung extends Memory {

    public Memory_Samsung() {
```

```
        // TODO Auto-generated constructor stub
    }

    public Memory_Samsung(String name, int volume, double price) {
        this.Name = name;
        this.volume = volume;
        this.price = price;
    }

    private String Name;
    private int volume;
    private double price;
    private String work = "Memory work";

    public String getWork() {
        return work;
    }
    public String getName() {
        return Name;
    }
    public int getVolume() {
        return volume;
    }
    public double getPrice() {
        return price;
    }

}


package Computer;

public class Memory {

    public Memory() {
        // TODO Auto-generated constructor stub
    }

    private String Name;
    private int volume;
    private double price;
    private String work = "Memory work";
    public String getName() {
        return Name;
```

```
    }
    public int getVolume() {
        return volume;
    }
    public double getPrice() {
        return price;
    }
    public String getWork() {
        return work;
    }


}
```

三、实验结果

```
<terminated> Computer_sell [Java Application] F:\JDK1\bin\javaw.exe (2020年3月11日 下午9:57:05)
Name Price  CPU           Memory   Mainboard Disk         Work
pc1  3850.0 i7-8750H      kingston asus      westdigitals CPU work Memory work Mainboard work Disk work
pc2  3900.0 i7-8750H      samsung  asus      seagate      CPU work Memory work Mainboard work Disk work
pc3  4499.0 Ryzen-7-3800X samsung  gigabyte  seagate      CPU work Memory work Mainboard work Disk work
```