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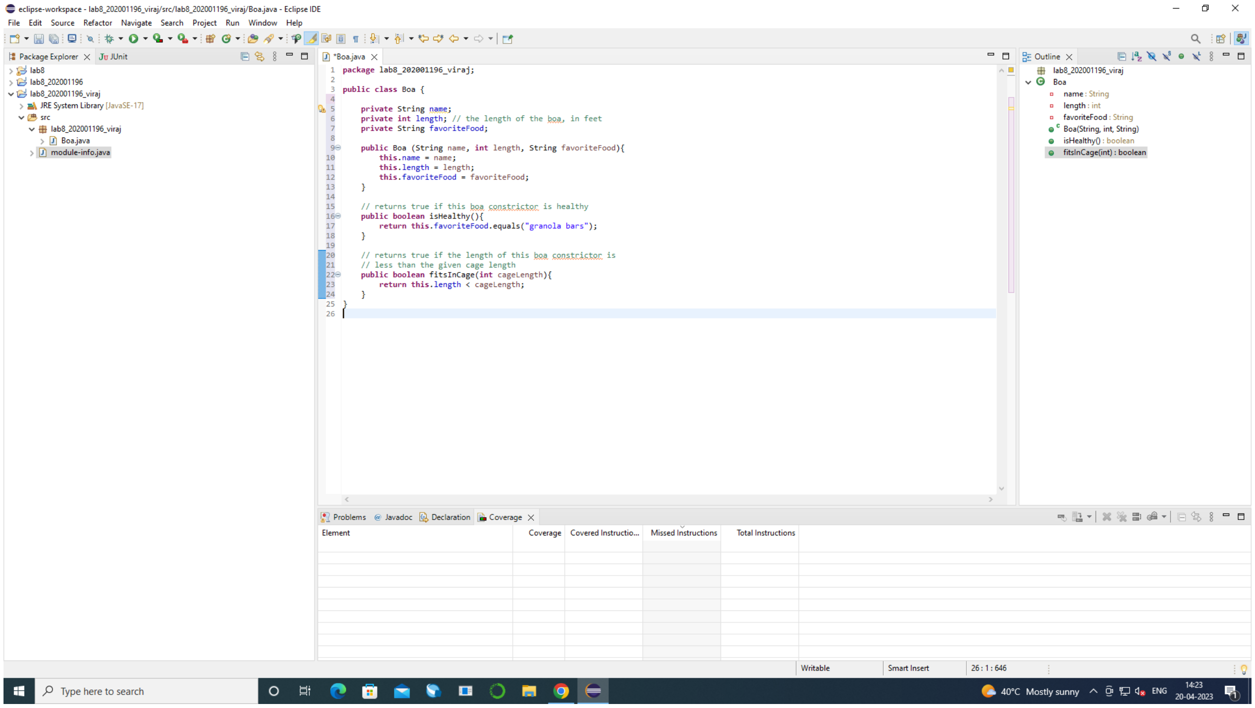
Student Id:202001196

LAB-8

Date:20/04/2023

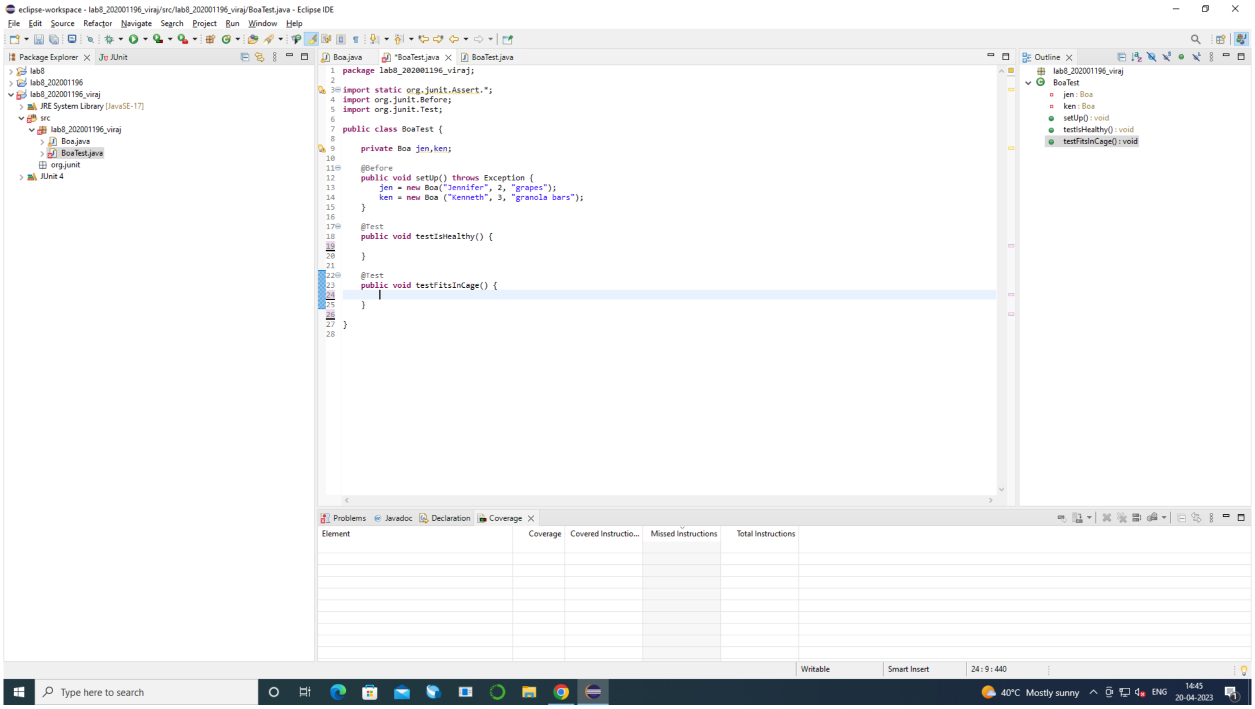
Course:IT314

Creating Boa Class:



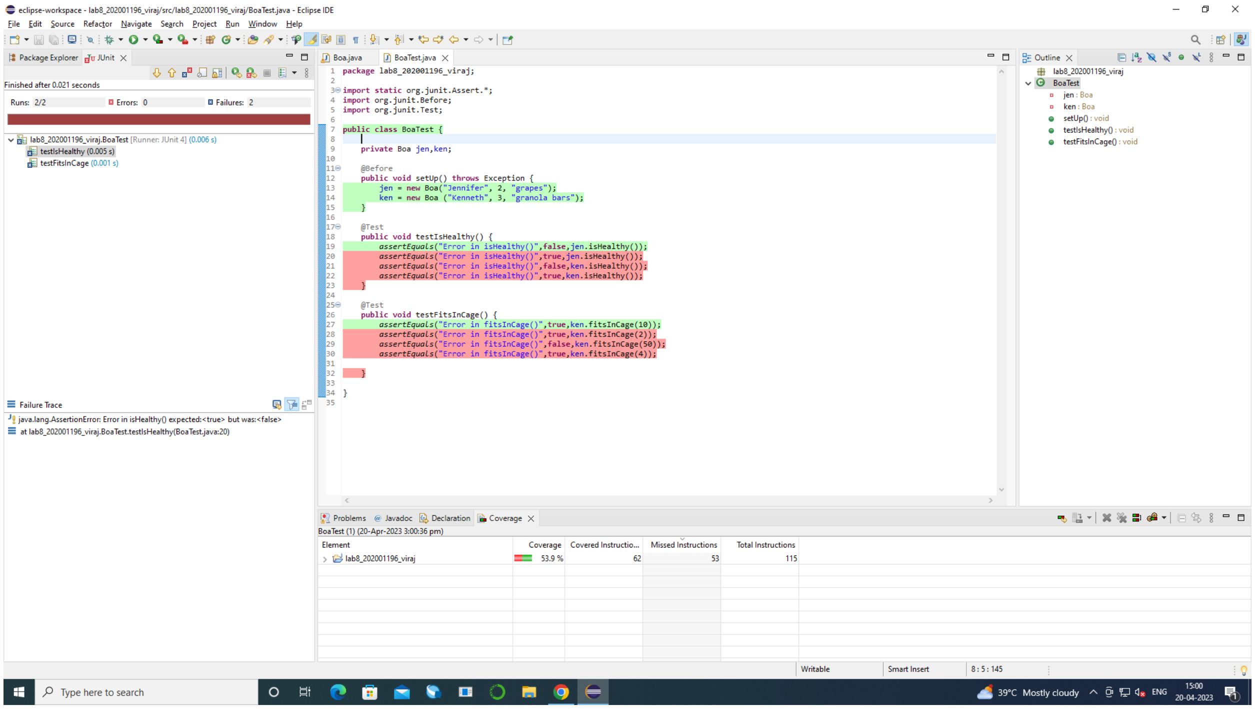
```java
package lab8_202001196_viraj;

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;
    }
}

```

Creating Boa-test file



```java
package lab8_202001196_viraj;

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() {

    }

    @Test
    public void testFitsInCage() {

    }

}

```

Here , i have modify both methods,



Finished after 0.021 seconds

Runs: 2/2 Errors: 0 Failures: 2

lab8_202001196_viraj.BoaTest [Runner: JUnit 4] (0.006 s)
- testIsHealthy (0.005 s)
- testFitsInCage (0.001 s)

```java
package lab8_202001196_viraj;

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

    @Test
    public void testFitsInCage() {
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(10));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(2));
        assertEquals("Error in fitsInCage()",false,ken.fitsInCage(50));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(4));

    }

}
```

Failure Trace

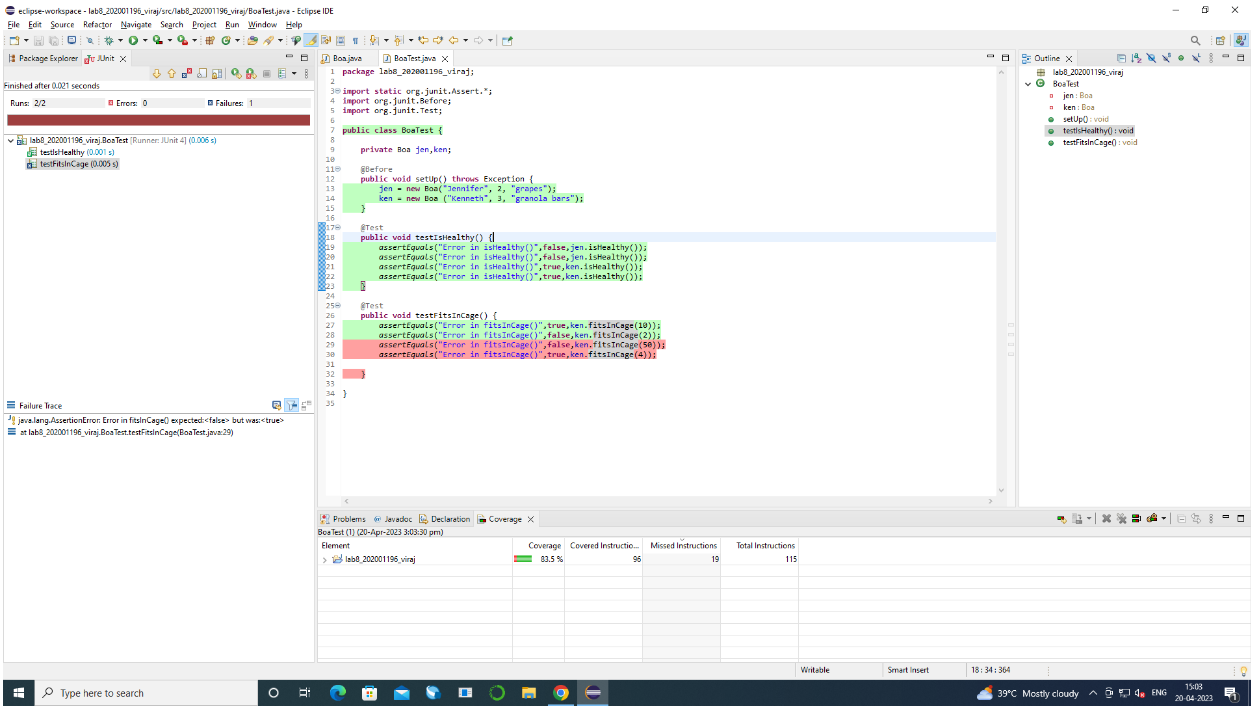
```
java.lang.AssertionError: Error in isHealthy() expected:<true> but was:<false>
at lab8_202001196_viraj.BoaTest.testIsHealthy(BoaTest.java:20)
```

BoaTest (1) (20-Apr-2023 3:00:36 pm)

Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
lab8_202001196_viraj	53.9 %	62	53	115

Red line shows that expected output and actual output are not matching.
There may be faults in code or in our expected output.

After doing few changes in expected output ,



Finished after 0.021 seconds

Runs: 2/2 Errors: 0 Failures: 1

lab8_202001196_viraj.BoaTest [Runner: JUnit 4] (0.006 s)
- testIsHealthy (0.001 s)
- testFitsInCage (0.005 s)

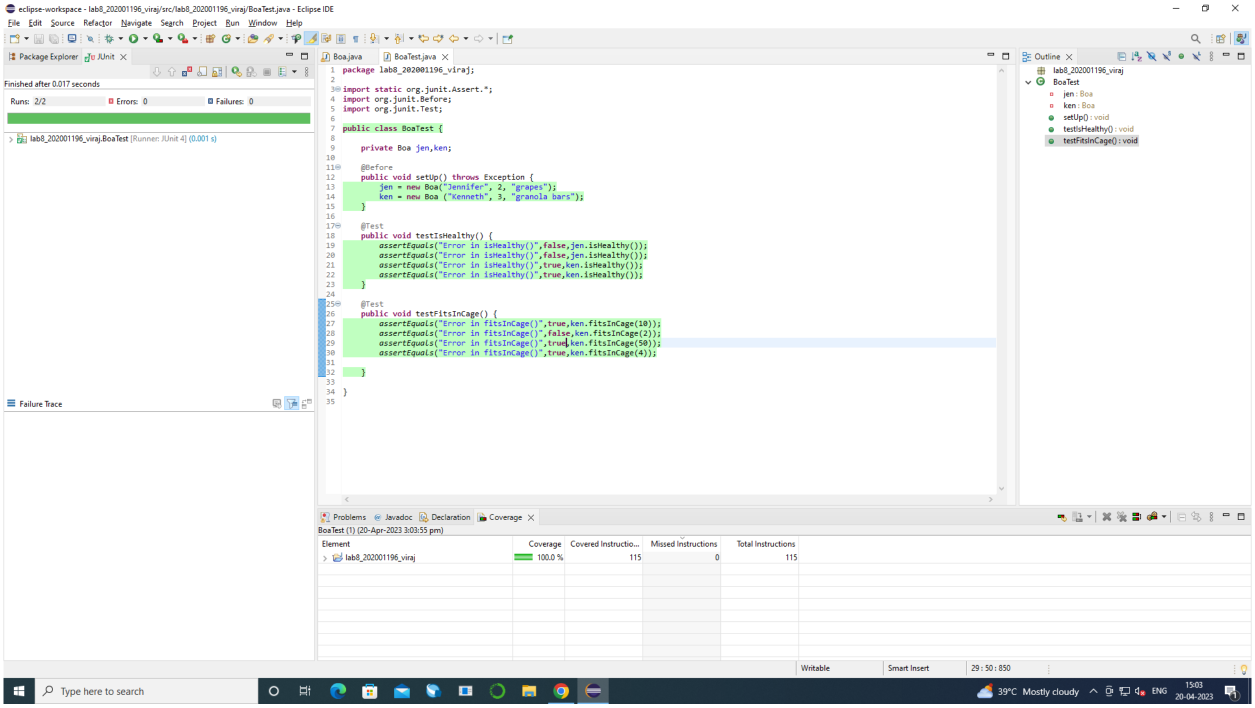
```java
package lab8_202001196_viraj;

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

    @Test
    public void testFitsInCage() {
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(10));
        assertEquals("Error in fitsInCage()",false,ken.fitsInCage(2));
        assertEquals("Error in fitsInCage()",false,ken.fitsInCage(50));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(4));

    }

}
```

Failure Trace

```
java.lang.AssertionError: Error in fitsInCage() expected:<false> but was:<true>
at lab8_202001196_viraj.BoaTest.testFitsInCage(BoaTest.java:29)
```

BoaTest (1) (20-Apr-2023 3:03:30 pm)

Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
lab8_202001196_viraj	83.5 %	96	19	115



Finished after 0.017 seconds

Runs: 2/2 Errors: 0 Failures: 0

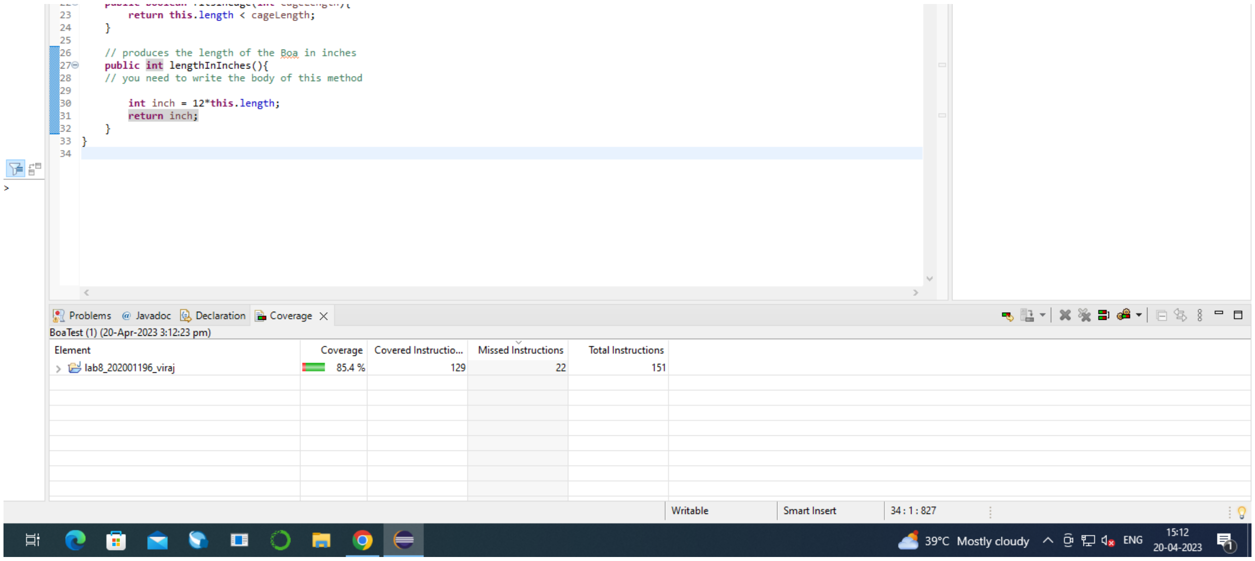
lab8_202001196_viraj.BoaTest [Runner: JUnit 4] (0.001 s)

```java
package lab8_202001196_viraj;

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

    @Test
    public void testFitsInCage() {
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(10));
        assertEquals("Error in fitsInCage()",false,ken.fitsInCage(2));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(50));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(4));

    }

}
```

BoaTest (1) (20-Apr-2023 3:03:55 pm)

Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
lab8_202001196_viraj	100.0 %	115	0	115

Adding new function to class :

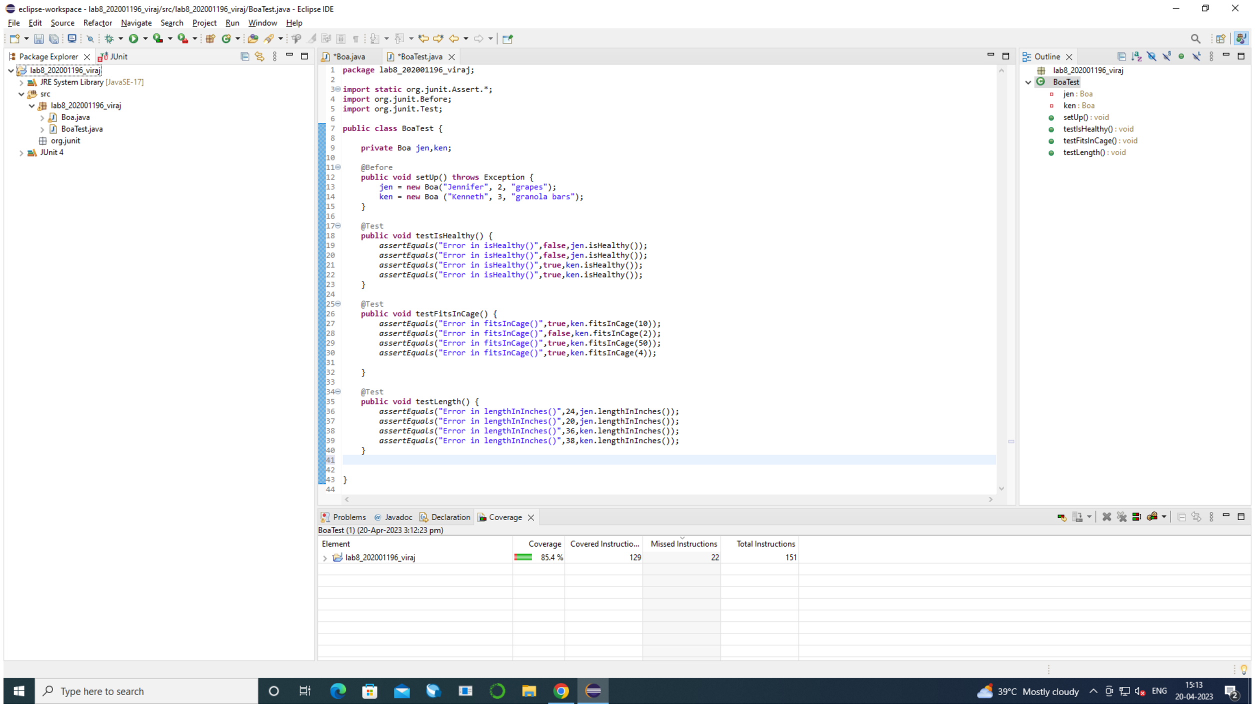


```java
    public boolean fitsInCage(int cageLength){
        return this.length < cageLength;
    }

    // produces the length of the Boa in inches
    public int lengthInInches(){
    // you need to write the body of this method

        int inch = 12*this.length;
        return inch;
    }
}
```

BoaTest (1) (20-Apr-2023 3:12:23 pm)

Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
lab8_202001196_viraj	85.4 %	129	22	151

Testing file:

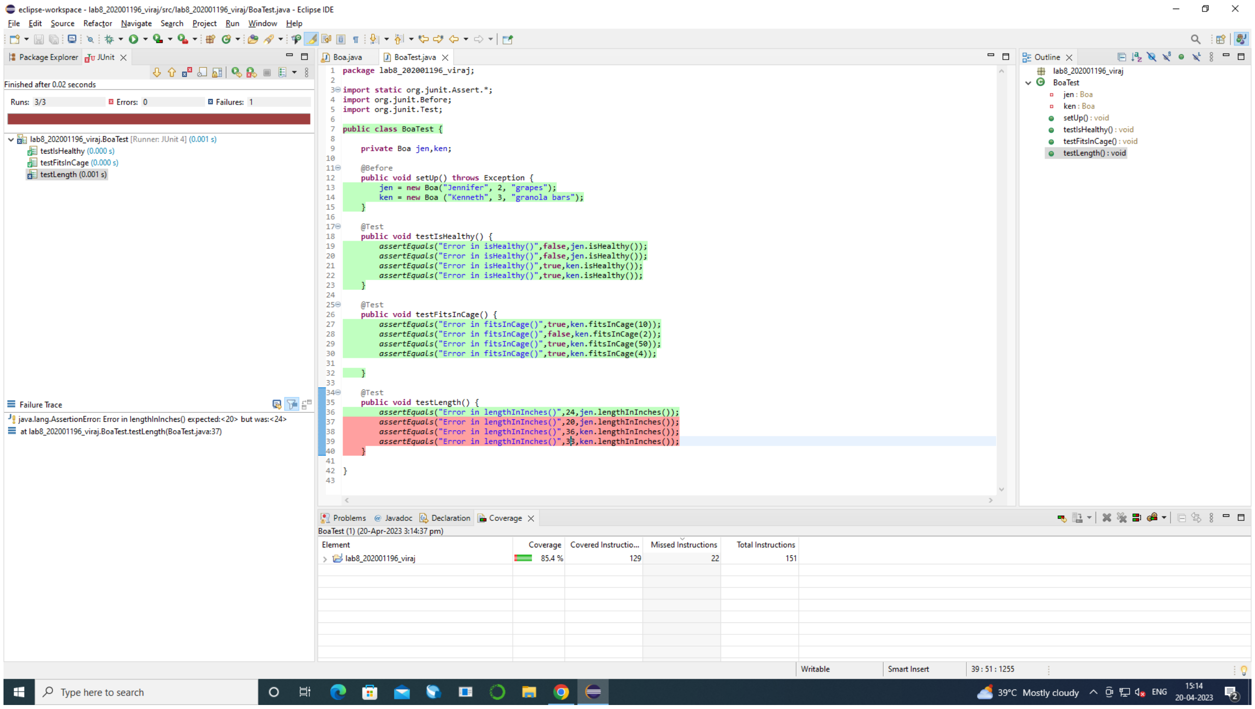


```java
package lab8_202001196_viraj;

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

    @Test
    public void testFitsInCage() {
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(10));
        assertEquals("Error in fitsInCage()",false,ken.fitsInCage(2));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(50));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(4));

    }

    @Test
    public void testLength() {
        assertEquals("Error in lengthInInches()",24,jen.lengthInInches());
        assertEquals("Error in lengthInInches()",20,jen.lengthInInches());
        assertEquals("Error in lengthInInches()",36,ken.lengthInInches());
        assertEquals("Error in lengthInInches()",38,ken.lengthInInches());
    }


}
```

BoaTest (1) (20-Apr-2023 3:12:23 pm)

Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
lab8_202001196_viraj	85.4 %	129	22	151

After running:



Finished after 0.02 seconds

Runs: 3/3 Errors: 0 Failures: 1

```
lab8_202001196_viraj.BoaTest [Runner: JUnit 4] (0.001 s)
    testIsHealthy (0.000 s)
    testFitsInCage (0.000 s)
    testLength (0.001 s)
```

```
java.lang.AssertionError: Error in lengthInInches() expected:<20> but was:<24>
at lab8_202001196_viraj.BoaTest.testLength(BoaTest.java:37)
```

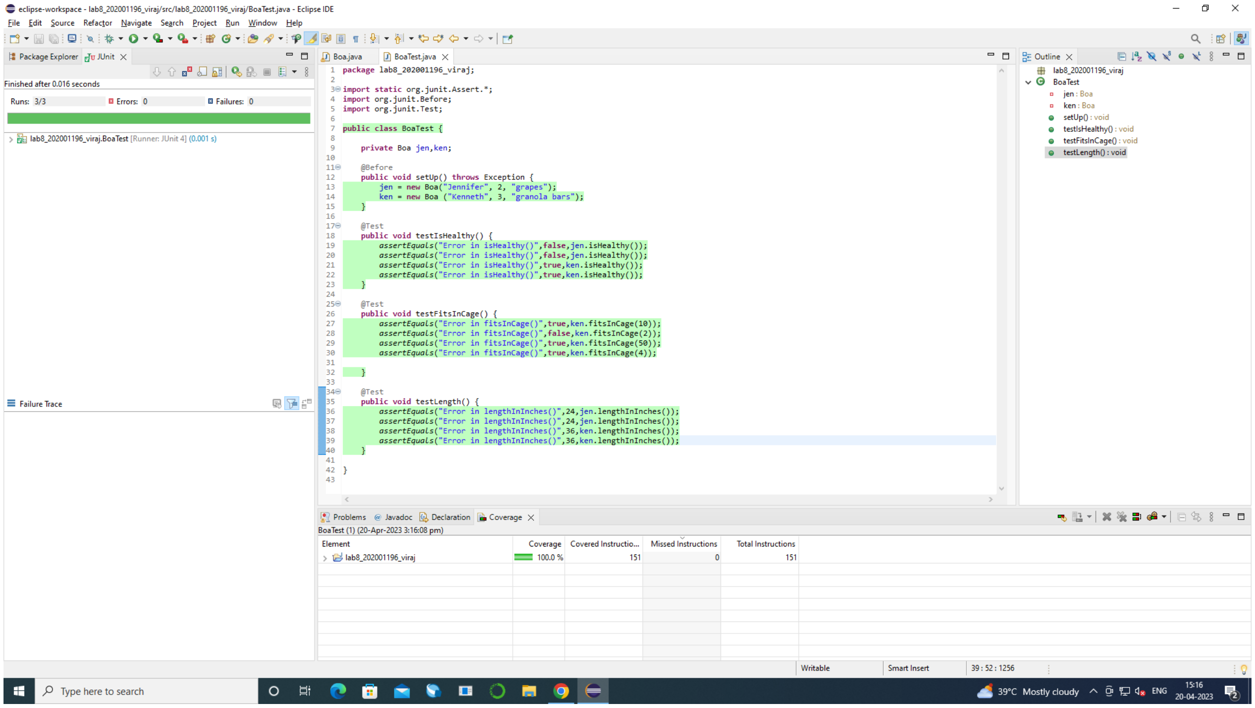
```java
package lab8_202001196_viraj;

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

    @Test
    public void testFitsInCage() {
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(10));
        assertEquals("Error in fitsInCage()",false,ken.fitsInCage(2));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(50));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(4));

    }

    @Test
    public void testLength() {
        assertEquals("Error in lengthInInches()",24,jen.lengthInInches());
        assertEquals("Error in lengthInInches()",20,jen.lengthInInches());
        assertEquals("Error in lengthInInches()",36,ken.lengthInInches());
        assertEquals("Error in lengthInInches()",38,ken.lengthInInches());
    }

}
```

BoaTest (1) (20-Apr-2023 3:14:37 pm)

Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
lab8_202001196_viraj	85.4 %	129	22	151

Same as previous , have to change either expected output OR code,

After changes in expected output ,



Finished after 0.016 seconds

Runs: 3/3 Errors: 0 Failures: 0

lab8_202001196_viraj.BoaTest [Runner: JUnit 4] (0.001 s)

```java
package lab8_202001196_viraj;

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

    @Test
    public void testFitsInCage() {
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(10));
        assertEquals("Error in fitsInCage()",false,ken.fitsInCage(2));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(50));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(4));

    }

    @Test
    public void testLength() {
        assertEquals("Error in lengthInInches()",24,jen.lengthInInches());
        assertEquals("Error in lengthInInches()",24,jen.lengthInInches());
        assertEquals("Error in lengthInInches()",36,ken.lengthInInches());
        assertEquals("Error in lengthInInches()",36,ken.lengthInInches());
    }

}
```

lab8_202001196_viraj
BoaTest
jen : Boa
ken : Boa
setUp() : void
testIsHealthy() : void
testFitsInCage() : void
testLength() : void

BoaTest (1) (20-Apr-2023 3:16:08 pm)

Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
lab8_202001196_viraj	100.0 %	151	0	151

Code of Boa Class File:

```
package lab8_202001196_viraj;
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;
    }

    // produces the length of the Boa in inches
    public int lengthInInches(){
    // you need to write the body of this method

        int inch = 12*this.length;
        return inch;
    }

}
```

Code of Testing File:

```
package lab8_202001196_viraj;
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("Error in isHealthy()",false,jen.isHealthy());
        assertEquals("Error in isHealthy()",false,jen.isHealthy());
        assertEquals("Error in isHealthy()",true,ken.isHealthy());
        assertEquals("Error in isHealthy()",true,ken.isHealthy());
 }
 @Test
 public void testFitsInCage() {
    assertEquals("Error in fitsInCage()",true,ken.fitsInCage(10));
        assertEquals("Error in fitsInCage()",false,ken.fitsInCage(2));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(50));
        assertEquals("Error in fitsInCage()",true,ken.fitsInCage(4));

 }

 @Test
    public void testLength() {
        assertEquals("Error in lengthInInches()",24,jen.lengthInInches());
        assertEquals("Error in lengthInInches()",24,jen.lengthInInches());
        assertEquals("Error in lengthInInches()",36,ken.lengthInInches());
        assertEquals("Error in lengthInInches()",36,ken.lengthInInches());
    }
}
```