Software Engineering IT314
Lab-8 Unit Testing with JUnit

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➢ **Sample ode for the 'Boa' class created for testing.**

```
// represents a boa constrictor
public class Boa {
	private String name;
	private int length; // the length of the boa, in feet
	private String favoriteFood;
	public Boa (String name, int length, String favoriteFood){
		this.name = name;
		this.length = length;
		this.favoriteFood = favoriteFood;
	}
	// returns true if this boa constrictor is healthy
	public boolean isHealthy(){
		return this.favoriteFood.equals("granola bars");
	}
	// returns true if the length of this boa constrictor is
	// less than the given cage length
	public boolean fitsInCage(int cageLength){
		return this.length < cageLength;
	}
}
```

➢ **Now we create a Junit Test case for testing the above 'Boa' class and named it 'Boa_test'.**

```
package test_lab8;
import static org.junit.jupiter.api.Assertions.*;
```

```
import org.junit.Before;
import org.junit.jupiter.api.Test;
class Boa_test {
  @Test
  public void testIsHealthyWithFavoriteFoodGranolaBars() {
     Boa boa = new Boa("Benny", 5, "granola bars");
     assertTrue(boa.isHealthy());
  }

  @Test
  public void testIsHealthyWithFavoriteFoodNotGranolaBars() {
     Boa boa = new Boa("Benny", 5, "mice");
     assertFalse(boa.isHealthy());
  }

  @Test
  public void testFitsInCageWhenLengthLessThanCageLength() {
     Boa boa = new Boa("Benny", 5, "granola bars");
     assertTrue(boa.fitsInCage(10));
  }

  @Test
  public void testFitsInCageWhenLengthGreaterThanCageLength() {
     Boa boa = new Boa("Benny", 20, "granola bars");
     assertFalse(boa.fitsInCage(10));

  }
}
```

- Now we ran the above test cases successfully.
- Now we use the **@Before** tag to run another test case.
- The **@Before tag** runs before every test case(@Test).

➢ Q4: The code snippet below show how to execute it.

```
  private Boa jen;
  private Boa ken;
```

```
  @Before
  public void setUp() throws Exception {
          jen = new Boa("Jennifer", 2, "grapes");
          ken = new Boa("Kenneth", 3, "granola bars");

}
```

➢ Q5: Below is the test code for the question.

```
  @Test
  public void testIsHealthy() {
        Boa jen = new Boa("Jen", 5, "granola bars");
     Boa ken = new Boa("Ken", 6, "mice");

    assertTrue(jen.isHealthy());
    assertFalse(ken.isHealthy());
  }

  @Test
  public void testFitsInCage() {
        Boa jen = new Boa("Jen", 5, "granola bars");
     Boa ken = new Boa("Ken", 6, "mice");

    assertFalse(jen.fitsInCage(2));
    assertTrue(jen.fitsInCage(10));
    assertTrue(jen.fitsInCage(15));
    assertFalse(ken.fitsInCage(4));
    assertTrue(ken.fitsInCage(15));
    assertTrue(ken.fitsInCage(20));
  }
```

➢ Q7: Creating another method in the 'Boa' class.

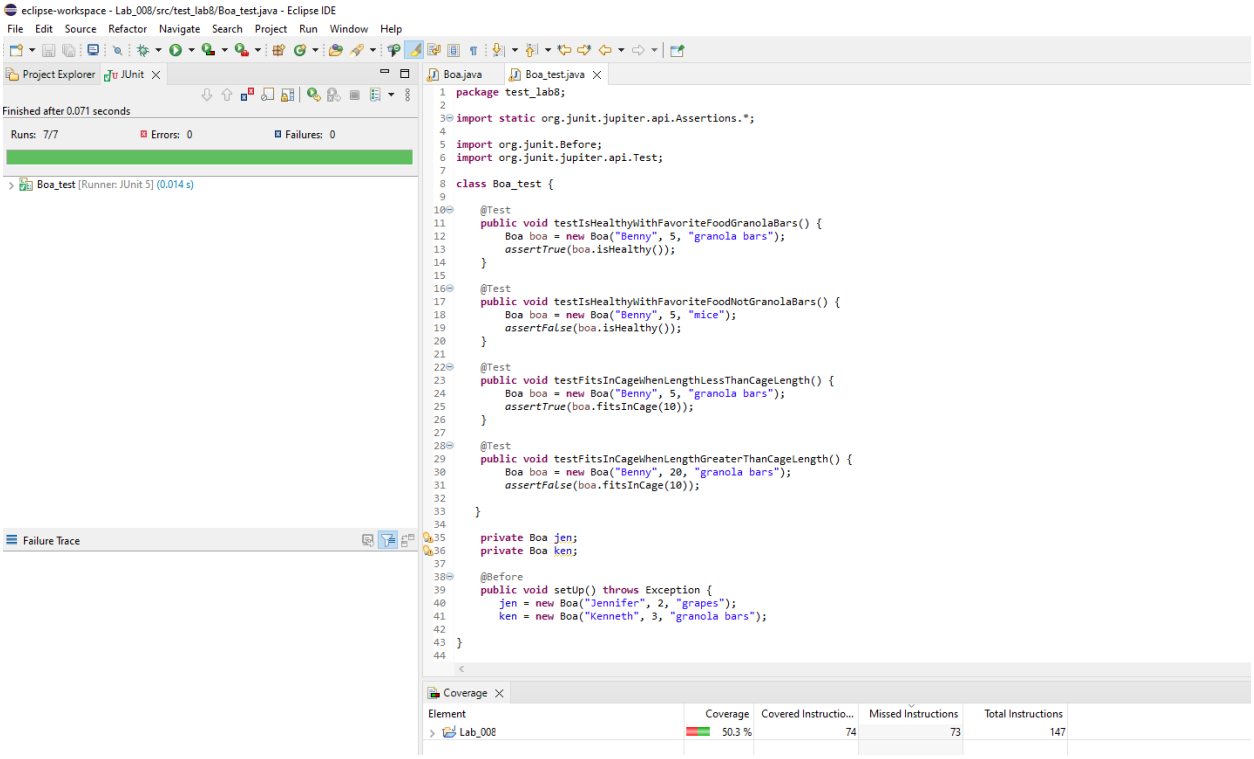
Method Code:

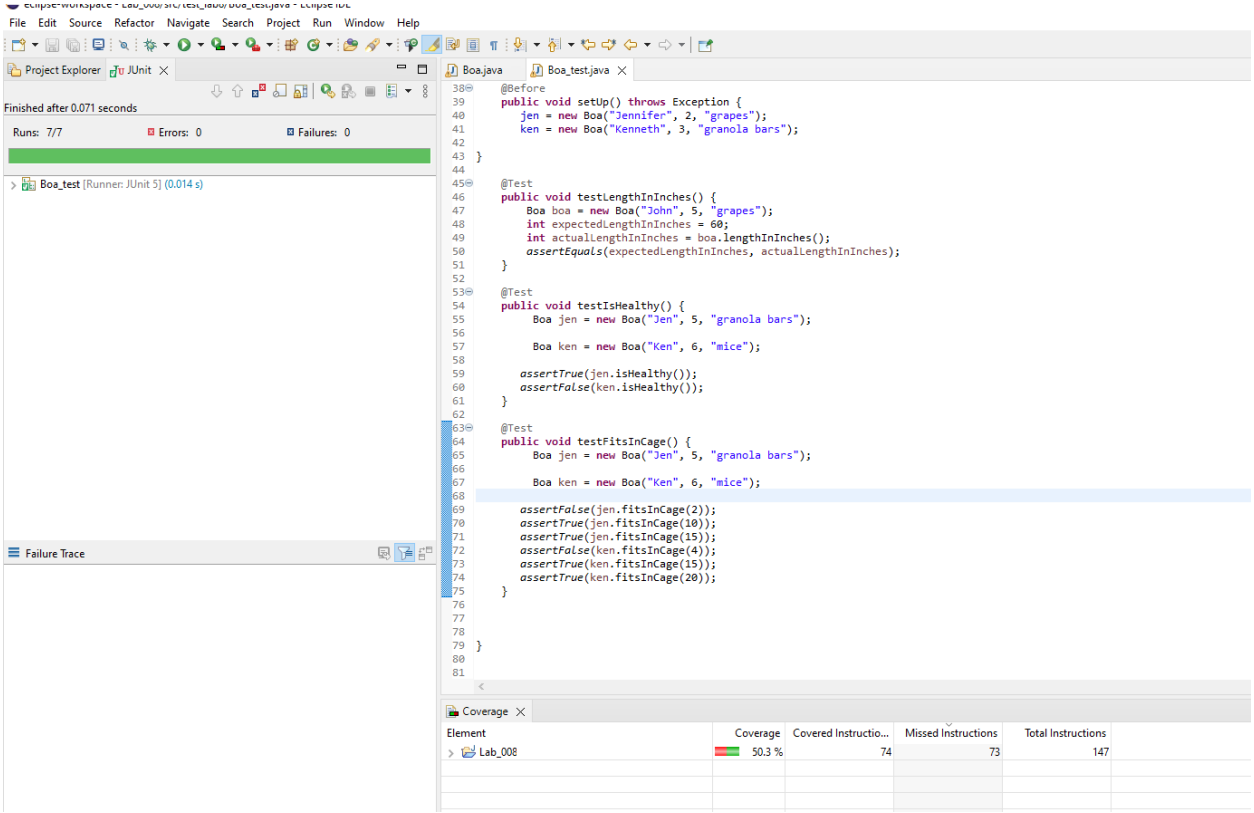
```
public int lengthInInches() {
  return this.length * 12;
}
```

Testing code:

```
@Test
  public void testLengthInInches() {
        Boa boa = new Boa("John", 5, "grapes");
        int expectedLengthInInches = 60;
        int actualLengthInInches = boa.lengthInInches();
        assertEquals(expectedLengthInInches, actualLengthInInches);
  }
```

- Here is the snippet for the complete testing code.




File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
JUnit
Finished after 0.071 seconds
Runs: 7/7
Errors: 0
Failures: 0
Boa_test [Runner: JUnit 5] (0.014 s)
Failure Trace
Boa.java
Boa_test.java
38 @Before
39 public void setUp() throws Exception {
40 jen = new Boa("Jennifer", 2, "grapes");
41 ken = new Boa("Kenneth", 3, "granola bars");
42
43 }
44
45 @Test
46 public void testLengthInInches() {
47 Boa boa = new Boa("John", 5, "grapes");
48 int expectedLengthInInches = 60;
49 int actualLengthInInches = boa.lengthInInches();
50 assertEquals(expectedLengthInInches, actualLengthInInches);
51 }
52
53 @Test
54 public void testIsHealthy() {
55 Boa jen = new Boa("Jen", 5, "granola bars");
56
57 Boa ken = new Boa("Ken", 6, "mice");
58
59 assertTrue(jen.isHealthy());
60 assertFalse(ken.isHealthy());
61 }
62
63 @Test
64 public void testFitsInCage() {
65 Boa jen = new Boa("Jen", 5, "granola bars");
66
67 Boa ken = new Boa("Ken", 6, "mice");
68
69 assertFalse(jen.fitsInCage(2));
70 assertTrue(jen.fitsInCage(10));
71 assertTrue(jen.fitsInCage(15));
72 assertFalse(ken.fitsInCage(4));
73 assertTrue(ken.fitsInCage(15));
74 assertTrue(ken.fitsInCage(20));
75 }
76
77
78
79 }
80
81
Coverage
Element
Coverage
Covered Instructio...
Missed Instructions
Total Instructions
Lab_008
50.3 %
74
73
147