ECSE 428 – Software Engineering Practice
Assignment B: Test Driven Development
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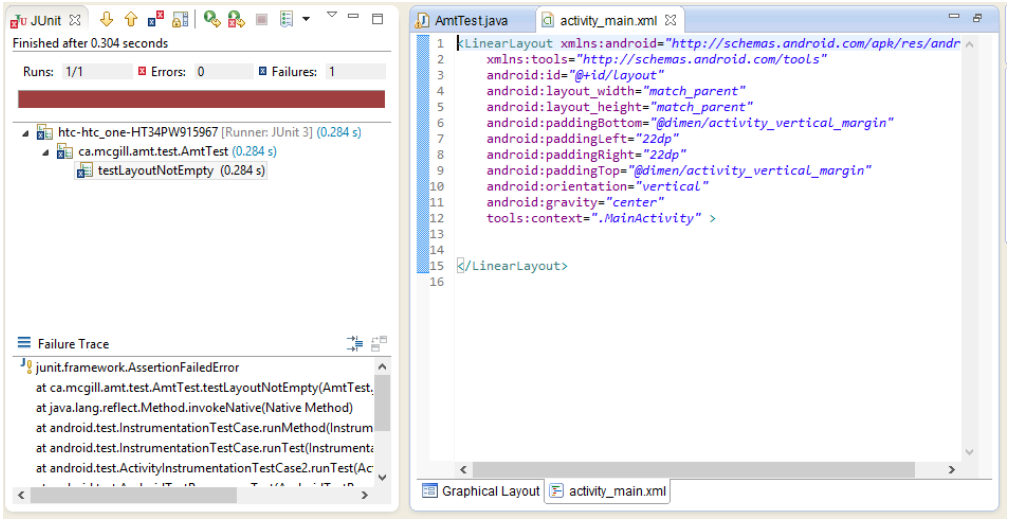
Contents

Domain Logic Tests

1. The layout contains any number of elements

Check if the application is properly formatted by verifying that that elements appear on screen
Setup: None
Expected Result: The layout should have elements in which the user can input their specifications

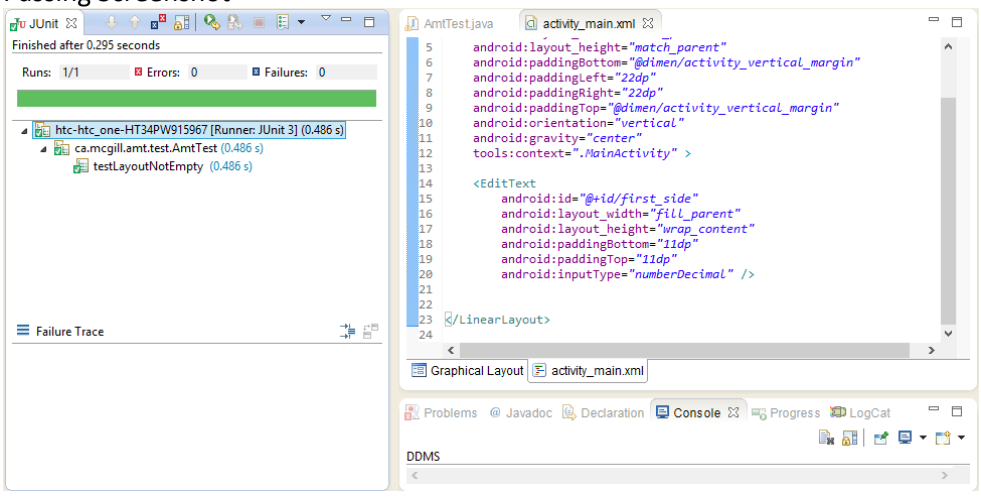
Failing Screenshot:



Code added

```
<EditText
  android:id="@+id/first_side"
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:paddingBottom="11dp"
  android:paddingTop="11dp"
  android:hint="@+string/enter_first_side"
        android:inputType="numberDecimal" />
```

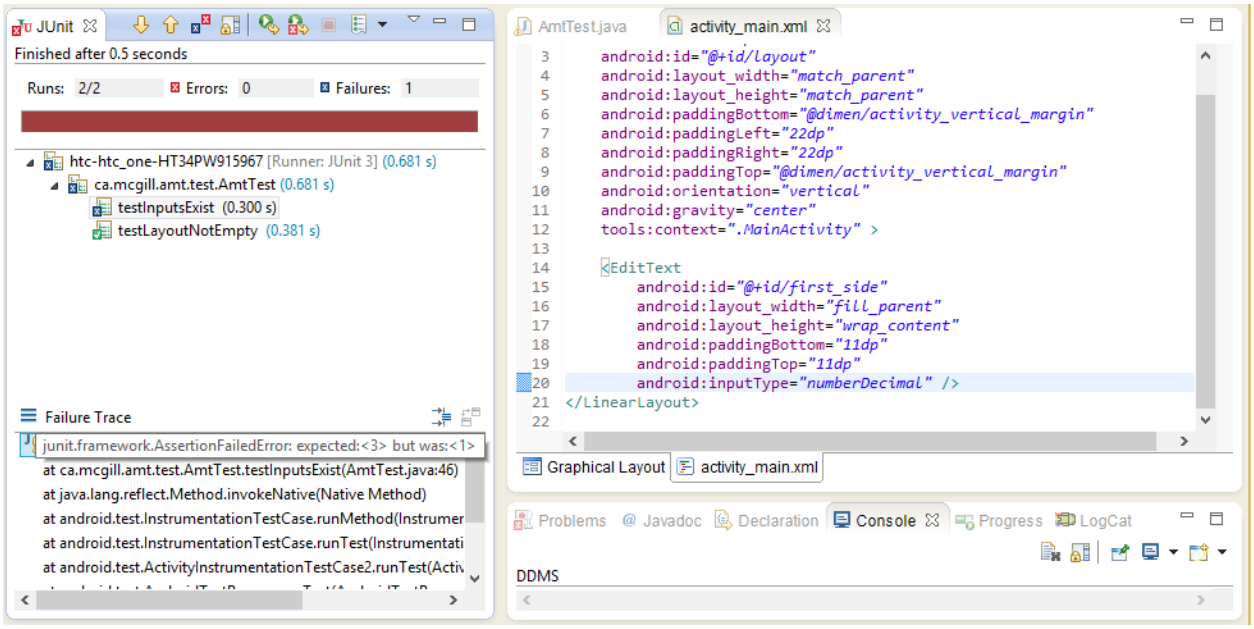
Passing Screenshot



2. Three input fields exist

Verify that the input fields for the user exist
Setup: None
Expected result: The layout should contain three input fields, one for each side of the triangle

Failing Screenshot:

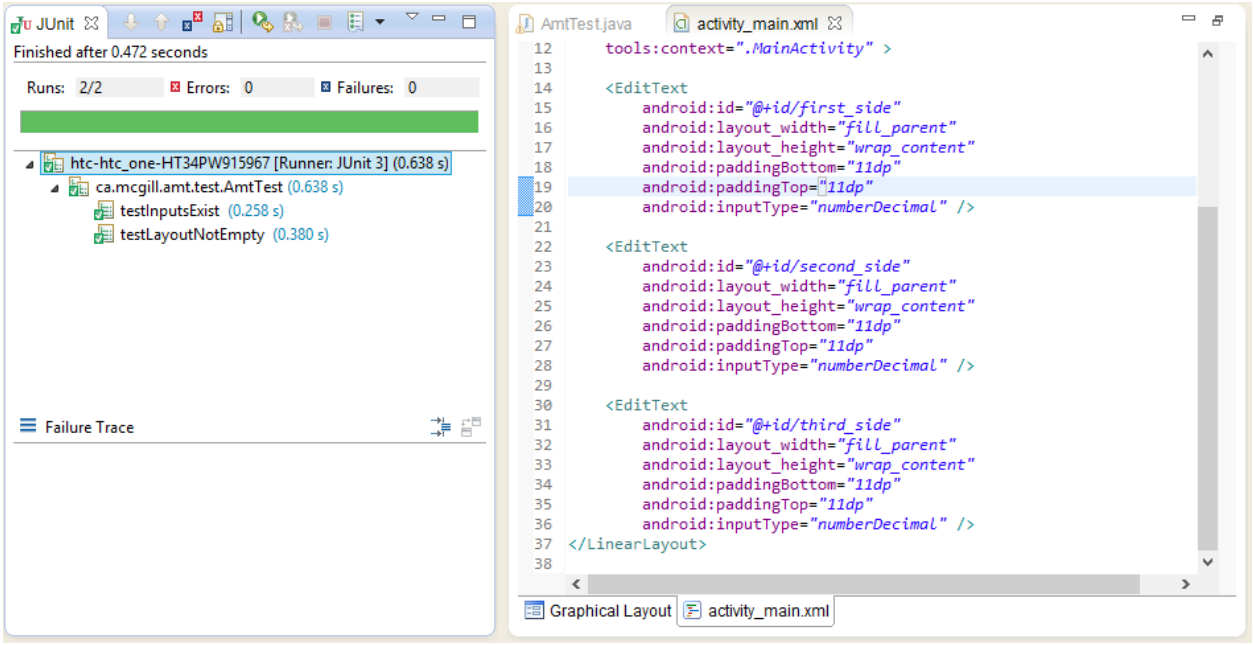


Code added:

```
<EditText
  android:id="@+id/second_side"
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:paddingBottom="11dp"
  android:paddingTop="11dp"
  android:hint="@+string/enter_second_side"
  android:inputType="numberDecimal" />

 <EditText
  android:id="@+id/third_side"
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:paddingBottom="11dp"
  android:paddingTop="11dp"
  android:hint="@+string/enter_third_side"
        android:inputType="numberDecimal" />
```

Passing screenshot:

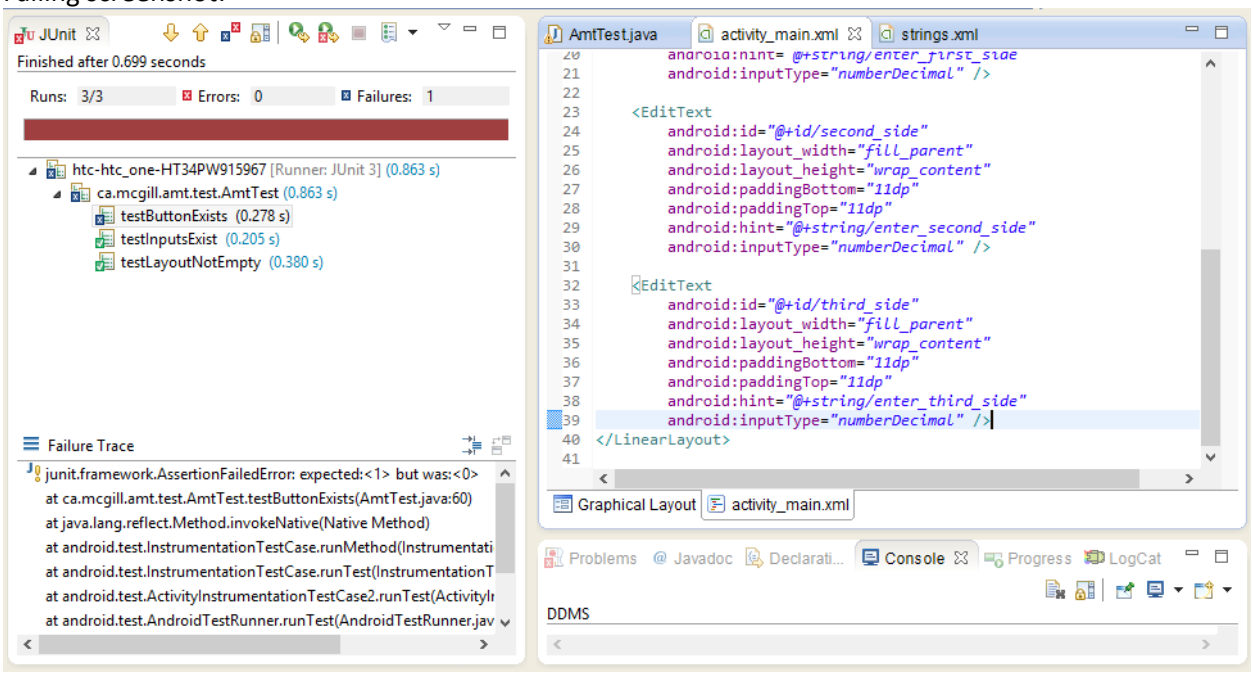


3. Submit button exists

Setup: None

Expected result: The activity should display a button that a user presses to obtain a result for their input

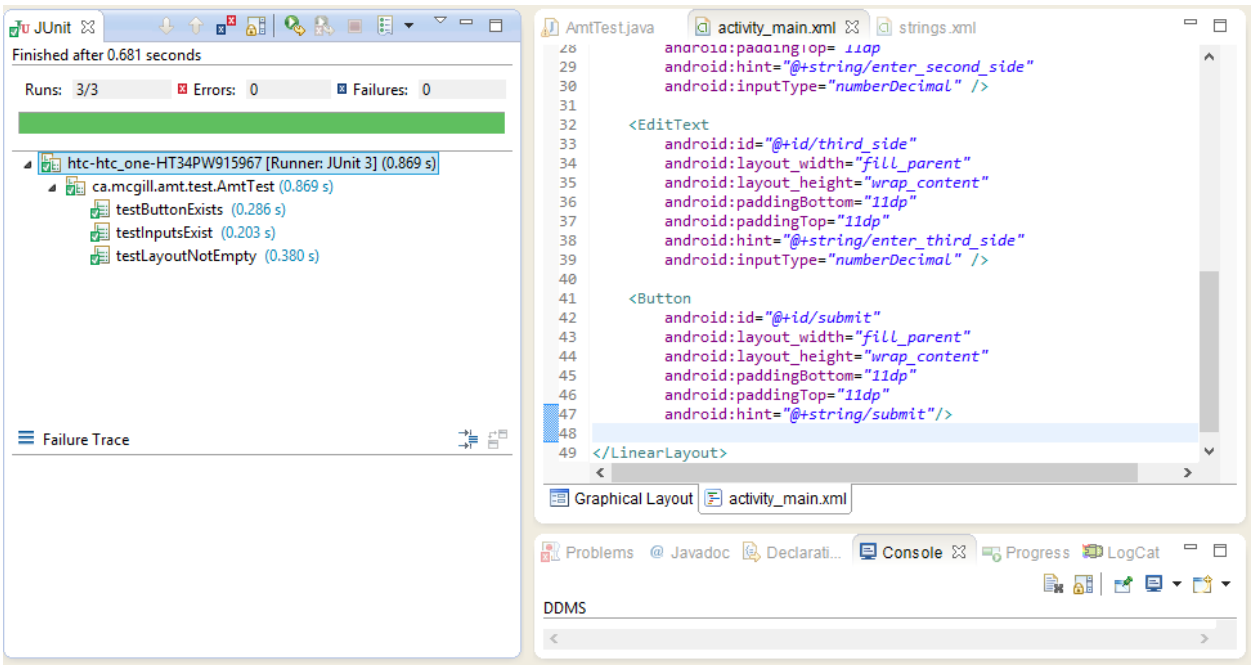
Failing screenshot:



Code added:

```
<Button
  android:id="@+id/submit"
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:paddingBottom="11dp"
  android:paddingTop="11dp"
  android:hint="@+string/submit"
        android:onClick="getTriangle"/>
```

Passing screenshot:

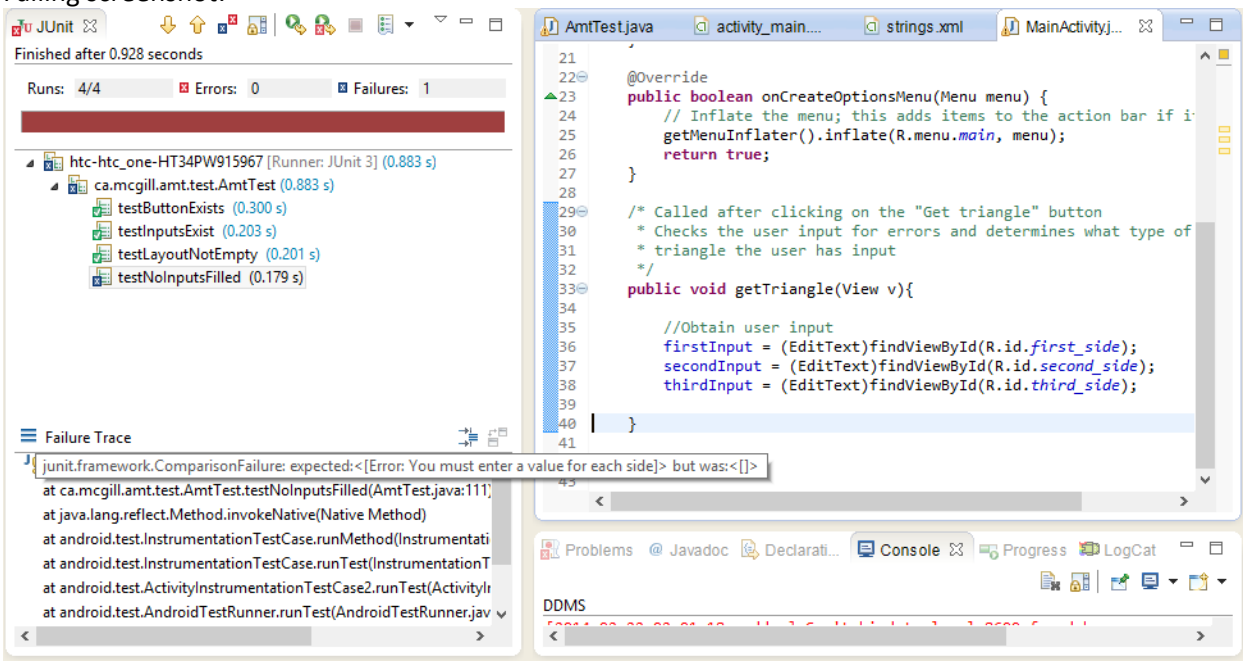

JUnit
Finished after 0.681 seconds
Runs: 3/3
Errors: 0
Failures: 0
htc-htc_one-HT34PW915967 [Runner: JUnit 3] (0.869 s)
ca.mcgill.amt.test.AmtTest (0.869 s)
testButtonExists (0.286 s)
testInputsExist (0.203 s)
testLayoutNotEmpty (0.380 s)
Failure Trace
AmtTest.java
activity_main.xml
strings.xml
android:hint="@+string/enter_second_side"
android:inputType="numberDecimal" />
<EditText
android:id="@+id/third_side"
android:layout_width="fill_parent"
android:layout_height="wrap_content"
android:paddingBottom="11dp"
android:paddingTop="11dp"
android:hint="@+string/enter_third_side"
android:inputType="numberDecimal" />
<Button
android:id="@+id/submit"
android:layout_width="fill_parent"
android:layout_height="wrap_content"
android:paddingBottom="11dp"
android:paddingTop="11dp"
android:hint="@+string/submit"/>
</LinearLayout>
Graphical Layout
activity_main.xml
Problems
Javadoc
Declarati...
Console
Progress
LogCat
DDMS

User Error Tests

1. None of the inputs are filled

Setup: Each input is left blank, then the submit button is pressed
Expected result: An error message appears telling the user that all inputs must be filled

Failing screenshot:

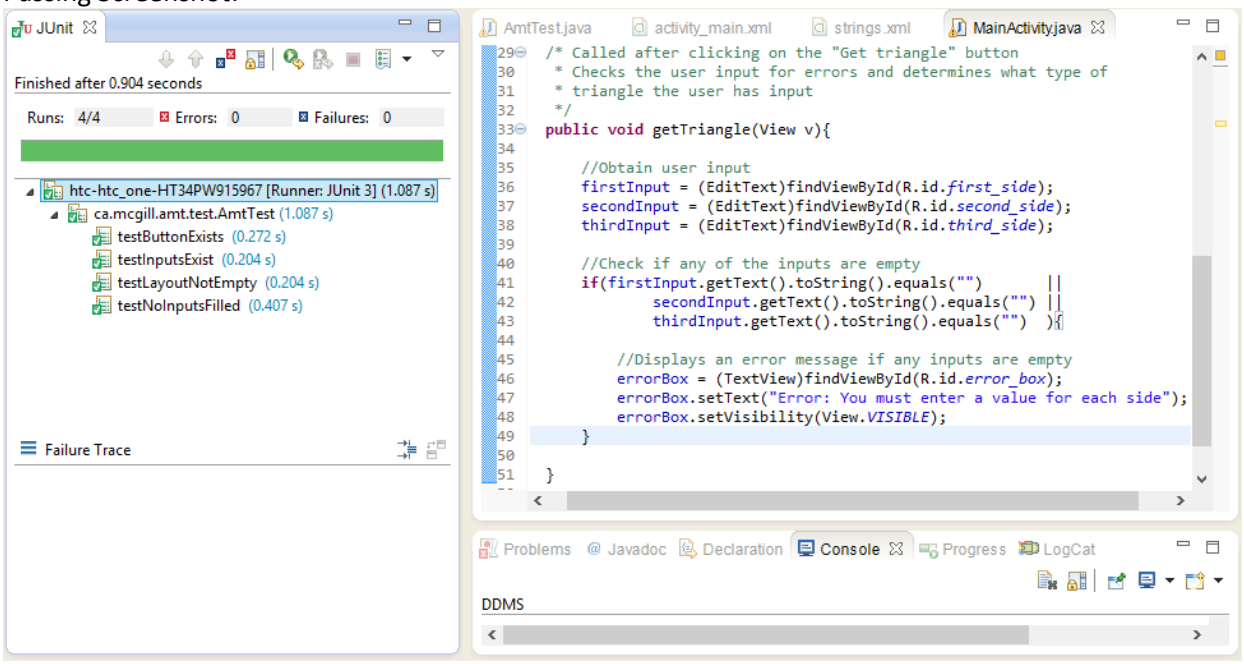


Code added:

```
//Check if any of the inputs are empty
      if(firstInput.getText().toString().equals("")          ||
                  secondInput.getText().toString().equals("")      ||
                  thirdInput.getText().toString().equals("")       ){

            //Displays an error message if any inputs are empty
                  outputBox.setText("Error: You must enter a value for
each side");
            outputBox.setVisibility(View.VISIBLE);
            return;
      }
```

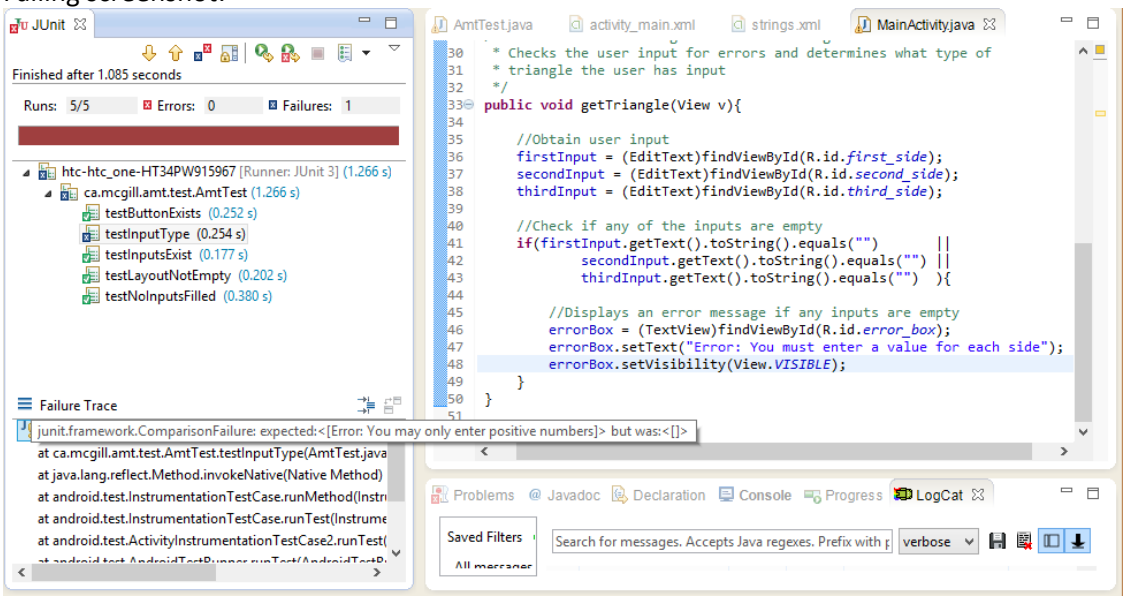
Passing Screenshot:



2. The input type is invalid

Verify that the user can only enter whole numbers
Setup: Input characters and negative numbers into the text fields
Expected Result: An error message appears telling the user they must only enter whole numbers

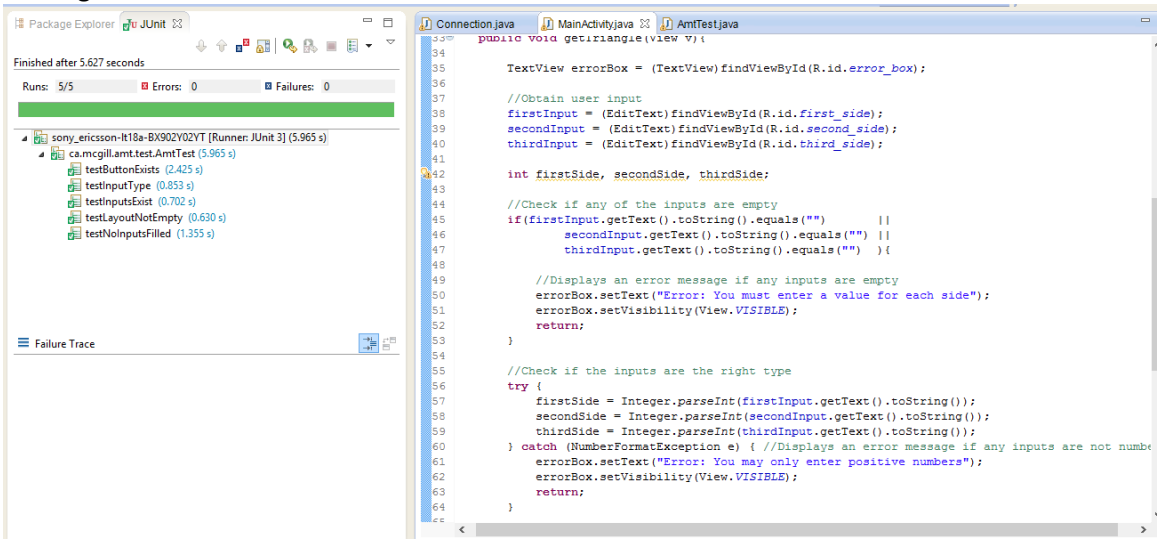
Failing screenshot:



Code added:

```
try {
            firstSide = Integer.parseInt(firstInput.getText().toString());
            secondSide = Integer.parseInt(secondInput.getText().toString());
            thirdSide = Integer.parseInt(thirdInput.getText().toString());
} catch (NumberFormatException e) {
                //Displays an error message if any inputs are not numbers
            outputBox.setText("Error: You may only enter positive numbers");
            outputBox.setVisibility(View.VISIBLE);
}
```

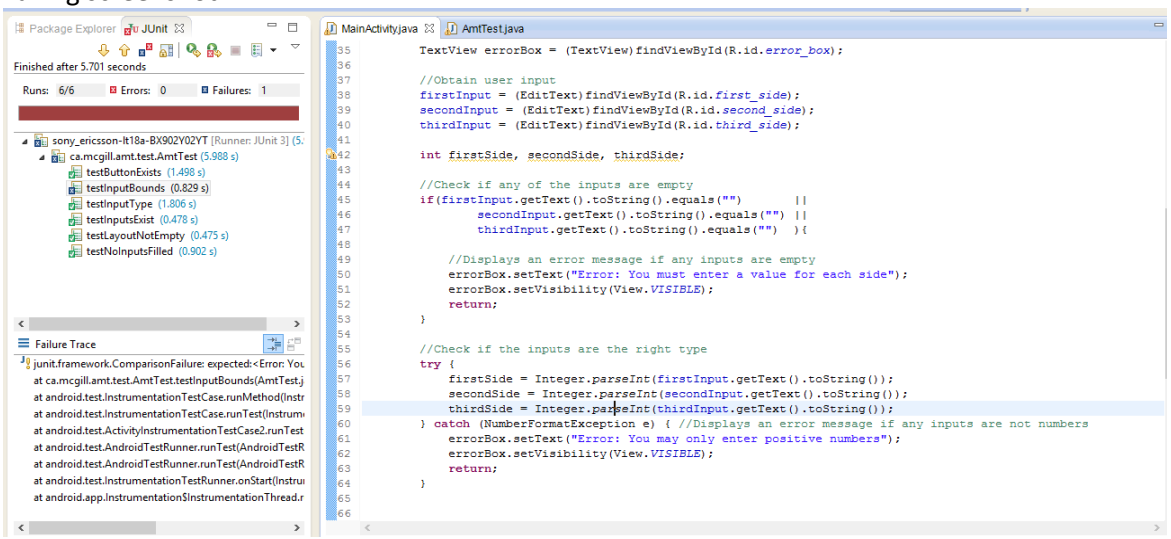
Passing screenshot:



3. The input is out of bounds

The user must input numbers between 1 and 100 inclusive
Setup: Set values to numbers outside of the valid range
Expected Result: A message appears telling the user that they must only enter numbers between 1 and 100 inclusive

Failing screenshot:

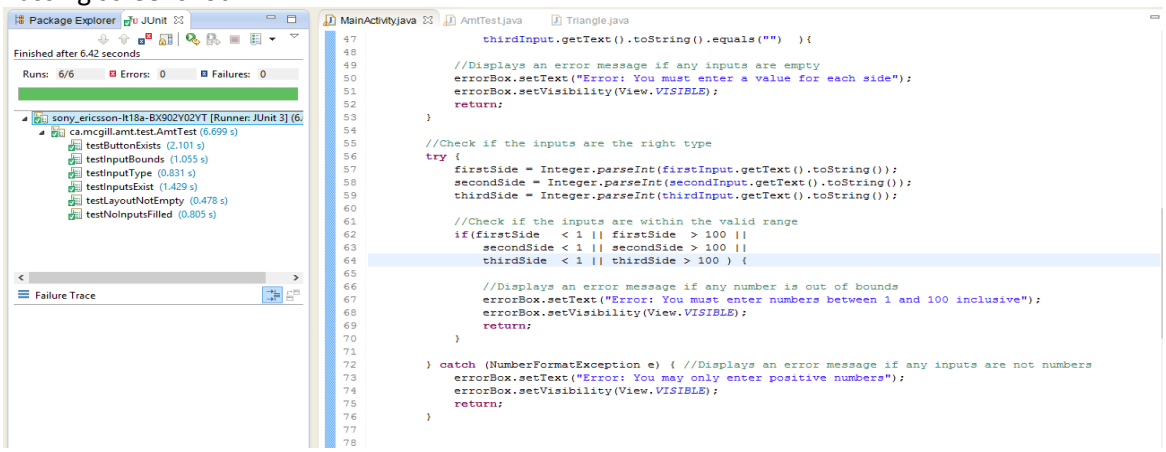


Code added:

```
//Check if the inputs are within the valid range
      if(firstSide   < 1 || firstSide  > 100 ||
            secondSide < 1 || secondSide > 100 ||
            thirdSide  < 1 || thirdSide > 100 ) {

            //Displays an error message if any number is out of bounds
            outputBox.setText("Error: You must enter numbers between 1 and
100 inclusive");
            outputBox.setVisibility(View.VISIBLE);
      }
```

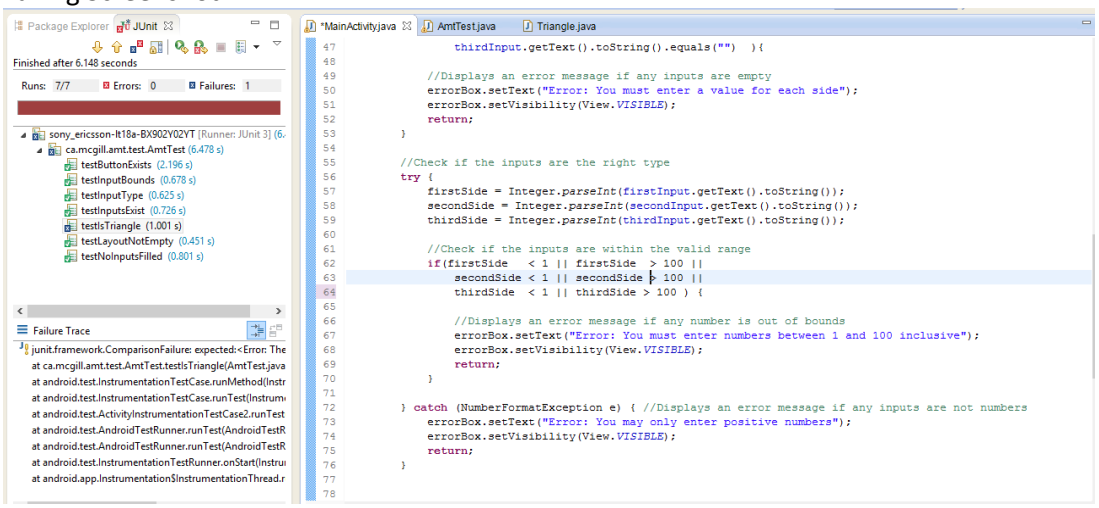
Passing screenshot:



4. The input does not create a triangle

The values of the sides the user entered does not create a triangle
Setup: Set two of the inputs such that their sum is smaller than the third input
Expected Result: An error message will appear telling the user that their inputs do not create a triangle

Failing Screenshot:

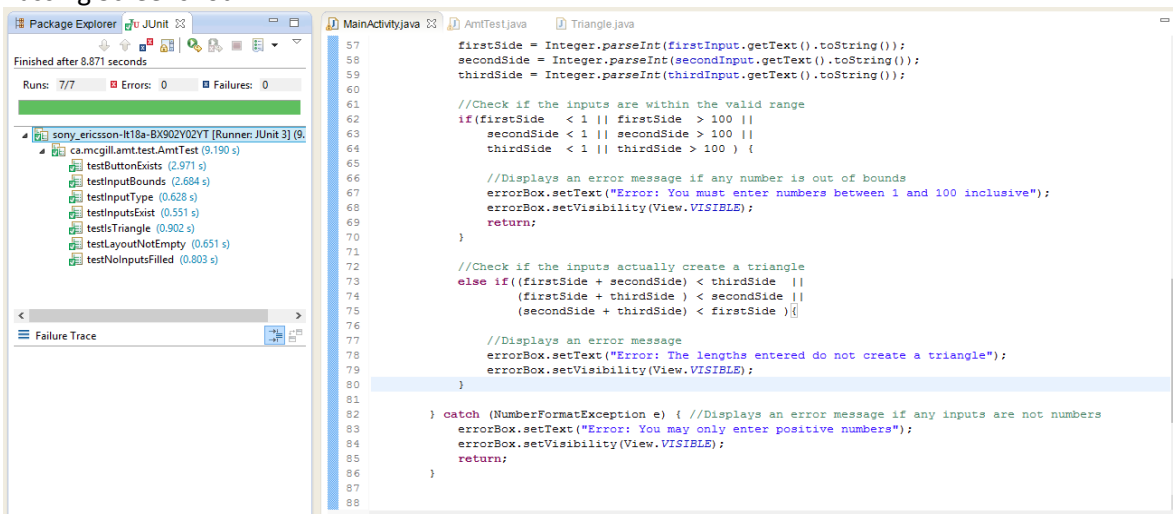


Code added:

```
//Check if the inputs actually create a triangle
      else if((firstSide + secondSide) < thirdSide  ||
            (firstSide + thirdSide ) < secondSide ||
            (secondSide + thirdSide) < firstSide ){

                  //Displays an error message
            outputBox.setText("Error: The lengths entered do not create a
triangle");
            outputBox.setVisibility(View.VISIBLE);
      }
```

Passing Screenshot:

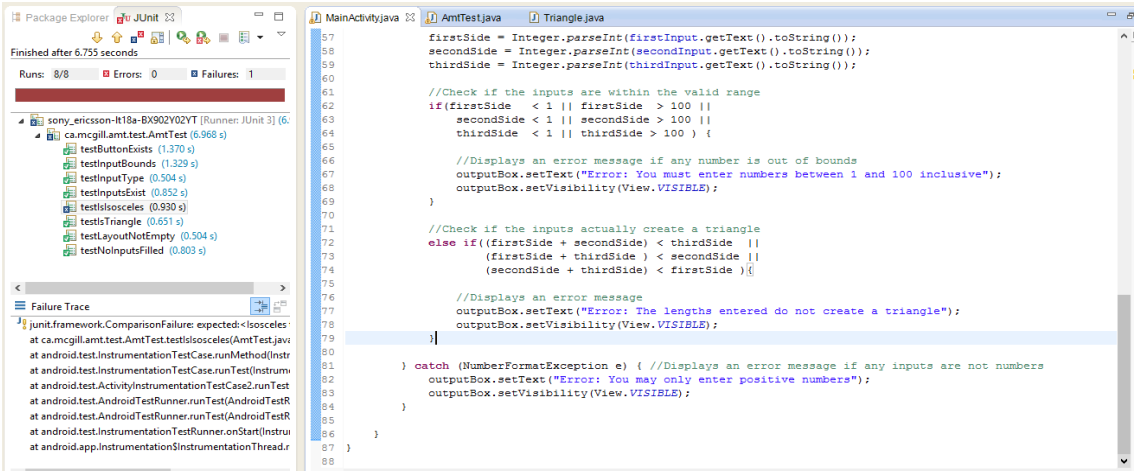


Triangle Business Rules

1. Isosceles

The user entered the same value for 2 sides.
Set up: Set 2 inputs to have the same value.
Expected result: A message will appear telling the user that the inputs form an isosceles triangle.

Failing screenshot:

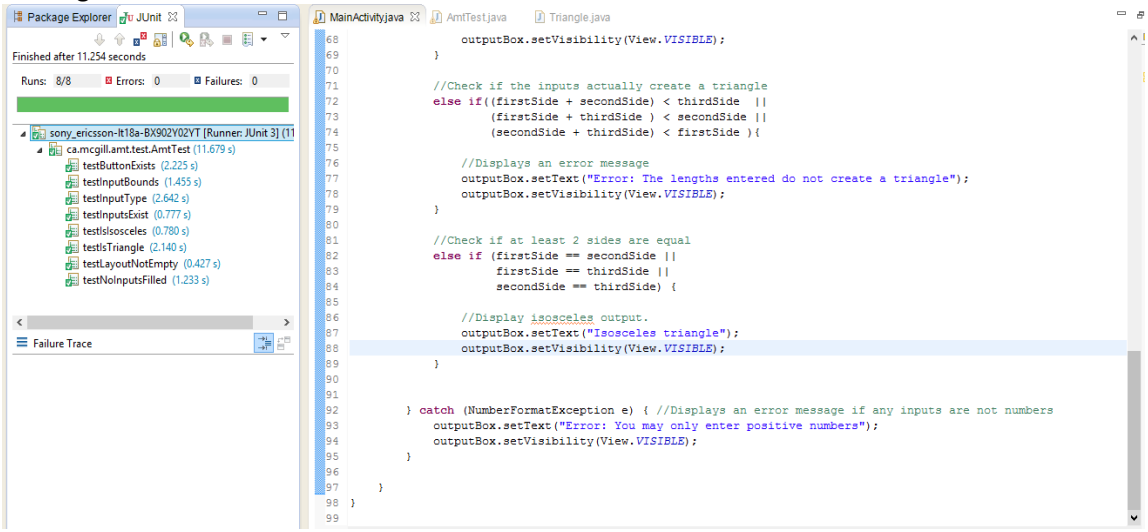


Code added:

```
else if (firstSide == secondSide ||
            firstSide == thirdSide ||
            secondSide == thirdSide) {

            //Display output isosceles triangle
            outputBox.setText("Isosceles triangle");
            outputBox.setVisibility(View.VISIBLE);
        }
```

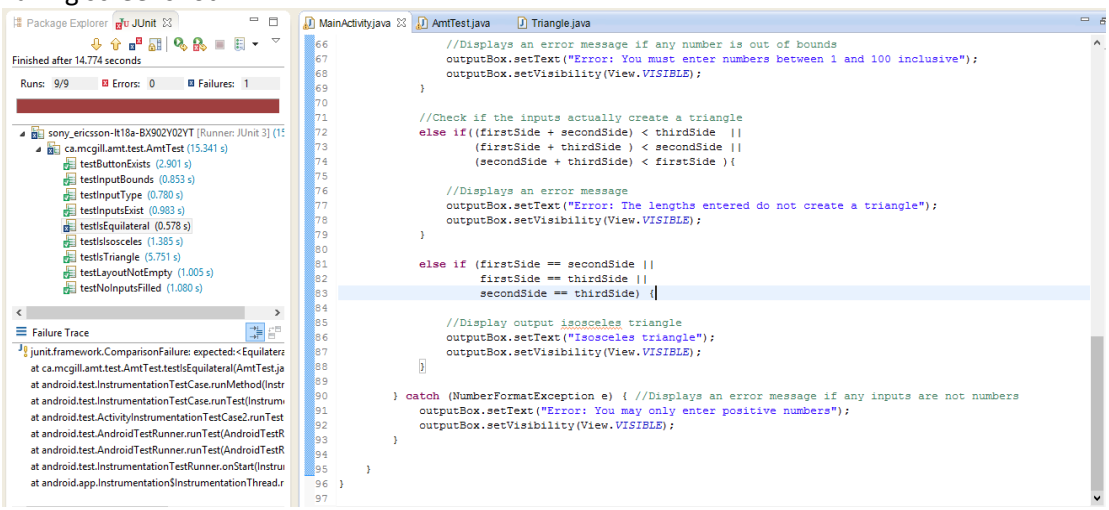
Passing screenshot:



2. Equilateral

The user entered the same value for all three sides.
Set up: Set all three inputs to have the same value.
Expected result: A message will appear telling the user that the inputs form an equilateral triangle.

Failing screenshot:

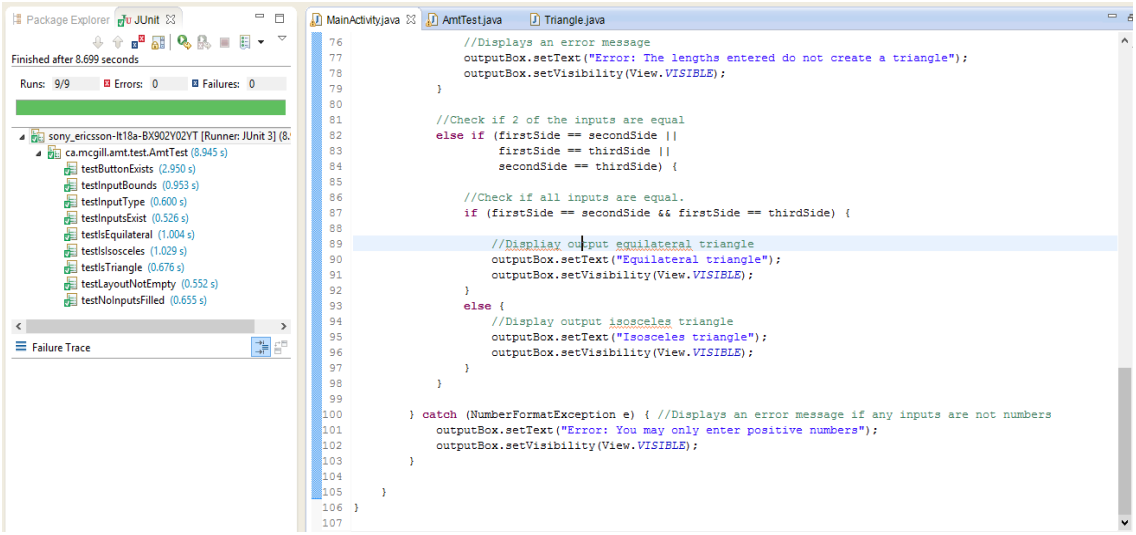


Code added:

```
//Check if all inputs are equal.
      if (firstSide == secondSide && firstSide == thirdSide) {

            //Display output equilateral triangle
            outputBox.setText("Equilateral triangle");
            outputBox.setVisibility(View.VISIBLE);
      }
      else {
```

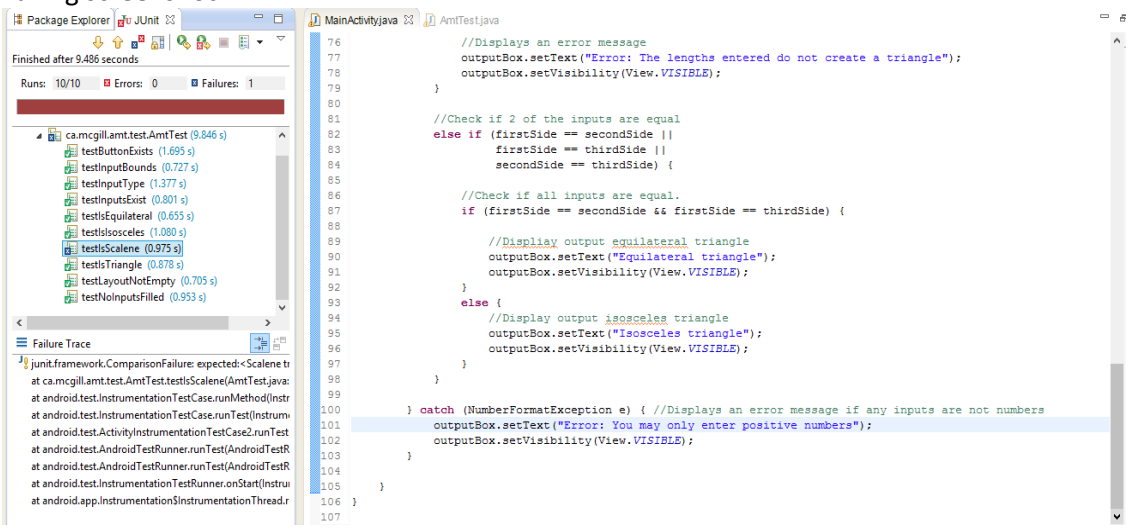
Passing screenshot:



3. Scalene

The user entered 3 different values for 3 sides.
Set up: Set 3 inputs to have different values.
Expected result: A message will appear telling the user that the inputs form a scalene triangle.

Failing screenshot:



Code added:

```
else {
                //Display output scalene triangle
                outputBox.setText("Scalene triangle");
                outputBox.setVisibility(View.VISIBLE);
                }
```

Passing screenshot: