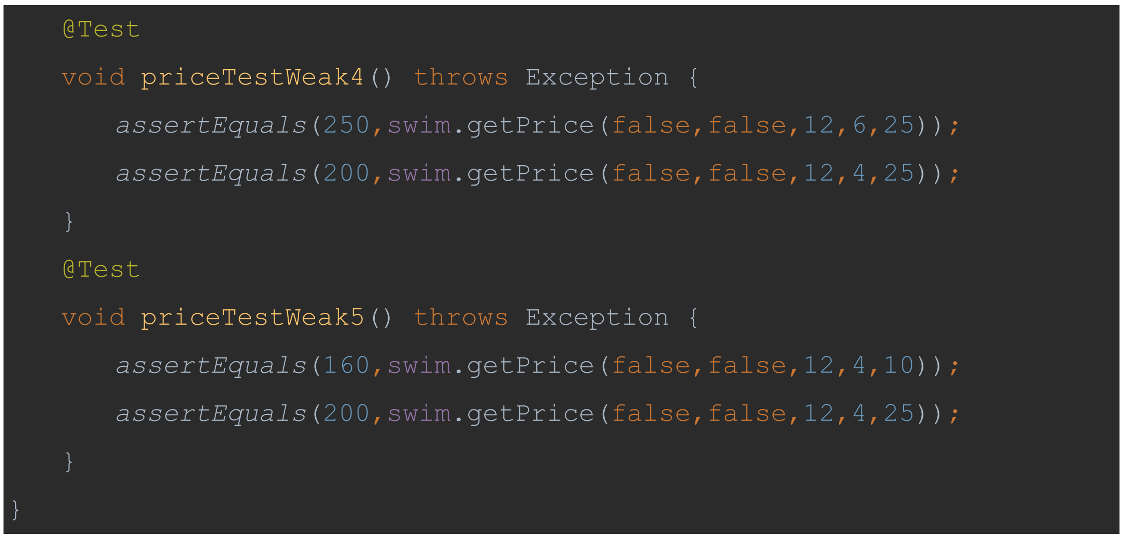
D0745378 薛竣祐 M6.2

Swim.java

```
public class Swim {
   private static final int NORMAL_PRICE = 200;
   private static final int WEEKEND_PRICE = 250;
   double getPrice (boolean is_member,boolean is_group,int time,int
week,int age) throws Exception {
       if(time>22 || time<5) throw new Exception("Not Open");
       if(age<3 || age>75) throw new Exception("Not Open");
       double discount = 1;
       if (week == 6 || week == 7) {
           discount = is_member ? 0.5 : 1;
           return WEEKEND_PRICE * discount;
       }
       if (time < 7) discount = 0.8;
       if (age <=12 || age>=60) discount = 0.8;
       if (is_group) discount = 0.7;
       if (is_member) discount = 0.5;

       return NORMAL_PRICE * discount;
   }
}
```

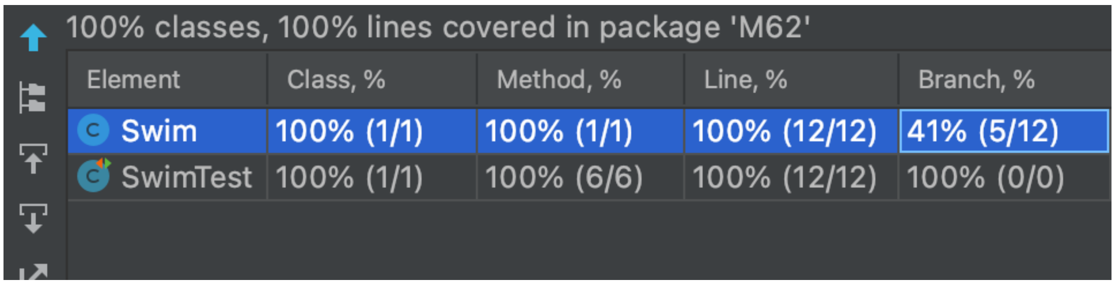
SwimTest.java （弱涵蓋）

```
public class SwimTest {

   Swim swim;

   @BeforeEach

   void set(){

       swim = new Swim();

   }

   @Test

   void priceTestWeak1() throws Exception {

       assertEquals(100,swim.getPrice(true,false,12,4,25));

       assertEquals(200,swim.getPrice(false,false,12,4,25));

   }

   @Test

   void priceTestWeak2() throws Exception {

       assertEquals(140,swim.getPrice(false,true,12,4,25));

       assertEquals(200,swim.getPrice(false,false,12,4,25));

   }

   @Test

   void priceTestWeak3() throws Exception {

       assertEquals(160,swim.getPrice(false,false,6,4,25));

       assertEquals(200,swim.getPrice(false,false,12,4,25));

   }
```



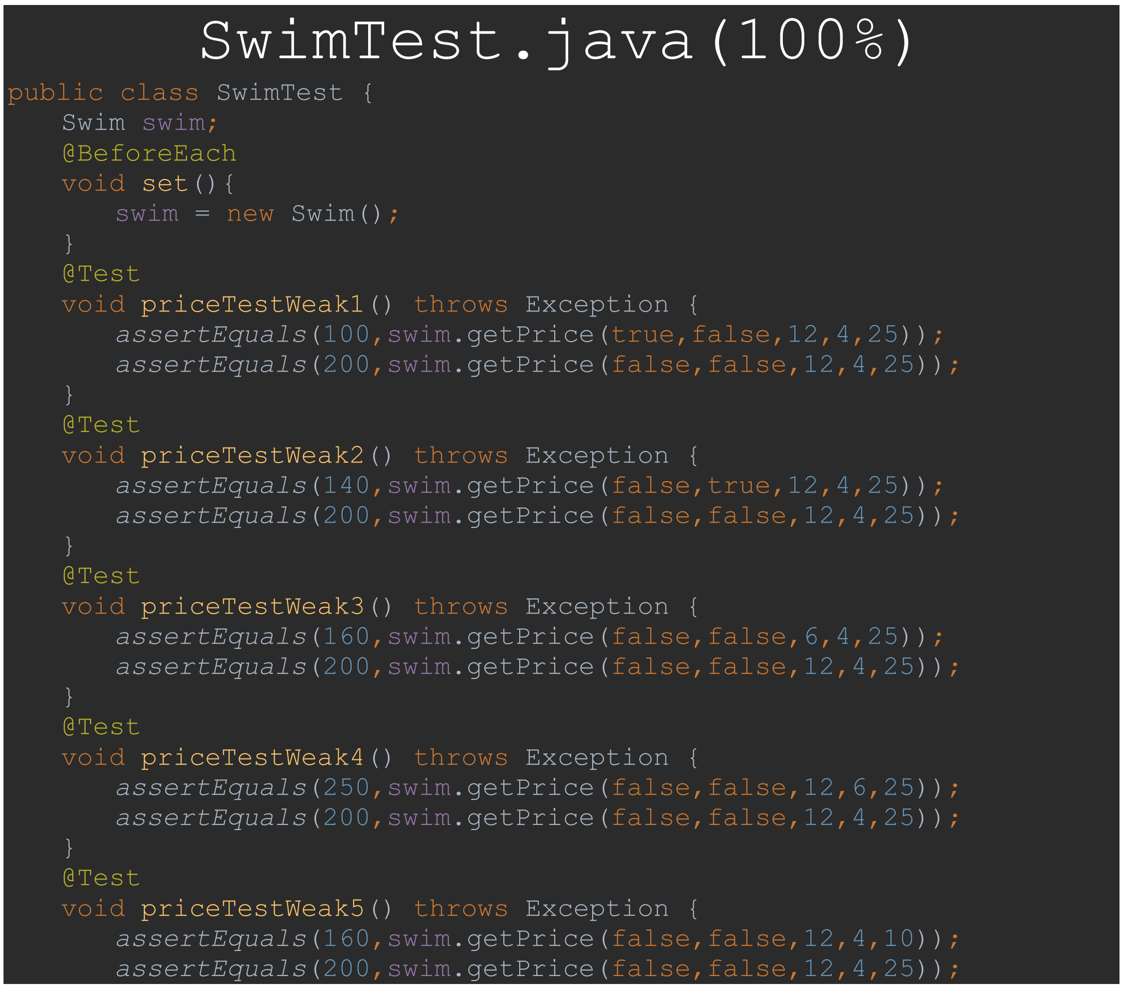
```java
    @Test
    void priceTestWeak4() throws Exception {
        assertEquals(250,swim.getPrice(false,false,12,6,25));
        assertEquals(200,swim.getPrice(false,false,12,4,25));
    }
    @Test
    void priceTestWeak5() throws Exception {
        assertEquals(160,swim.getPrice(false,false,12,4,10));
        assertEquals(200,swim.getPrice(false,false,12,4,25));
    }
}
```

涵蓋度測試：41%



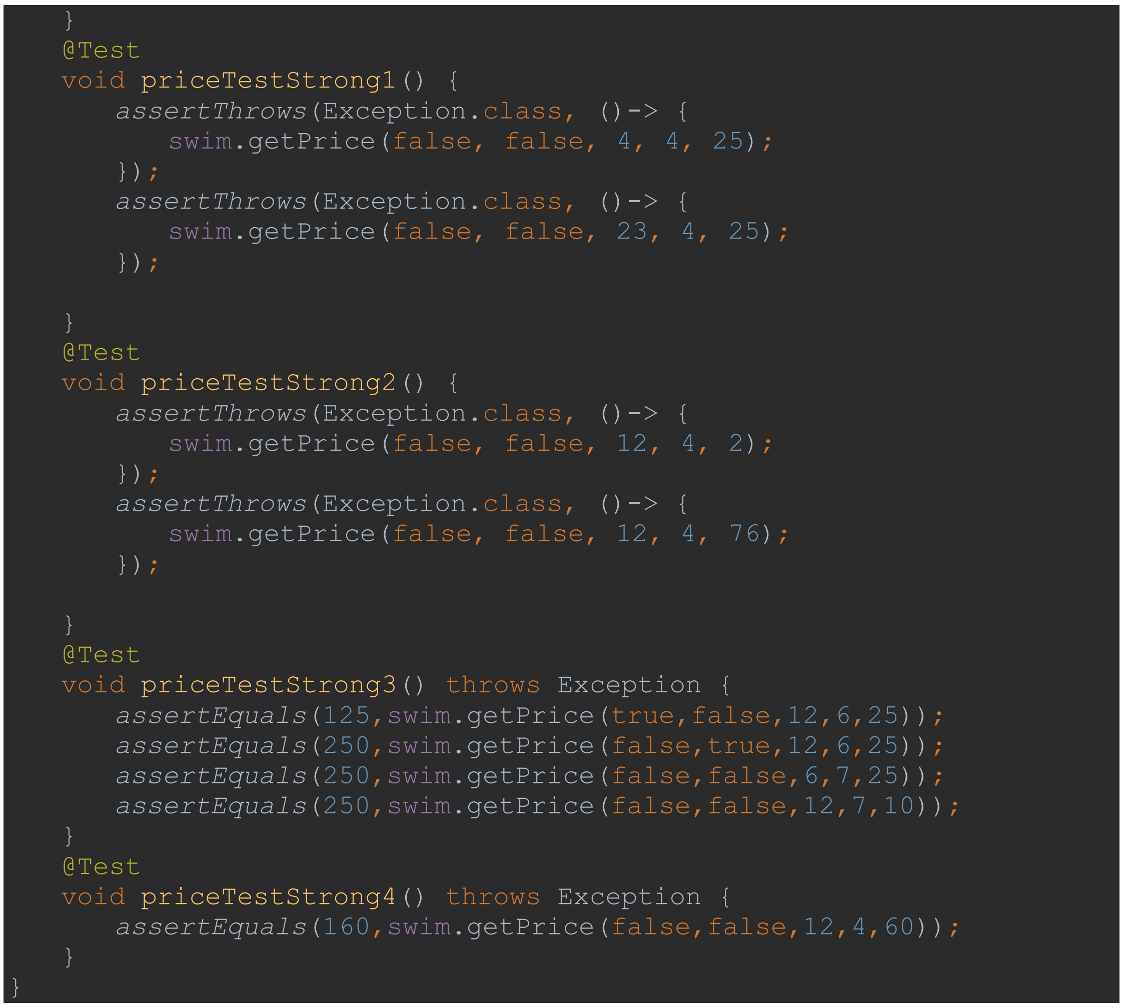
100% classes, 100% lines covered in package 'M62'

Element	Class, %	Method, %	Line, %	Branch, %
Swim	100% (1/1)	100% (1/1)	100% (12/12)	41% (5/12)
SwimTest	100% (1/1)	100% (6/6)	100% (12/12)	100% (0/0)



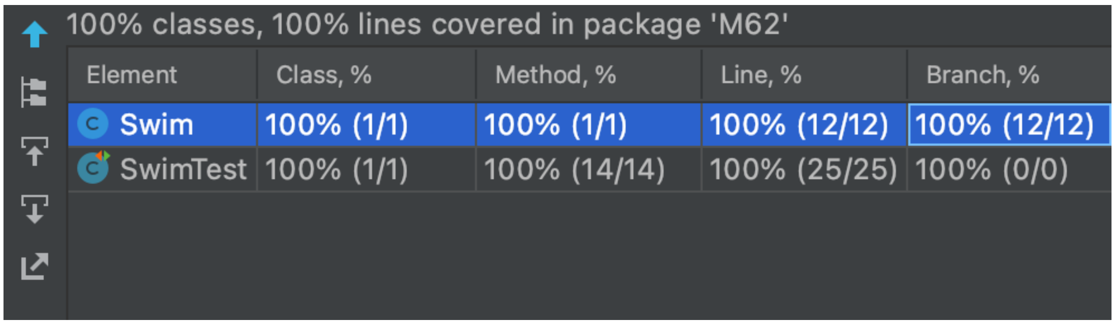
SwimTest.java(100%)

```java
public class SwimTest {
    Swim swim;
    @BeforeEach
    void set(){
        swim = new Swim();
    }
    @Test
    void priceTestWeak1() throws Exception {
        assertEquals(100,swim.getPrice(true,false,12,4,25));
        assertEquals(200,swim.getPrice(false,false,12,4,25));
    }
    @Test
    void priceTestWeak2() throws Exception {
        assertEquals(140,swim.getPrice(false,true,12,4,25));
        assertEquals(200,swim.getPrice(false,false,12,4,25));
    }
    @Test
    void priceTestWeak3() throws Exception {
        assertEquals(160,swim.getPrice(false,false,6,4,25));
        assertEquals(200,swim.getPrice(false,false,12,4,25));
    }
    @Test
    void priceTestWeak4() throws Exception {
        assertEquals(250,swim.getPrice(false,false,12,6,25));
        assertEquals(200,swim.getPrice(false,false,12,4,25));
    }
    @Test
    void priceTestWeak5() throws Exception {
        assertEquals(160,swim.getPrice(false,false,12,4,10));
        assertEquals(200,swim.getPrice(false,false,12,4,25));
```



```
    }
    @Test
    void priceTestStrong1() {
        assertThrows(Exception.class, ()-> {
            swim.getPrice(false, false, 4, 4, 25);
        });
        assertThrows(Exception.class, ()-> {
            swim.getPrice(false, false, 23, 4, 25);
        });

    }
    @Test
    void priceTestStrong2() {
        assertThrows(Exception.class, ()-> {
            swim.getPrice(false, false, 12, 4, 2);
        });
        assertThrows(Exception.class, ()-> {
            swim.getPrice(false, false, 12, 4, 76);
        });

    }
    @Test
    void priceTestStrong3() throws Exception {
        assertEquals(125,swim.getPrice(true,false,12,6,25));
        assertEquals(250,swim.getPrice(false,true,12,6,25));
        assertEquals(250,swim.getPrice(false,false,6,7,25));
        assertEquals(250,swim.getPrice(false,false,12,7,10));
    }
    @Test
    void priceTestStrong4() throws Exception {
        assertEquals(160,swim.getPrice(false,false,12,4,60));
    }
}
```

涵蓋度：100%



100% classes, 100% lines covered in package 'M62'

Element	Class, %	Method, %	Line, %	Branch, %
Swim	100% (1/1)	100% (1/1)	100% (12/12)	100% (12/12)
SwimTest	100% (1/1)	100% (14/14)	100% (25/25)	100% (0/0)

心得

弱涵蓋測試可以快速的把大部分的分支都走過一遍，能夠快速的簡單測試程式的錯誤可能性，但沒辦法讓可能前後分支會互相影響的狀況考量到。
透過涵蓋度測試得到的結果是 41%，許多的條件都沒有走到，透過 IDE 的涵蓋度測試工具逐漸改善成 100%，這樣更能確保程式的錯誤機率降低，但仍然有些問題，如果把 Swim.java 中的折數的 if 順序打亂會導致折數不是取小的優先，涵蓋度測試並沒辦法找出這些錯誤，所以涵蓋度 100%也只能表達出有測到這些地方而已，並不能保證有測到這個地方就沒錯。