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Institute of Information and Communication Technology

Subject: Software Engineering

Subject code: IT314

Lab 8

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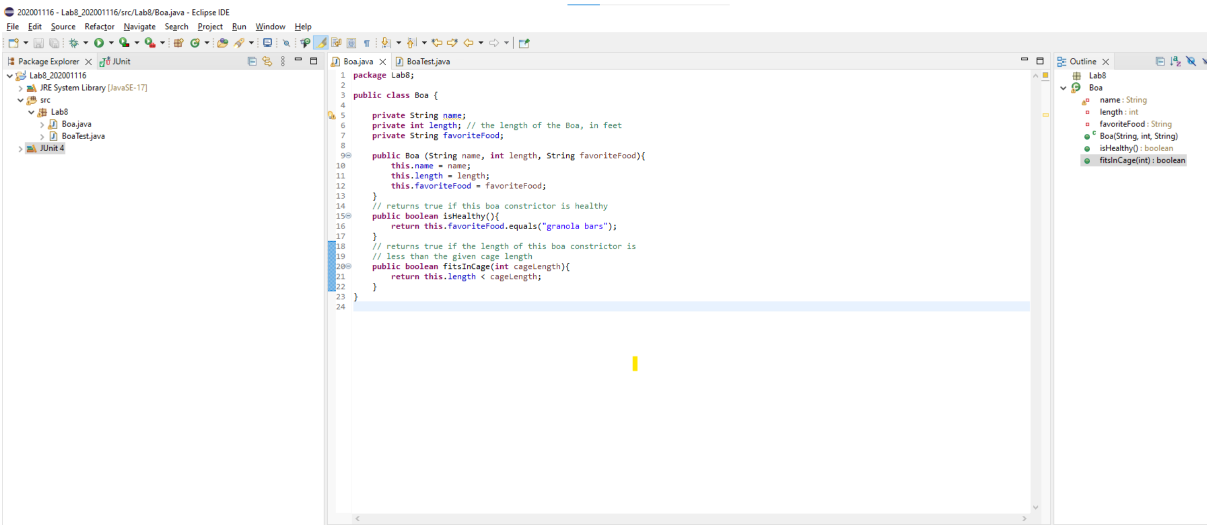
Topic: JUnit Testing

LAB EXERCISE

CLASS CODE:

according to initial steps :

```
package Lab8;
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;
        }
}
```



```java
package Lab8;

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;
    }
}

```

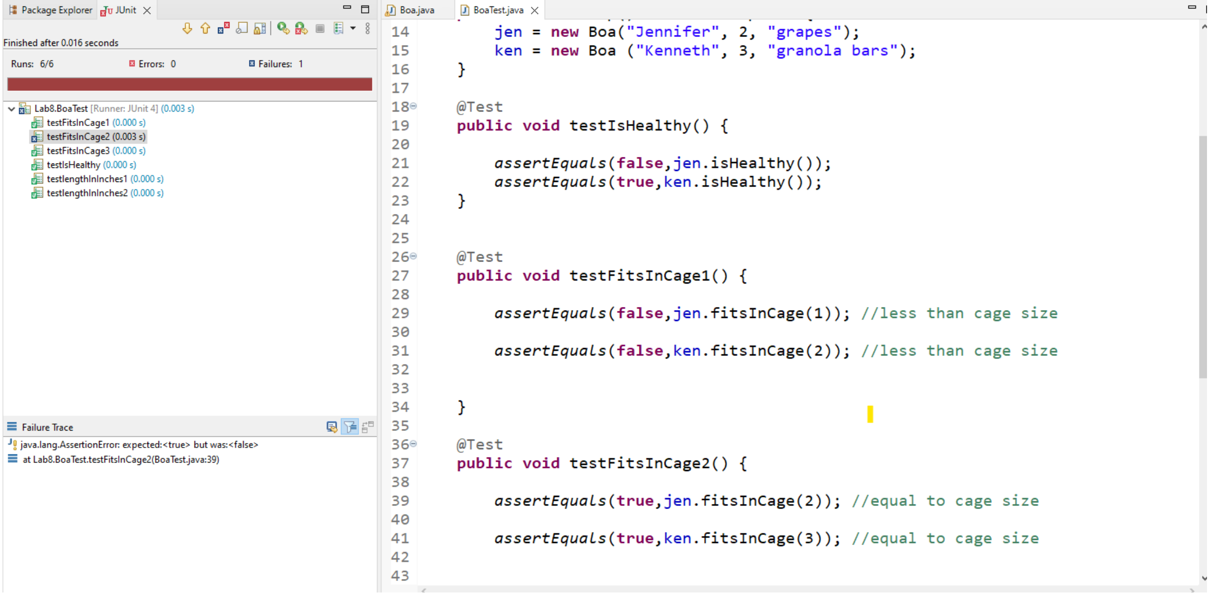
Adding one more function :

```java
// produces the length of the Boa in inches
        public int lengthInInches(){
                return this.length*12;
        }
```

TEST CASES :

```
package Lab8;
import static org.junit.Assert.*;
import org.junit.Before;
import org.junit.Test;
public class BoaTest {

    private Boa jen, ken;

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

        assertEquals(false,jen.isHealthy());
        assertEquals(true,ken.isHealthy());
    }

    @Test
    public void testFitsInCage1() {

        assertEquals(false,jen.fitsInCage(1)); //less than cage
size

        assertEquals(false,ken.fitsInCage(2)); //less than cage
size



    }
    @Test
    public void testFitsInCage2() {

        assertEquals(true,jen.fitsInCage(2)); //equal to cage size

        assertEquals(true,ken.fitsInCage(3)); //equal to cage
size



    }

    @Test
    public void testFitsInCage3() {

        assertEquals(true,ken.fitsInCage(4)); //greater than
cage size

        assertEquals(true,jen.fitsInCage(3)); //greater than
cage size
    }

    @Test
    public void testlengthInInches1() {
        int output = jen.lengthInInches();
        assertEquals(output,24);
    }
    @Test
    public void testlengthInInches2() {
        int output = ken.lengthInInches();
        assertEquals(output,36);
    }
}
```

screenshot to running the test cases :



```
Finished after 0.016 seconds
Runs: 6/6        Errors: 0        Failures: 1

Lab8.BoaTest [Runner: JUnit 4] (0.003 s)
    testFitsInCage1 (0.000 s)
    testFitsInCage2 (0.003 s)
    testFitsInCage3 (0.000 s)
    testIsHealthy (0.000 s)
    testlengthInInches1 (0.000 s)
    testlengthInInches2 (0.000 s)

java.lang.AssertionError: expected:<true> but was:<false>
at Lab8.BoaTest.testFitsInCage2(BoaTest.java:39)
```

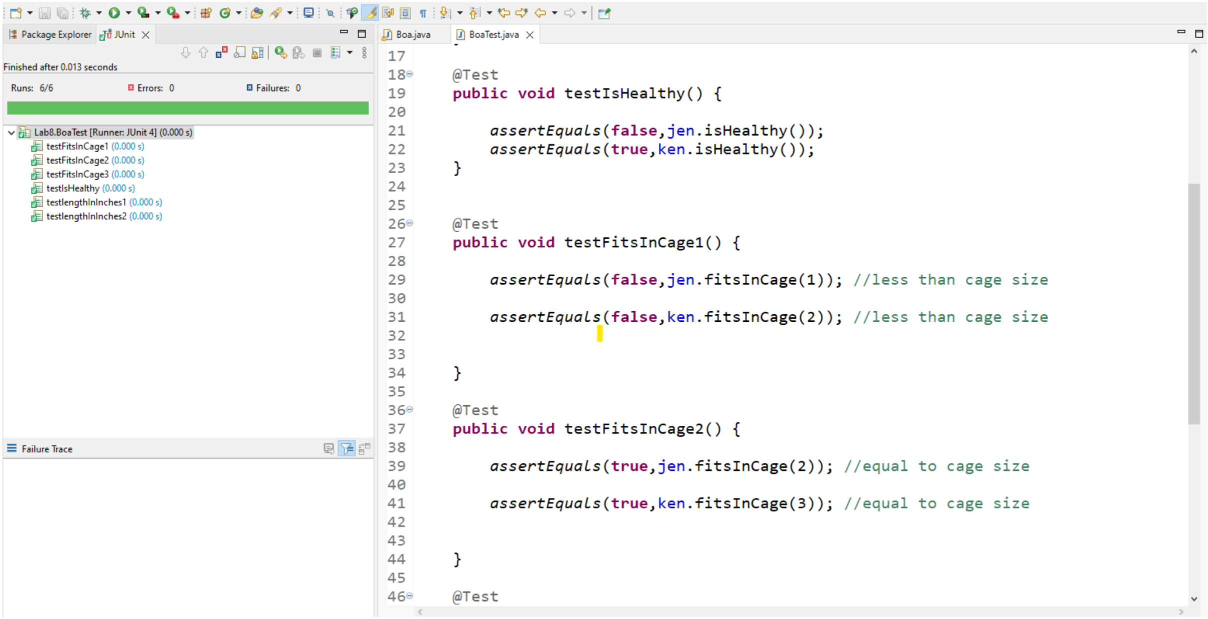
```java
        jen = new Boa("Jennifer", 2, "grapes");
        ken = new Boa ("Kenneth", 3, "granola bars");
    }

    @Test
    public void testIsHealthy() {

        assertEquals(false,jen.isHealthy());
        assertEquals(true,ken.isHealthy());
    }


    @Test
    public void testFitsInCage1() {

        assertEquals(false,jen.fitsInCage(1)); //less than cage size

        assertEquals(false,ken.fitsInCage(2)); //less than cage size


    }

    @Test
    public void testFitsInCage2() {

        assertEquals(true,jen.fitsInCage(2)); //equal to cage size

        assertEquals(true,ken.fitsInCage(3)); //equal to cage size

```

Here we can see when cage size is equal to length of object is returns false(due to failure of test case).

To fix this problem we will modify the code a little where

```java
public boolean fitsInCage(int cageLength){
            return this.length <= cageLength;
    }
```

after Changes :



```
Finished after 0.013 seconds
Runs: 6/6    Errors: 0    Failures: 0

Lab8.BoaTest [Runner: JUnit 4] (0.000 s)
    testFitsInCage1 (0.000 s)
    testFitsInCage2 (0.000 s)
    testFitsInCage3 (0.000 s)
    testIsHealthy (0.000 s)
    testlengthInInches1 (0.000 s)
    testlengthInInches2 (0.000 s)
```

```java

    @Test
    public void testIsHealthy() {

        assertEquals(false,jen.isHealthy());
        assertEquals(true,ken.isHealthy());
    }


    @Test
    public void testFitsInCage1() {

        assertEquals(false,jen.fitsInCage(1)); //less than cage size

        assertEquals(false,ken.fitsInCage(2)); //less than cage size


    }

    @Test
    public void testFitsInCage2() {

        assertEquals(true,jen.fitsInCage(2)); //equal to cage size

        assertEquals(true,ken.fitsInCage(3)); //equal to cage size


    }

    @Test
```

we can see now it runs.