软件测试上机报告

第一次上机作业

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年　　级_____17 级_____
班　　级_____1 班_____

一、实验要求

1. Install Junit(4.12), Hamcrest(1.3) with Eclipse/IDEA
2. Install Eclemma with Eclipse
3. Write a java program for the given problem and test the program with Junit.

a) Description of the problem:

There are one 50 yuan, one 20 yuan, one 10 yuan, two 5 yuan bills and three 1 yuan coins in your pocket. Write a program to find out whether you can take out a given number (x) yuan.

二、源代码

采用二进制优化的枚举方法，枚举所有可能，查询时使用哈希表查询，时间复杂度为 O(n*2^n)

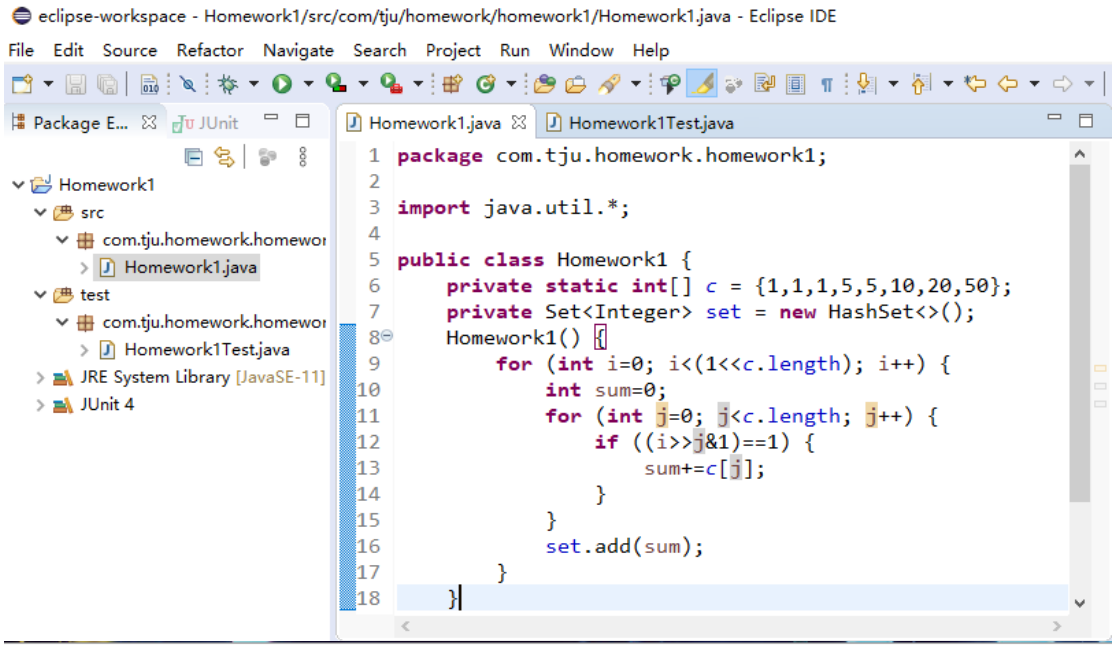
/Homework1/src/com/tju/homework/homework1/Homework1.java

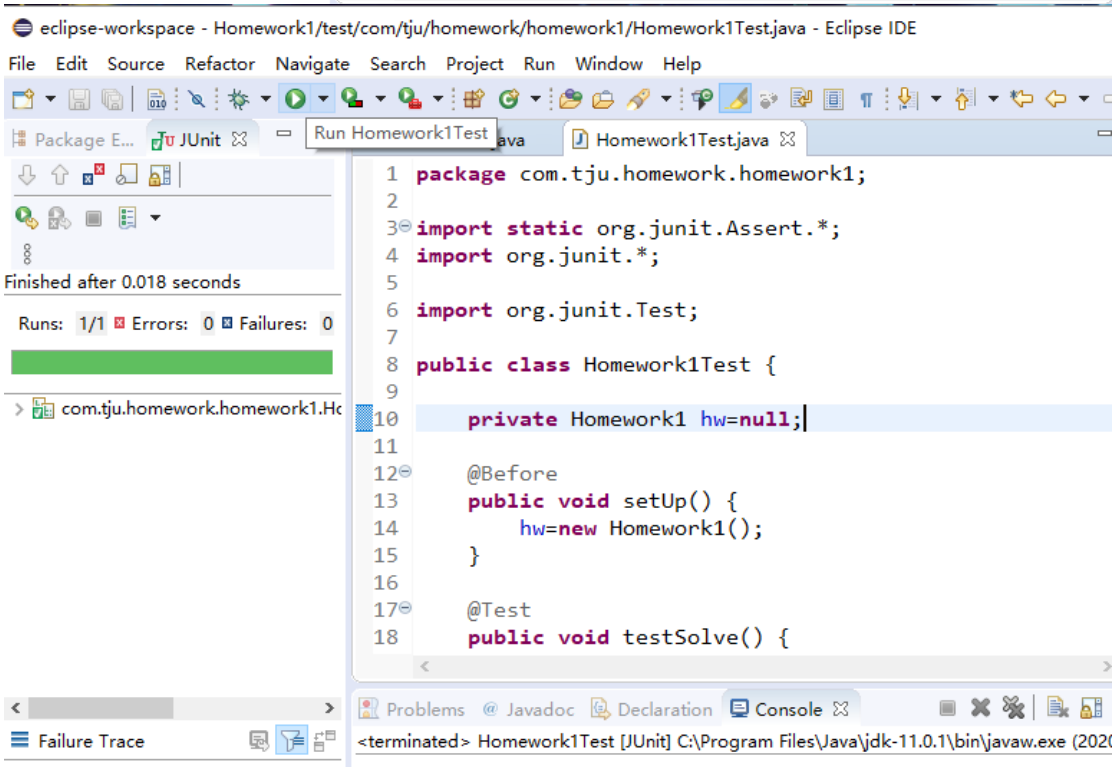
```
package com.tju.homework.homework1;

import java.util.*;

public class Homework1 {
    private static int[] c = {1,1,1,5,5,10,20,50};
    private Set<Integer> set = new HashSet<>();
    Homework1() {
        for (int i=0; i<(1<<c.length); i++) {
            int sum=0;
            for (int j=0; j<c.length; j++) {
                if ((i>>j&1)==1) {
                    sum+=c[j];
                }
            }
            set.add(sum);
        }
    }
    public boolean solve(int x) {
        return set.contains(x);
    }
}
```

/Homework1/test/com/tju/homework/homework1/Homework1Test.jav

```
package com.tju.homework.homework1;

import static org.junit.Assert.*;
import org.junit.*;

import org.junit.Test;

public class Homework1Test {

    private Homework1 hw=null;

    @Before
    public void setUp() {
        hw=new Homework1();
    }

    @Test
    public void testSolve() {
        int[] T = {0,1,2,5,8,30,80,93};
        for (int i:T) {
            assertTrue(hw.solve(i));
        }
        int[] F = {-1,4,19,94};
        for (int i:F) {
            assertFalse(hw.solve(i));
        }
    }

}
```

三、运行结果


eclipse-workspace - Homework1/src/com/tju/homework/homework1/Homework1.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Package E... JUnit
Homework1
src
com.tju.homework.homewor
Homework1.java
test
com.tju.homework.homewor
Homework1Test.java
JRE System Library [JavaSE-11]
JUnit 4
Homework1.java
Homework1Test.java
1 package com.tju.homework.homework1;
2
3 import java.util.*;
4
5 public class Homework1 {
6 private static int[] c = {1,1,1,5,5,10,20,50};
7 private Set<Integer> set = new HashSet<>();
8 Homework1() {
9 for (int i=0; i<(1<<c.length); i++) {
10 int sum=0;
11 for (int j=0; j<c.length; j++) {
12 if ((i>>j&1)==1) {
13 sum+=c[j];
14 }
15 }
16 set.add(sum);
17 }
18 }


eclipse-workspace - Homework1/test/com/tju/homework/homework1/Homework1Test.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Run Homework1Test
Package E... JUnit
Finished after 0.018 seconds
Runs: 1/1 Errors: 0 Failures: 0
com.tju.homework.homework1.Hc
Failure Trace
Homework1Test.java
1 package com.tju.homework.homework1;
2
3 import static org.junit.Assert.*;
4 import org.junit.*;
5
6 import org.junit.Test;
7
8 public class Homework1Test {
9
10 private Homework1 hw=null;
11
12 @Before
13 public void setUp() {
14 hw=new Homework1();
15 }
16
17 @Test
18 public void testSolve() {
Problems Javadoc Declaration Console
<terminated> Homework1Test [JUnit] C:\Program Files\Java\jdk-11.0.1\bin\javaw.exe (202