Behavioral-Driven Development

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Avant-propos

To follow those slides... 📱📱💻

http://bit.ly/jmb-teaching

Principles

- Given
- When
- Then
- And

Examples

Some review activity (No code)

```
Feature: Reviewing a Ph.D. Thesis
    Every PhD thesis review has some recurrent steps

Scenario: A reviewer, being an expert on the field, should be cited somewhere
    Given A PhD thesis to review
    And a reviewer John Smith
    Then The thesis should cite John Smith's work

Scenario: A Ph.D. thesis should be an original work
    Given A PhD thesis to review
    And a reviewer John Smith
    Then The PhD.pdf should be checked agains plagiarism
```

Figure 1. Review PhD feature

This course materials! (No code)

```
#-----------------------------
# Checking URLs
# JMB - 2020
#-----------------------------
# language: en
Feature: Teaching Materials Quality Assemsment
    Every material should have correct links

Scenario: The URLs mentioned in an Asciidoc document should be verified (non 404)
    Given An Asciidoc file
    Then All the URLs should be active
```

Figure 2. Check URLs feature

Android example

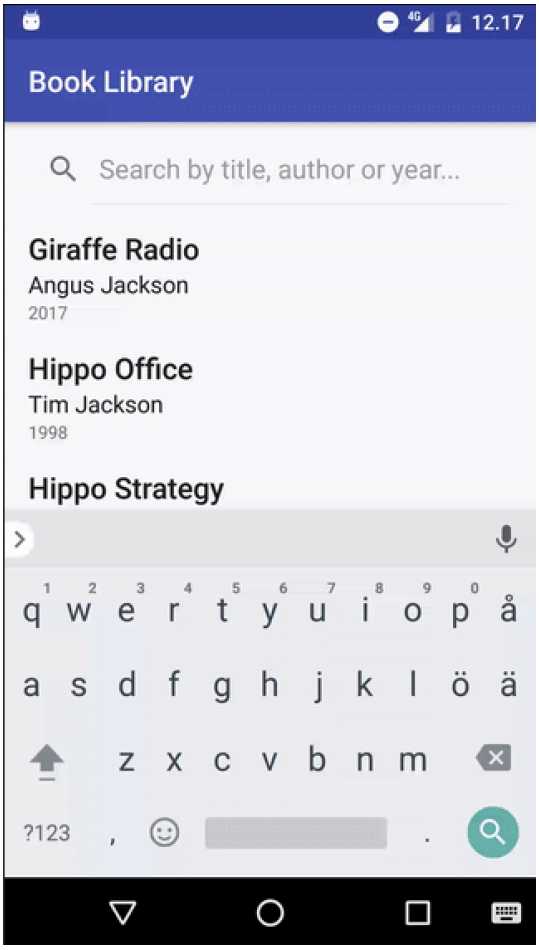


Figure 3. An Android app (source here)

!

A feature for this app (source here)

```
Feature: Book Search
    Scenario: Search books by author
      Given there's a book called "Tips for job interviews" written by "John Smith"
        And there's a book called "Bananas and their many colors" written by "James
Doe"
        And there's a book called "Mama look I'm a rock star" written by "John Smith"
      When an employee searches by author "John Smith"
      Then 2 books should be found
        And Book 1 has the title "Tips for job interviews"
        And Book 2 has the title "Mama look I'm a rock star"
```

Angular example

!

A "Getting Started" app

https://github.com/petermorlion/angular-getting-started

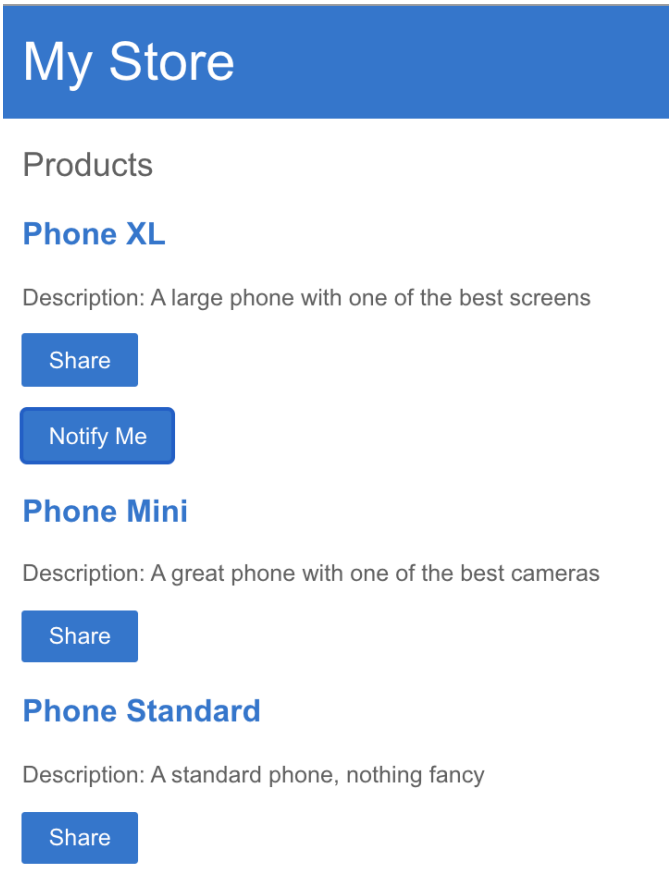


Figure 4. An Angular example app

!

Some feature description

```
Feature: Automatic discounts for premium customers
    Premium customers should automatically get a
    discount of 10% on purchases over $100.

    Scenario: Purchase over $100
        Given a premium customer
        And an order containing
            | item   | amount | price |
            | pencil | 100    | 1     |
            | paper  | 1      | 35    |
        When the customer checks out
        Then the total price should be 121.5
```

Figure 5. Some feature example

!

Running Cucumber (fail)

```
[→  /tmp/angular-getting-started git:(master) ✗ cucumber features/products-list.feature
Feature: Products List

  Scenario: Load the products list    # features/products-list.feature:3
    When we request the products list # features/products-list.feature:4
    Then we should receive            # features/products-list.feature:5
      | name           | description                                |
      | Phone XL       | A large phone with one of the best screens |
      | Phone Mini     | A great phone with one of the best cameras |
      | Phone Standard | A standard phone, nothing fancy            |

1 scenario (1 undefined)
2 steps (2 undefined)
0m0.051s

You can implement step definitions for undefined steps with these snippets:

When('we request the products list') do
  pending # Write code here that turns the phrase above into concrete actions
end

Then('we should receive') do |table|
  # table is a Cucumber::MultilineArgument::DataTable
  pending # Write code here that turns the phrase above into concrete actions
end

  Share your Cucumber Report with your team at https://reports.cucumber.io

  Command line option:    --publish
  Environment variable:   CUCUMBER_PUBLISH_ENABLED=true
  cucumber.yml:           default: --publish

  More information at https://reports.cucumber.io/docs/cucumber-ruby

  To disable this message, specify CUCUMBER_PUBLISH_QUIET=true or use the
  --publish-quiet option. You can also add this to your cucumber.yml:
  default: --publish-quiet
```

Figure 6. First run of the tests

!

Write Steps definitions

This is code linking the assertions with the running code.

Steps definition

```
import { When, Then } from 'cucumber';

When('we request the products list', function () {
    // Write code here that turns the phrase above into concrete actions
    return 'pending';
});

Then('we should receive', function (dataTable) {
    // Write code here that turns the phrase above into concrete actions
    return 'pending';
});
```

!

Running Cucumber (pass)

```
...

1 scenario (1 passed)
2 steps (2 passed)
0m05.270s
```

Figure 7. New run of the tests

Supported languages

Ruby (origin), Java, JavaScript,

- IntelliJ Cucumber for Java plugin
- Cucumber Eclipse plugin

Build

Make sure to integrate BDD in your build.

For maven/gradle, see https://cucumber.io/docs/tools/java/#build-tools

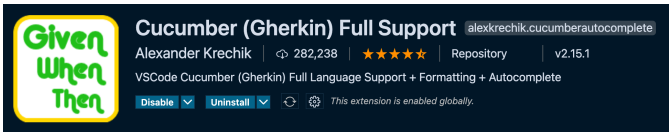
Find a plugin for your IDE

```
Feature: Products List

    Scenario: Load the products list
        When we request the products list
        Then we should receive
            | name           | description                          |
            | Phone XL       | A large phone with one of the best screens |
            | Phone Mini     | A great phone with one of the best cameras |
            | Phone Standard | A standard phone, nothing fancy      |
```

Figure 8. Cucumber plugin in use in VS Code

Example for VS Code: https://github.com/alexkrechik/VSCucumberAutoComplete



Gherkin tips

Avoid duplication

```
    Given I go to the home page
    Given I check the about page of the website
    Given I get the contact details
```

!

```
    Given I go to the {} page
```

!

Generic Step definition

```
@Given("I go to the {string} page")
public void i_want_to_open_page(String webpage) {
  webpageFactory.openPage(webpage);
}
```

Grouping step definitions

One file for each major domain object.

Example of step definition files

```
EmployeeStepDefinitions.java
EducationStepDefinitions.java
ExperienceStepDefinitions.java
AuthenticationStepDefinitions.java
```

Scenario outline (template)

```
Scenario Outline: eating
  Given there are <start> cucumbers
  When I eat <eat> cucumbers
  Then I should have <left> cucumbers

  Examples:
    | start | eat | left |
    |    12 |   5 |    7 |
    |    20 |   5 |   15 |
```

Language support

Don't forget the `# language: fr`

```
# language: fr
Fonctionnalité: Servir du café
  Afin de gagner de l'argent
  Les clients doivent être capables
  d'acheter du café à toutes heures

  Scénario: Acheter le dernier café
    Etant donné qu'il reste 1 café dans la machine
    Et que j'ai mis 1 dollar
    Quand j'appuie sur le bouton de la machine
    Alors je devrai recevoir un café
```

Figure 9. Example of feature in French (source)

Appendix A: Useful links

- Cucumber reference site
- A 10' tutorial
- An Android example
- An Angular example