Unit testing for Armed Bandit fruit-slot game

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Armed Bandit fruit slot game

Individual Project

Hours spend: ≈10hours

Date : 14-04-2022

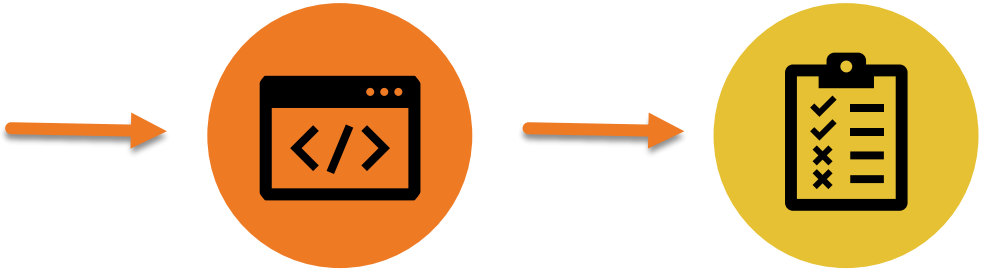
Project Description

- Armed Bandit fruit slot game is implemented using 2 classes
- Java programming language is used
- Junit framework is used with different assertion methods for testing the code
- 6 different fruit names and BAR has been used as choices
- Each class has a testing unit

Timetable

Java

JUnit



6 hours of coding

5 hours of testing

Both phases has prestudy, as I am a beginner

JUnit Testing Framework

```java
@Test
public void BarConditionTest(){
    int a = 6;
    int b = 6;
    int c = 6;
    SlotGame obj = new SlotGame();
    assertEquals(obj.FruitName(a,b,c),"Congratulations,You have won
    $100");
}
```

- Open-source testing framework
- Assertion methods are used to test the code for various possibilities
- Following libraries are included:
  - hamcrest-core-1.3.jar
  - junit-4.12.jar
  - cpsuite-1.2.6.jar

Problems and Solutions

Problem 1 - assertEquals

Syntax : assertEquals([arg] expected,[arg] actual)

```
pavit@LAPTOP-BM9KFM8K /cygdrive/d/Testing_proj
$ java -cp ".;hamcrest-core-1.3.jar;junit-4.12.jar"      org.junit.runner.JUnitCor
e \SlotGameTest
JUnit version 4.12
...E.
Time: 0
There was 1 failure:
1) BarConditionTest(SlotGameTest)
org.junit.ComparisonFailure: expected:<You []win> but was:<You [not ]win>
        at org.junit.Assert.assertEquals(Assert.java:115)
        at org.junit.Assert.assertEquals(Assert.java:144)
        at SlotGameTest.BarConditionTest(SlotGameTest.java:34)
        at java.base/jdk.internal.reflect.NativeMethodAccessorImpl.invoke0(Native
Method)
        at java.base/jdk.internal.reflect.NativeMethodAccessorImpl.invoke(NativeMe
thodAccessorImpl.java:77)
        at java.base/jdk.internal.reflect.DelegatingMethodAccessorImpl.invoke(Dele
gatingMethodAccessorImpl.java:43)
        at java.base/java.lang.reflect.Method.invoke(Method.java:568)
        at org.junit.runners.model.FrameworkMethod$1.runReflectiveCall(FrameworkMe
thod.java:50)
        at org.junit.internal.runners.model.ReflectiveCallable.run(ReflectiveCalla
ble.java:12)
        at org.junit.runners.model.FrameworkMethod.invokeExplosively(FrameworkMeth
od.java:47)
        at org.junit.internal.runners.statements.InvokeMethod.evaluate(InvokeMetho
```

- Difference in datatype
- Value mismatch due to datatype difference

Problems - 2. Compilation error

```
pavit@LAPTOP-BM9KFM8K /cygdrive/d/vc_testing/junit
$ javac -cp ".;junit-4.12.jar" SlotGameTest.java
SlotGameTest.java:9: error: package org.junit does not exist
import static org.junit.Assert.*;
                        ^
SlotGameTest.java:10: error: package org.junit does not exist
import org.junit.Test;
                ^
SlotGameTest.java:11: error: package org.junit does not exist
import org.junit.Ignore;
                ^
SlotGameTest.java:12: error: package org.junit.runner does not exist
import org.junit.runner.RunWith;
                        ^
SlotGameTest.java:13: error: package org.junit.runners does not exist
import org.junit.runners.JUnit4;
                         ^
SlotGameTest.java:17: error: cannot find symbol
    @Test
     ^
  symbol:   class Test
  location: class SlotGameTest
SlotGameTest.java:26: error: cannot find symbol
    @Test
     ^
```

- Necessary library package for the JUnit testing were missing in same folder

Learning Summary

- Game has been developed with two classes.
- Main reflection from this project - basics of Java and JUnit framework
- Learned about different Assertion methods
- Besides that, got to know about other similar frameworks
- Understanding of testing methodologies
- Understanding of suite class

Project Demonstration

```
pavit@LAPTOP-BM9KFM8K /cygdrive/d/Testing_proj
$ java SlotGame.java
How much would you like to bet?
100
Game starts...
Plum
Lemon
Plum
Congratulations, you have won 50$
Continue? y/n
y
How much would you like to bet?
50
Game starts...
Melon
Orange
Lemon
You have won $0
Continue? y/n
y
How much would you like to bet?
20
Game starts...
Orange
Banana
Plum
You have won $0
Continue? y/n
```

- Output of the game is shown here
- Every time we bet, game starts, and bar is filled with fruit choices
- Unequal Bar choices results in loss
- Equal bar choices wins the bet
- Bar choices are based on random numbers