

Automatically Testing Java Programs



*Using JUnit and a simple application that
uses STDOUT and STDIN*

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The Example Application

```
// http://pastebin.com/gajL4NsG
import java.util.Scanner;

public class App
{
    public static void main( String[] args )
    {
        Scanner input = new Scanner(System.in);
        String fullName = "";

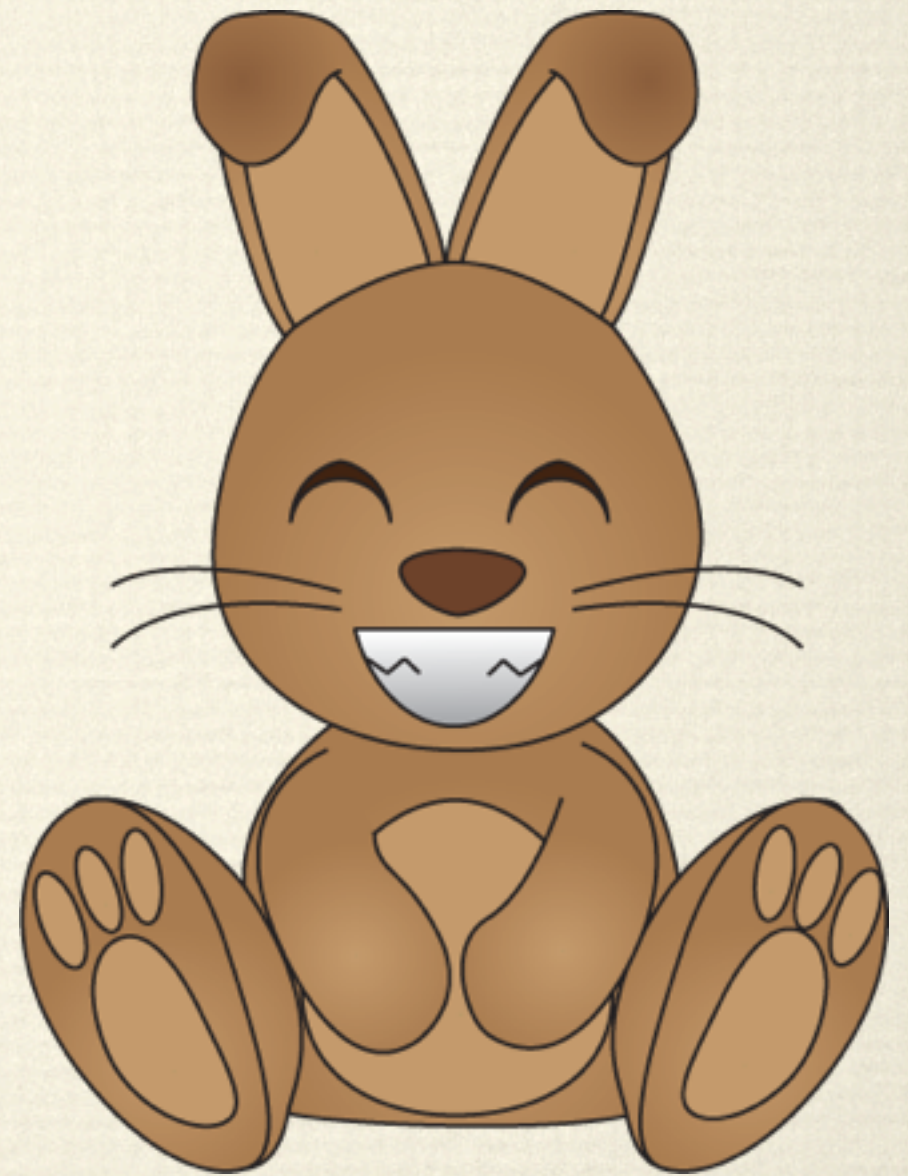
        System.out.println("What is your full name?");
        while(fullName.isEmpty()){
            System.out.print("I am: ");
            fullName = input.nextLine();
        }
        System.out.println("Thank you, " + fullName);
    }
}
```


Example Terminal Result

What is your full name?

I am: Mohammad El-Abid

Thank you, Mohammad El-Abid



Reliable Rabbit

Writing a Test

- ❖ By convention the test is named the class + test, so “MyApp” would have “MyAppTest”
- ❖ Tests are generally stored in another folder than the source code
- ❖ Most IDEs have a “Create a new JUnit test class”
- ❖ Tools > Plugins > Available > JUnit if not installed

Declarations for Rewiring In/Out

- ❖ `import java.io.ByteArrayOutputStream;`
- ❖ `import java.io.PrintStream;`
- ❖ `import java.io.PrintStream;`
- ❖ `import java.io.InputStream;`
- ❖ `private static final String lineSeparator =
System.getProperty("line.separator");`
- ❖ `private ByteArrayOutputStream outContent;`

In Our Function

- ❖ `InputStream stdin = System.in;`
- ❖ `PrintStream stdout = System.out;`
- ❖ `String input = "Mohammad El-Abid" +
lineSeparator;`
- ❖ `System.setIn(new
ByteArrayInputStream(input.getBytes()));`

Continue the Setup

- ❖ `outContent = new ByteArrayOutputStream();`
- ❖ `System.setOut(new PrintStream(outContent));`
- ❖ `String[] args = {};`
- ❖ `App.main(args);`

Write What We Expect

❖ String expected =

“What is your full name?” + lineSeparator +

“I am: “ + lineSeparator +

“Thank you, Mohammad El-Abid” +

lineSeparator;

Test What We Expect

- ❖ Restore STDIN and STDOUT:
- ❖ `System.setIn(stdin);`
- ❖ `System.setOut(stdout);`
- ❖ Be Assertive:
- ❖ `assertTrue(expected.equals(outContent.toString()));`

Hurrah!

- ❖ Run your test and you should get it going green!
- ❖ If we have time, we'll talk about JavaDoc
- ❖ Now see if you can get a similar test working on your project two assignment!
- ❖ Next Time? Exceptions and Extensions, or?