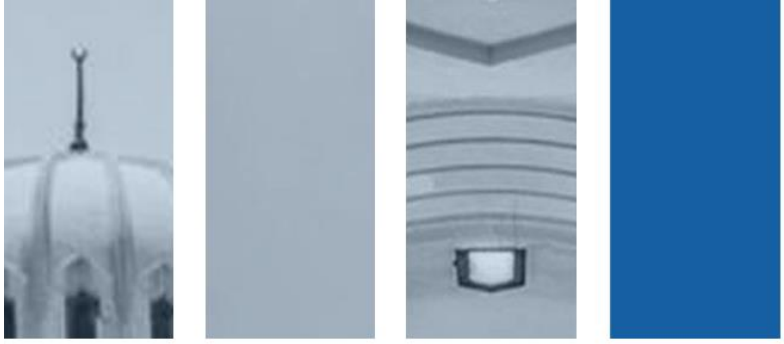

Lab (4)

Program: Computer and Systems Engineering

Course Code: CSE337s

Course Name: Software Testing

Ain Shams University
Faculty of Engineering

Team Number: 7

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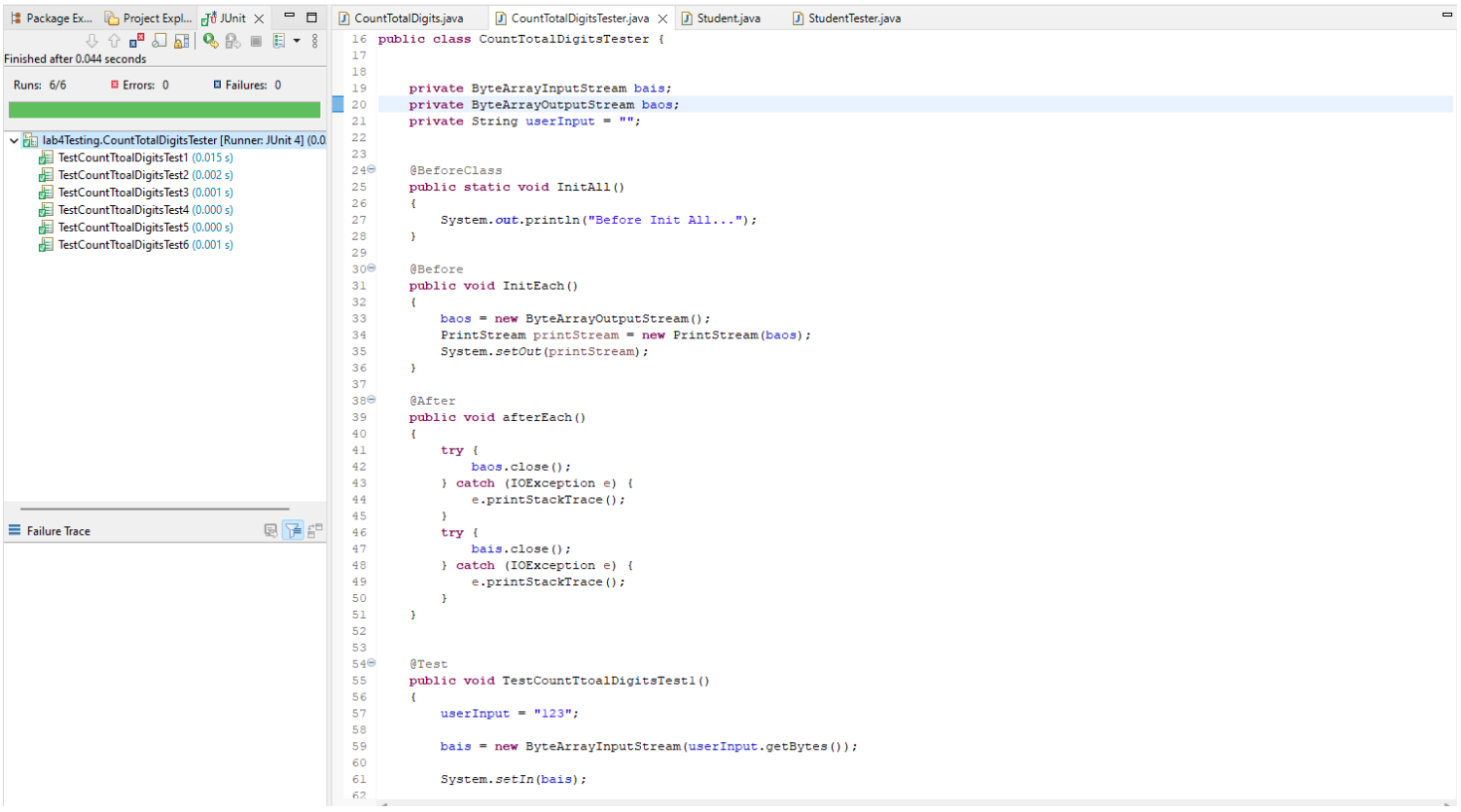
Count Total Digits Example

1. Implementation of CountTotalDigits class

CountTotalDigits.java | *CountTotalDigitsTester.java | Student.java | StudentTester.java

```java
package lab4Testing;


import java.util.Scanner;

public class CountTotalDigits {


    public static void main(String[] args)
    {
        int num, totalDigits = 0;

        Scanner s = new Scanner(System.in);

        //System.out.println("Enter a number : ");
        num = s.nextInt();

        while(num != 0)
        {
            totalDigits++;
            num = num/10;
        }

        System.out.print(totalDigits);

        s.close();

    }


}

```

2. Create 6 test cases and all passed



3. Test cases of CountTotalDigitsTester Class

   i. Test case 1,2

```
52
53      @Test
54      public void TestCountTtoalDigitsTest1()
55      {
56          userInput = "123";
57          bais = new ByteArrayInputStream(userInput.getBytes());
58          System.setIn(bais);
59
60          //run the program
61          CountTotalDigits.main(null);
62
63          String actual = baos.toString();
64          String expected = "3";
65
66          System.out.print("Actual : ");
67          System.out.print(actual);
68          System.out.println();
69          System.out.print("Expected : ");
70          System.out.print(expected);
71          System.out.println();
72
73          assertEquals("Error in Testing Counting Digits",actual,expected);
74      }
75
76      @Test
77      public void TestCountTtoalDigitsTest2()
78      {
79          userInput = "1";
80          bais = new ByteArrayInputStream(userInput.getBytes());
81          System.setIn(bais);
82
83          //run the program
84          CountTotalDigits.main(null);
85
86          String actual = baos.toString();
87          String expected = "1";
88
89          System.out.print("Actual : ");
90          System.out.print(actual);
91          System.out.println();
92          System.out.print("Expected : ");
93          System.out.print(expected);
94          System.out.println();
95
96          assertEquals("Error in Testing Counting Digits",actual,expected);
97      }
```

ii. Test case 3,4

```
98  @Test
99  public void TestCountTtoalDigitsTest3()
100 {
101     userInput = "12";
102     bais = new ByteArrayInputStream(userInput.getBytes());
103     System.setIn(bais);
104
105     //run the program
106     CountTotalDigits.main(null);
107
108     String actual = baos.toString();
109     String expected = "2";
110
111     System.out.print("Actual : ");
112     System.out.print(actual);
113     System.out.println();
114     System.out.print("Expected : ");
115     System.out.print(expected);
116     System.out.println();
117
118     assertEquals("Error in Testing Counting Digits",actual,expected);
119 }
120
121 @Test
122 public void TestCountTtoalDigitsTest4()
123 {
124
125     userInput = "-423";
126     bais = new ByteArrayInputStream(userInput.getBytes());
127     System.setIn(bais);
128
129     //run the program
130     CountTotalDigits.main(null);
131
132     String actual = baos.toString();
133     String expected = "3";
134
135     System.out.print("Actual : ");
136     System.out.print(actual);
137     System.out.println();
138     System.out.print("Expected : ");
139     System.out.print(expected);
140     System.out.println();
141
142     assertEquals("Error in Testing Counting Digits",actual,expected);
143 }
```

iii. Test case 5,6

```
146     public void TestCountTtoalDigitsTest5()
147     {
148         userInput = "-4";
149         bais = new ByteArrayInputStream(userInput.getBytes());
150         System.setIn(bais);
151
152         //run the program
153         CountTotalDigits.main(null);
154
155         String actual = baos.toString();
156         String expected = "1";
157
158         System.out.print("Actual : ");
159         System.out.print(actual);
160         System.out.println();
161         System.out.print("Expected : ");
162         System.out.print(expected);
163         System.out.println();
164
165         assertEquals("Error in Testing Counting Digits",actual,expected);
166     }
167
168     @Test
169     public void TestCountTtoalDigitsTest6()
170     {
171         userInput = "-4232";
172         bais = new ByteArrayInputStream(userInput.getBytes());
173         System.setIn(bais);
174
175         //run the program
176         CountTotalDigits.main(null);
177
178         String actual = baos.toString();
179         String expected = "4";
180
181         System.out.print("Actual : ");
182         System.out.print(actual);
183         System.out.println();
184         System.out.print("Expected : ");
185         System.out.print(expected);
186         System.out.println();
187
188         assertEquals("Error in Testing Counting Digits",actual,expected);
189     }
190 }
```

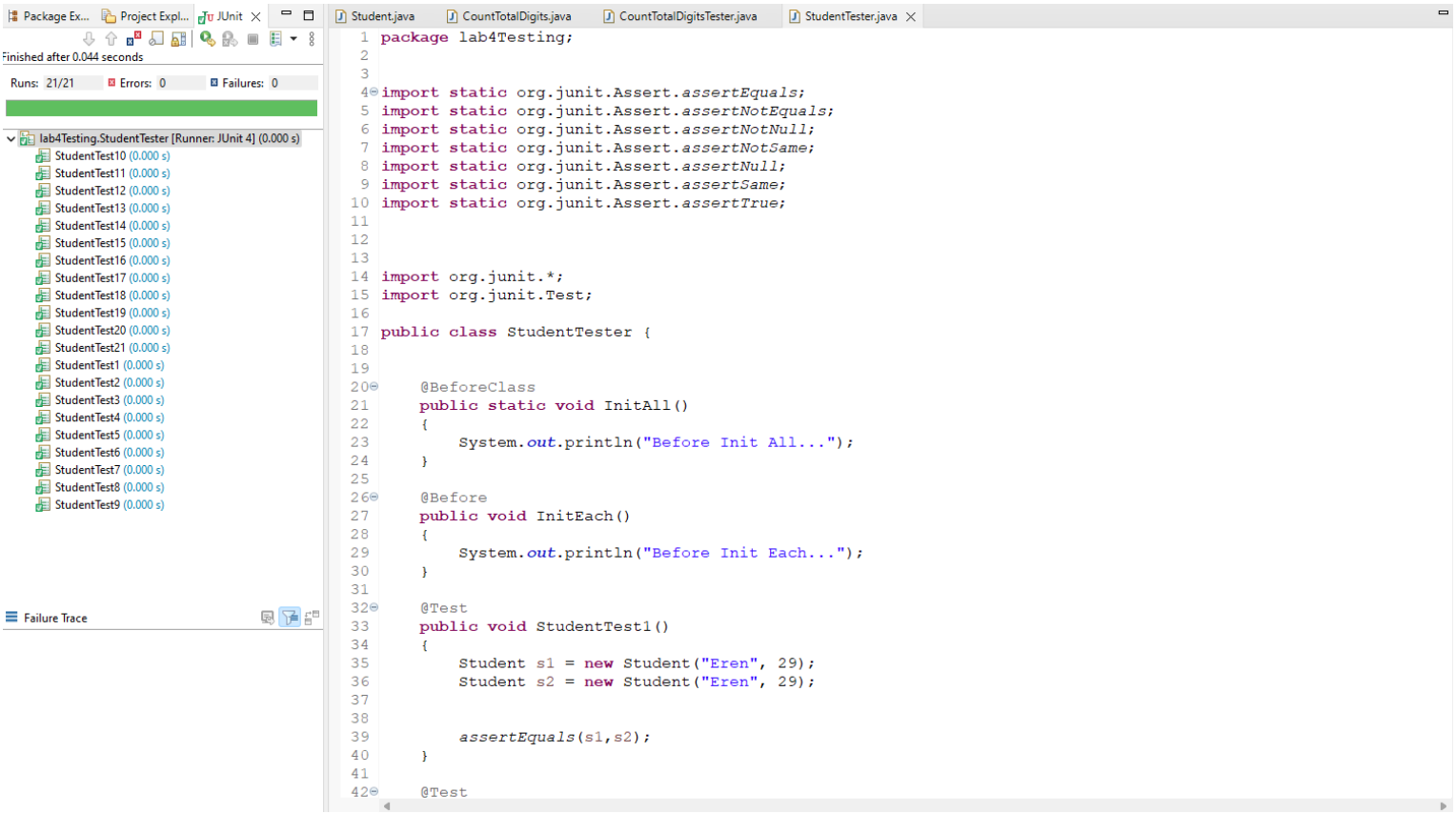
Student Class Example

1. Implementation of Student class

*Student.java | CountTotalDigits.java | CountTotalDigitsTester.java | StudentTester.java

```java
package lab4Testing;

public class Student {

    private String name;
    private int age;

    public Student(String name, int age)
    {
        this.name = name;
        this.age = age;
    }

    public String GetName()
    {
        return this.name;
    }

    public int GetAge()
    {
        return this.age;
    }
    @Override
    public boolean equals(Object s)
    {
        Student s2 = (Student)s;
        return this.name == s2.GetName() && this.age == s2.GetAge();
    }
}
```

2. Create 21 test cases and all passed




```java
package lab4Testing;


import static org.junit.Assert.assertEquals;
import static org.junit.Assert.assertNotEquals;
import static org.junit.Assert.assertNotNull;
import static org.junit.Assert.assertNotSame;
import static org.junit.Assert.assertNull;
import static org.junit.Assert.assertSame;
import static org.junit.Assert.assertTrue;



import org.junit.*;
import org.junit.Test;

public class StudentTester {


    @BeforeClass
    public static void InitAll()
    {
        System.out.println("Before Init All...");
    }

    @Before
    public void InitEach()
    {
        System.out.println("Before Init Each...");
    }

    @Test
    public void StudentTest1()
    {
        Student s1 = new Student("Eren", 29);
        Student s2 = new Student("Eren", 29);


        assertEquals(s1,s2);
    }

    @Test
```

3. Test cases of StudentTester Class

   i. Test cases 1 to 5

Student.java | CountTotalDigits.java | CountTotalDigitsTester.java | *StudentTester.java

```
31
32      @Test
33      public void StudentTest1()
34      {
35          Student s1 = new Student("Eren", 29);
36          Student s2 = new Student("Eren", 29);
37
38          assertEquals(s1,s2);
39      }
40
41      @Test
42      public void StudentTest2()
43      {
44          Student s1 = new Student("Ahmed", 23);
45          Student s2 = new Student("Ahmed", 23);
46
47          assertEquals(s1,s2);
48      }
49
50      @Test
51      public void StudentTest3()
52      {
53          Student s1 = new Student("Abdullah", 23);
54          Student s2 = new Student("Abdullah", 23);
55
56          assertEquals(s1,s2);
57      }
58
59      @Test
60      public void StudentTest4()
61      {
62          Student s1 = new Student("Andrew", 23);
63          Student s2 = new Student("Andrew", 23);
64
65          assertEquals(s1,s2);
66      }
67
68      @Test
69      public void StudentTest5()
70      {
71          Student s1 = new Student("Mostafa", 23);
72          Student s2 = new Student("Mostafa", 23);
73
74          assertEquals(s1,s2);
75      }
76
77      @Test
```

ii. Test cases 6 to 10

Student.java | CountTotalDigits.java | CountTotalDigitsTester.java | *StudentTester.java

```
76
77      @Test
78      public void StudentTest6()
79      {
80          Student s1 = new Student("Mohamed", 23);
81          Student s2 = new Student("Mohamed", 23);
82
83          assertEquals(s1,s2);
84      }
85
86      @Test
87      public void StudentTest7()
88      {
89          Student s1 = new Student("Mazen", 23);
90          Student s2 = new Student("Mazen", 23);
91
92          assertEquals(s1,s2);
93      }
94
95      @Test
96      public void StudentTest8()
97      {
98          Student s1 = new Student("Eren Yeger", 29);
99          Student s2 = new Student("Eren Yeger", 29);
100
101         assertEquals(s1,s2);
102     }
103
104     @Test
105     public void StudentTest9()
106     {
107         Student s1 = new Student("Eren", 29);
108         Student s2 = new Student("Eren Yeger", 29);
109
110         assertNotEquals(s1,s2);
111     }
112
113     @Test
114     public void StudentTest10()
115     {
116         Student s1 = new Student("Eren Yeger", 30);
117         Student s2 = new Student("Eren Yeger", 29);
118
119
120         assertNotEquals(s1,s2);
121     }
122
```

iii. Test cases 11 to 16

Student.java | CountTotalDigits.java | CountTotalDigitsTester.java | *StudentTester.java

```
124     public void StudentTest11()
125     {
126         Student s = new Student("Eren", 29);
127         assertEquals("Eren",s.GetName());
128     }
129
130     @Test
131     public void StudentTest12()
132     {
133         Student s = new Student("Eren", 29);
134         assertEquals(29,s.GetAge());
135     }
136
137     @Test
138     public void StudentTest13()
139     {
140         Student s1 = new Student("Eren", 29);
141         Student s2 = new Student("Eren", 29);
142         assertEquals(s1.GetName(),s2.GetName());
143     }
144
145     @Test
146     public void StudentTest14()
147     {
148         Student s1 = new Student("Eren", 29);
149         Student s2 = new Student("Eren", 29);
150         assertEquals(s1.GetAge(),s2.GetAge());
151     }
152
153     @Test
154     public void StudentTest15()
155     {
156         Student s1 = new Student("Eren", 29);
157         Student s2 = new Student("Eren", 29);
158         assertTrue(s1.GetName() == s2.GetName() && s1.GetAge() == s2.GetAge());
159     }
160
161     @Test
162     public void StudentTest16()
163     {
164         Student s1 = new Student("Eren", 29);
165         Student s2 = new Student("Eren Yeger", 29);
166         assertTrue(s1.GetName() != s2.GetName() && s1.GetAge() == s2.GetAge());
167     }
168
169     @Test
170     public void StudentTest17()
```

iv. Test cases 17 to 21

Student.java | CountTotalDigits.java | CountTotalDigitsTester.java | *StudentTester.java

```
166         assertTrue(s1.GetName() != s2.GetName() && s1.GetAge() == s2.GetAge());
167     }
168
169     @Test
170     public void StudentTest17()
171     {
172         Student s1 = new Student("Eren Yeger", 30);
173         Student s2 = new Student("Eren Yeger", 29);
174
175         assertTrue(s1.GetName() == s2.GetName() && s1.GetAge() != s2.GetAge());
176     }
177
178     @Test
179     public void StudentTest18()
180     {
181         Student s = new Student("Eren", 29);
182
183         assertNotNull(s);
184     }
185
186     @Test
187     public void StudentTest19()
188     {
189         Student s = null;
190
191         assertNull(s);
192     }
193
194     @Test
195     public void StudentTest20()
196     {
197         Student s1 = new Student("Eren", 29);
198         Student s2 = s1;
199
200         assertSame(s1, s2);
201     }
202
203     @Test
204     public void StudentTest21()
205     {
206         Student s1 = new Student("Eren", 29);
207         Student s2 = new Student("Eren", 29);
208
209         assertNotSame(s1, s2);
210     }
211 }
212
```

link of source code

https://drive.google.com/drive/folders/1yrsCtVVy30NRC-lMq5VTqlAeazuhLAJF