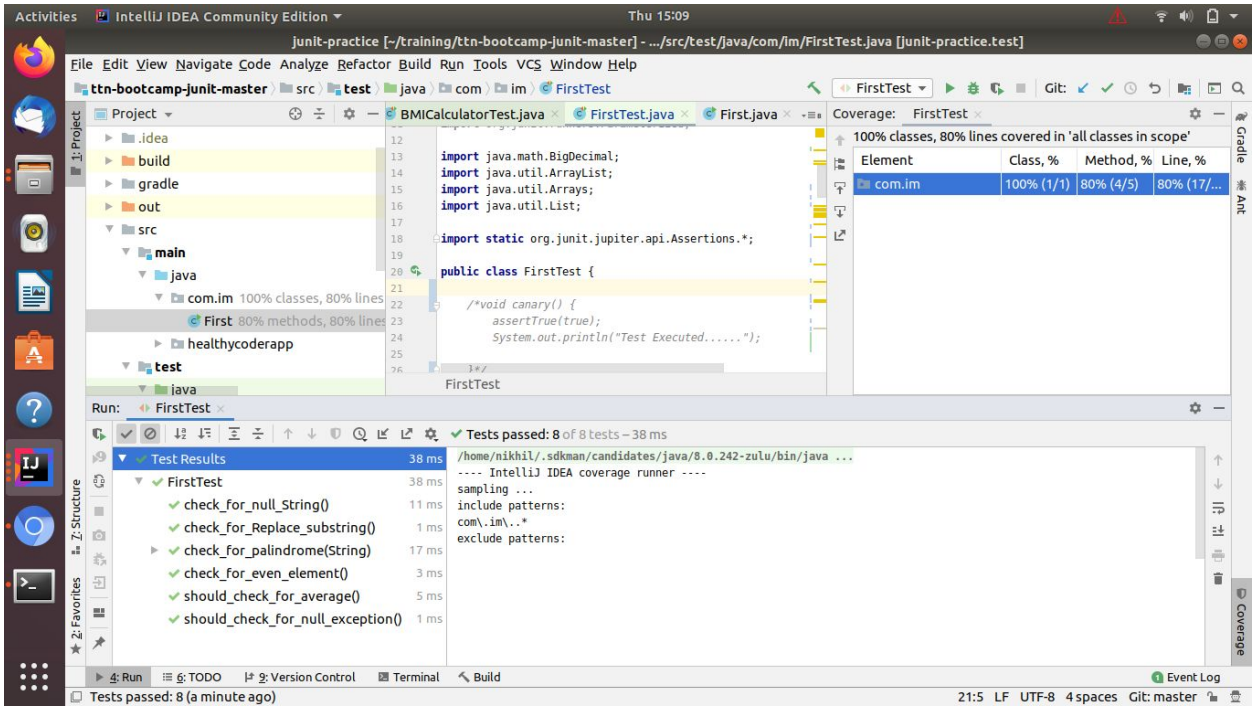
Q1.*Write all possible (including failure, exception case) Unit Tests for all the methods in First.java.*

Ans.



Code:-

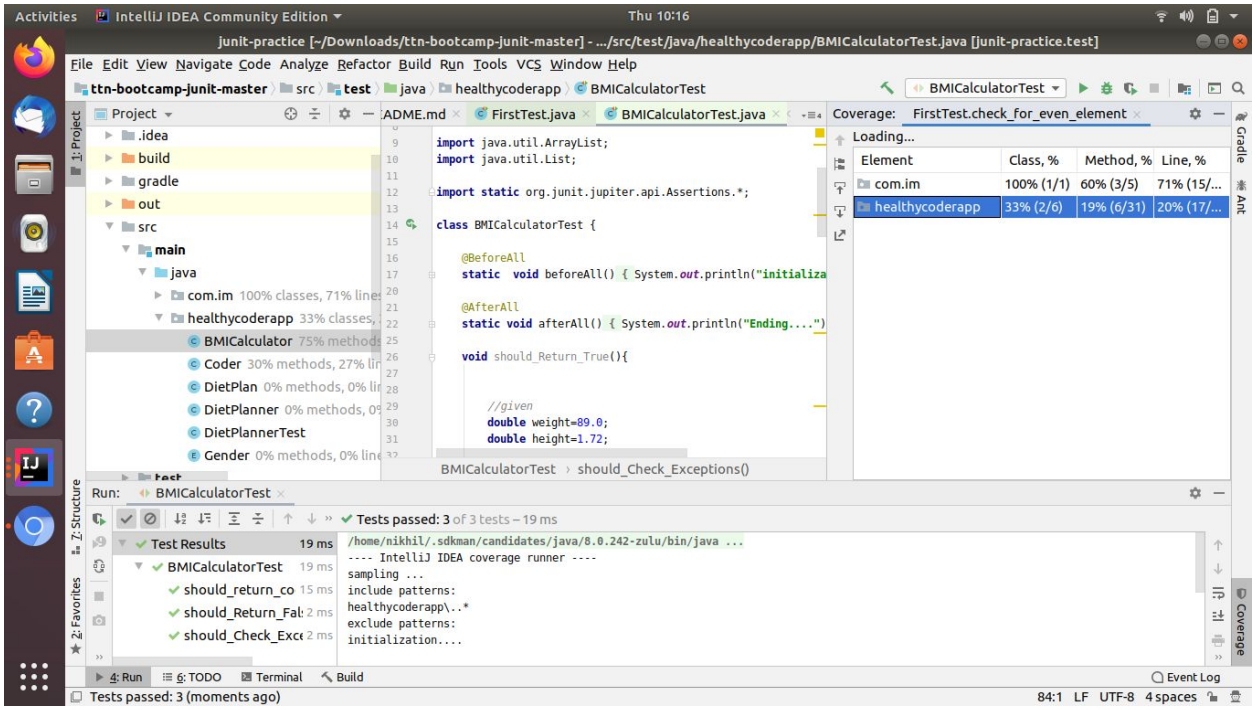
```
package com.im;

//import org.junit.Test;

import junit.runner.Version;
import org.junit.jupiter.api.Test;
import org.junit.jupiter.api.function.Executable;
import org.junit.jupiter.params.ParameterizedTest;
import org.junit.jupiter.params.provider.CsvSource;
import org.junit.jupiter.params.provider.ValueSource;
import org.junit.runners.Parameterized;

import java.math.BigDecimal;
import java.util.ArrayList;
import java.util.Arrays;
import java.util.List;

import static org.junit.jupiter.api.Assertions.*;

public class FirstTest {

  /*void canary() {
     assertTrue(true);
     System.out.println("Test Executed.....");

  }*/
```

```java
@Test
void should_check_for_average() {
    List<BigDecimal> list = new ArrayList<BigDecimal>();
    list.add(new BigDecimal(10.333));
    list.add(new BigDecimal(10.333));
    list.add(new BigDecimal(10.333));
    list.add(new BigDecimal(10.333));
    list.add(new BigDecimal(10.333));

    BigDecimal result = new First().calculateAverage(list);
    BigDecimal expected = new BigDecimal(10.333);
    assertEquals(result, expected);
}

@Test
void should_check_for_null_exception() {
    List<BigDecimal> list = new ArrayList<BigDecimal>();
    Executable executable = () -> new First().calculateAverage(list);

    assertThrows(RuntimeException.class, executable);

}

//@ParameterizedTest
//@ValueSource(String ={"Nitin","Nikhil","Mahak"})
@ParameterizedTest
@CsvSource(value = {"Nikhil", "Nitin", "Nikina"})
void check_for_palindrome(String val) {
    String str = val;
    boolean actual = new First().isPallindrome(str);
    assertFalse(actual);
    //System.out.println("JUnit version is: " + Version.id());
}

@Test
void check_for_even_element() {
    List<Integer> ls = new ArrayList<Integer>();
    ls.add(234);
    ls.add(239);
    ls.add(238);
    ls.add(237);
    ls.add(236);
    List<Integer> expected = Arrays.asList(239, 237);
    List<Integer> actual = new First().filterEvenElements(ls);
    Integer[] exp = expected.stream().toArray(Integer[]::new);
    Integer[] act = actual.stream().toArray(Integer[]::new);
    //for(Integer e:actual)
    //  System.out.println("values:"+e);
    assertArrayEquals(exp, act);
```

```
    }

    @Test
    void check_for_null_String() {
        String str = "";
        boolean expected = true;
        boolean actual = new First().isPallindrome(str);
        assertEquals(expected, actual);
    }

    @Test
    void check_for_Replace_substring(){
        String main = "Nikhl";
        String sub = "i";
        String tar = "ii";
        String expected = "Niikhl";
        String actual = new First().replaceSubString(main,sub,tar);
        assertEquals(expected,actual);
    }

}
```

Q2.*Write Unit tests for HealthyCoder app given in the Udemy session. You need to write tests for the BMICalculator and DitePlanner.*

Ans.
BMICalculator:-



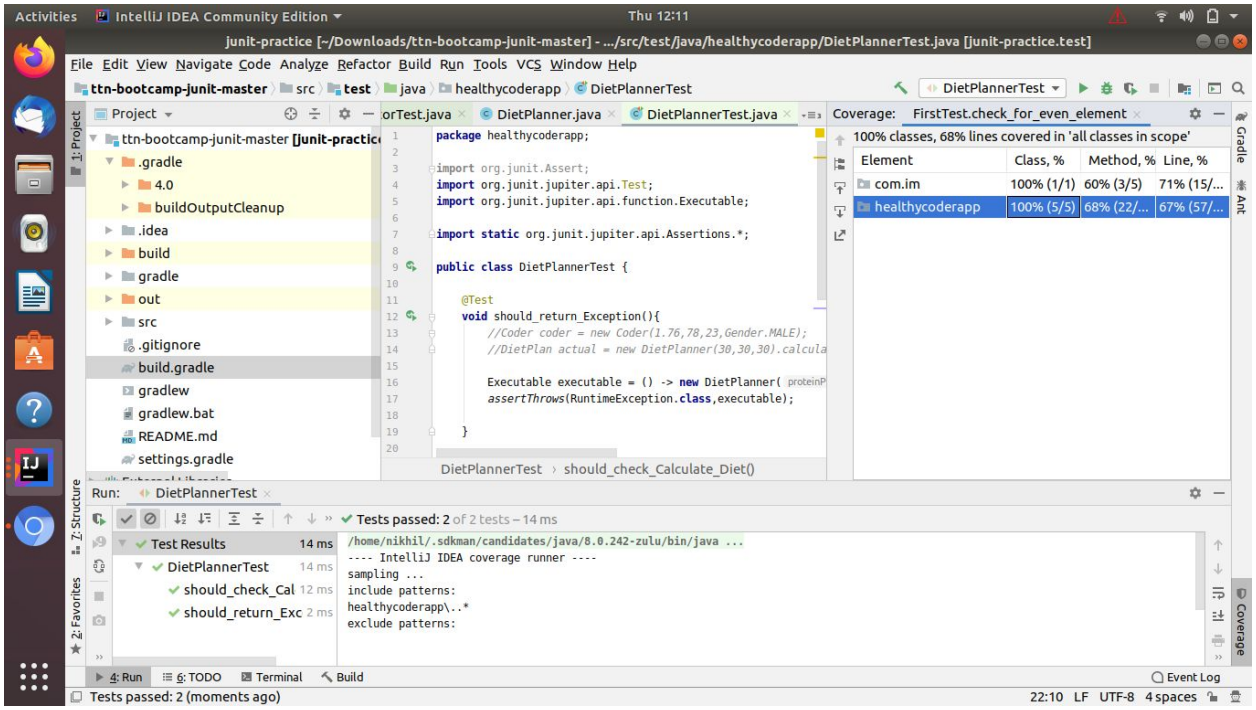
Code:-

```
package healthycoderapp;
import junit.runner.Version;

import org.junit.jupiter.api.AfterAll;
import org.junit.jupiter.api.BeforeAll;
import org.junit.jupiter.api.Test;
import org.junit.jupiter.api.function.Executable;

import java.util.ArrayList;
import java.util.List;

import static org.junit.jupiter.api.Assertions.*;

class BMICalculatorTest {

  @BeforeAll
  static  void beforeAll(){
     System.out.println("initialization....");
  }

  @AfterAll
  static void afterAll(){
     System.out.println("Ending....");
  }

  void should_Return_True(){
```

```
    //given
    double weight=89.0;
    double height=1.72;


    //when
    boolean recommend=BMICalculator.isDietRecommended(weight,height);
    //assertTrue(BMICalculator.isDietRecommended(129.0,1.75));

    //then
    assertTrue(recommend);
}

@Test
void should_Return_False(){

    //given
    double weight = 50.0;
    double height = 1.92;

    //when
    boolean rec  = BMICalculator.isDietRecommended(weight,height);

    //then

    assertFalse(rec);
}

@Test
void should_return_coder_with_worstBMI(){

    List<Coder> coders = new ArrayList<Coder>();
    coders.add(new Coder(1.80,60.0));
    coders.add(new Coder(1.82,98.0));
    coders.add(new Coder(1.82,97.0));

    Coder coderWorstBMI = BMICalculator.findCoderWithWorstBMI(coders);


    assertAll(
            () -> assertEquals(1.82, coderWorstBMI.getHeight()),
            () -> assertEquals(98.0, coderWorstBMI.getWeight())
    );

}

@Test
void should_Check_Exceptions(){

    double height = 0;
```

```
        double weight = 89.0;

        Executable executable = () -> BMICalculator.isDietRecommended(weight,height);

        assertThrows(ArithmeticException.class, executable);

    }


}
```

DietPlanner:-



Code:-

```
package healthycoderapp;

import org.junit.Assert;
import org.junit.jupiter.api.Test;
import org.junit.jupiter.api.function.Executable;

import static org.junit.jupiter.api.Assertions.*;

public class DietPlannerTest {

    @Test
    void should_return_Exception(){
        //Coder coder = new Coder(1.76,78,23,Gender.MALE);
        //DietPlan actual = new DietPlanner(30,30,30).calculateDiet(coder);
```

```
        Executable executable = () -> new DietPlanner(30,30,30);
        assertThrows(RuntimeException.class,executable);

    }

    @Test
    void should_check_Calculate_Diet(){
        Coder coder = new Coder(1.76,78,23,Gender.MALE);
        DietPlan actual = new DietPlanner(40,30,30).calculateDiet(coder);
        DietPlan expected = new DietPlan(2240,224,75,168);
        assertAll(
                () -> assertEquals(actual.getCalories(), expected.getCalories() ),
                () -> assertEquals(actual.getCarbohydrate(), expected.getCarbohydrate() ),
                () -> assertEquals(actual.getFat(), expected.getFat() ),
                () -> assertEquals(actual.getProtein(), expected.getProtein() )
        );
    }
}
```