AUTOMATING USER INTERFACE TESTS WITH BDD

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MOTIVATION

- Improve test automation efficiency
- Reduce technical know-how for automation
EXAMPLE LOGIN STORY
Authentication

Login

Your login

Password

Your password

☐ Automatic login

Authenticate

You don't have an account yet? Register a new account
TEST SPECIFICATION

Written by test writers

Test Login

Step 1: Navigate to the Login screen
Step 2: Enter "admin" into the Login field
Step 3: Enter "admin" into the Password field
Step 4: Check **Automatic Login**
Step 5: Click the Sign In button

Assert 1: You are on the Home Page
Assert 2: The title is "Welcome, Java Hipster!"

...
APPLICATION CODE

Implemented by app developer

```html
<input type="text" id="username">
<input type="password" id="password">
<input type="checkbox" id="rememberMe">
<button type="submit" id="signIn">Authenticate</button>
```
class LoginFeature {

    public void loginWithAdminUser() {
        driver.get("http://eclipse-finance-day/login");
        WebElement element = driver.findElement(By.id("user"));
        element.sendKeys("admin");
        element = driver.findElement(By.id("password"));
        element.sendKeys("admin");
        element = driver.findElement(By.id("automaticLogin"));
        element.check();
        element = driver.findElement(By.id("signIn"));
        element.submit();

        Assert.assertTrue(driver.getTitle(), "Welcome, Java Hipster!");
    }
}
Automatic login element is removed
<table>
<thead>
<tr>
<th>Case</th>
<th>Wireframe</th>
<th>Test spec</th>
<th>Test code</th>
<th>App code</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
<td>runtime fail</td>
</tr>
<tr>
<td>2</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
<td>runtime fail</td>
</tr>
<tr>
<td>...</td>
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</tr>
</tbody>
</table>
BEHAVIOR DRIVEN DEVELOPMENT (BDD)

- Stakeholder and business-value oriented
- Textual test descriptions
BDD

Feature Login

As a registered user
I want to login
In order to use the application

Scenario Authenticate with admin user

Given I am on the Login screen
when I type "admin" into the Login textfield
and I type "admin" into the Password textfield
and I check the AutomaticLogin checkbox
and I click the Authenticate button
then I am on the Home screen
and the Title label contains "Welcome, Java Hipster!"

Scenario ...
...

...
**BDD DSL**

**Feature** Login

**As a** registered user
**I want** to login
**In order** to use the application

**Scenario** Authenticate with admin user

**Given** I am on the Login screen
when I type "admin" into the Login textfield
and I type "admin" into the Password textfield
and I check the AutomaticLogin checkbox
and I click the Authenticate button
then I am on the Home screen
and the Title label contains "Welcome, Java Hipster!"

**Scenario** ...
...


LINK THE ARTIFACTS

SPEC

Wireframe

Login

Password

admin

<User/>

>Password

APP
CODE GENERATOR
DEMO

Let's go!
PROS

- Separation of Concerns
  - Wireframe - Business Analyst
  - BDD DSL - Test Writer
  - Mapping - App Developer
- Detect breaking tests at development time
- Self documenting, clearly readable tests
- Encourages reuse
- Generate test code for multiple drivers e.g. Jubula, Tosca
- Ability to integrate with vendor testing stack and processes like agile, TDD, waterfall
CONS

- Test writers have to learn BDD DSL
- Business analysts must keep wireframes up to date
FUTURE

- Open source
- Web-based wireframes
- Integrate perceptual diff support (already partially available)
- Migrate to Gherkin syntax
- Additional generators (TOSCA, JUBULA, QTP)
QUESTIONS?

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TOOLS USED

- Wireframesketcher
- Xtext
- Geb/Spock
- JHipster