SmartHomeTest.java

```java
interface smartLock  7 usages  2 implementations
{
    void batteryConsumption();  2 usages  2 implementations
}

interface lightBulb  7 usages  2 implementations
{
    void powerUsage();  2 usages  2 implementations
}

//Brand A products
class BrandALock implements smartLock  1 usage
{
    int aBattery;  2 usages

    public BrandALock(int aBattery)  1 usage
    {
        this.aBattery = aBattery;
    }

    @Override  2 usages
    public void batteryConsumption()
    {
        System.out.println("The battery consumption from the lock from brand A is " + aBattery + "W.");
    }

}

class BrandABulb implements lightBulb  1 usage
{
    int aPower;  2 usages

    public BrandABulb(int aPower) {  1 usage
        this.aPower = aPower;
    }
```

```java
    @Override  2 usages
    public void powerUsage()
    {
        System.out.println("The power usage from the bulb from brand A is " + aPower + "W.");
    }
}
//Brand B products
class BrandBLock implements smartLock  1 usage
{
    int bBattery;  2 usages
    public BrandBLock(int bBattery)  1 usage
    {
        this.bBattery = bBattery;
    }

    @Override  2 usages
    public void batteryConsumption()
    {
        System.out.println("The battery consumption from the lock from brand B is " + bBattery + "W.");
    }

}

class BrandBBulb implements lightBulb  1 usage
{
    int bPower;  2 usages

    public BrandBBulb(int bPower) {  1 usage
        this.bPower = bPower;
    }

```

```
67
68      @Override  2 usages
69      public void powerUsage()
70      {
71          System.out.println("The power usage from the bulb from brand B is " + bPower + "W.");
72      }
73  }
74
75  //Abstract Factory Interface
76  interface SmartHomeFactory  4 usages  2 implementations
77  {
78      smartLock createLock(int battery);  2 usages  2 implementations
79      lightBulb createBulb(int power);  2 usages  2 implementations
80  }
81
82  //Factory for Brand A
83  class BrandAFactory implements SmartHomeFactory  1 usage
84  {
85      @Override  2 usages
86      public smartLock createLock(int battery)
87      {
88          return new BrandALock(battery);
89      }
90
91      @Override  2 usages
92      public lightBulb createBulb(int power)
93      {
94          return new BrandABulb(power);
95      }
96  }
97
```

```
98  //Factory for Brand B
99  class BrandBFactory implements SmartHomeFactory  1 usage
100 {
101     @Override  2 usages
102     public smartLock createLock(int battery)
103     {
104         return new BrandBLock(battery);
105     }
106
107     @Override  2 usages
108     public lightBulb createBulb(int power)
109     {
110         return new BrandBBulb(power);
111     }
112 }
113
```

```java
//Test Driver for Smart Home System
public class SmartHomeTest {
    public static void main(String[] args) {

        int aPower = 50;
        int bPower = 70;

        int aBattery = 20;
        int bBattery = 30;

        SmartHomeFactory brandAFactory = new BrandAFactory();
        SmartHomeFactory brandBFactory = new BrandBFactory();

        lightBulb bulb1 = brandAFactory.createBulb(aPower);
        bulb1.powerUsage();

        lightBulb bulb2 = brandBFactory.createBulb(bPower);
        bulb2.powerUsage();

        smartLock lock1 = brandAFactory.createLock(aBattery);
        lock1.batteryConsumption();

        smartLock lock2 = brandBFactory.createLock(bBattery);
        lock2.batteryConsumption();
    }

}
```

```
C:\Users\chris\.jdks\openjdk-22.0.2\bin\java.exe "-javaagent:C:\P
The power usage from the bulb from brand A is 50W.
The power usage from the bulb from brand B is 70W.
The battery consumption from the lock from brand A is 20W.
The battery consumption from the lock from brand B is 30W.

Process finished with exit code 0
```