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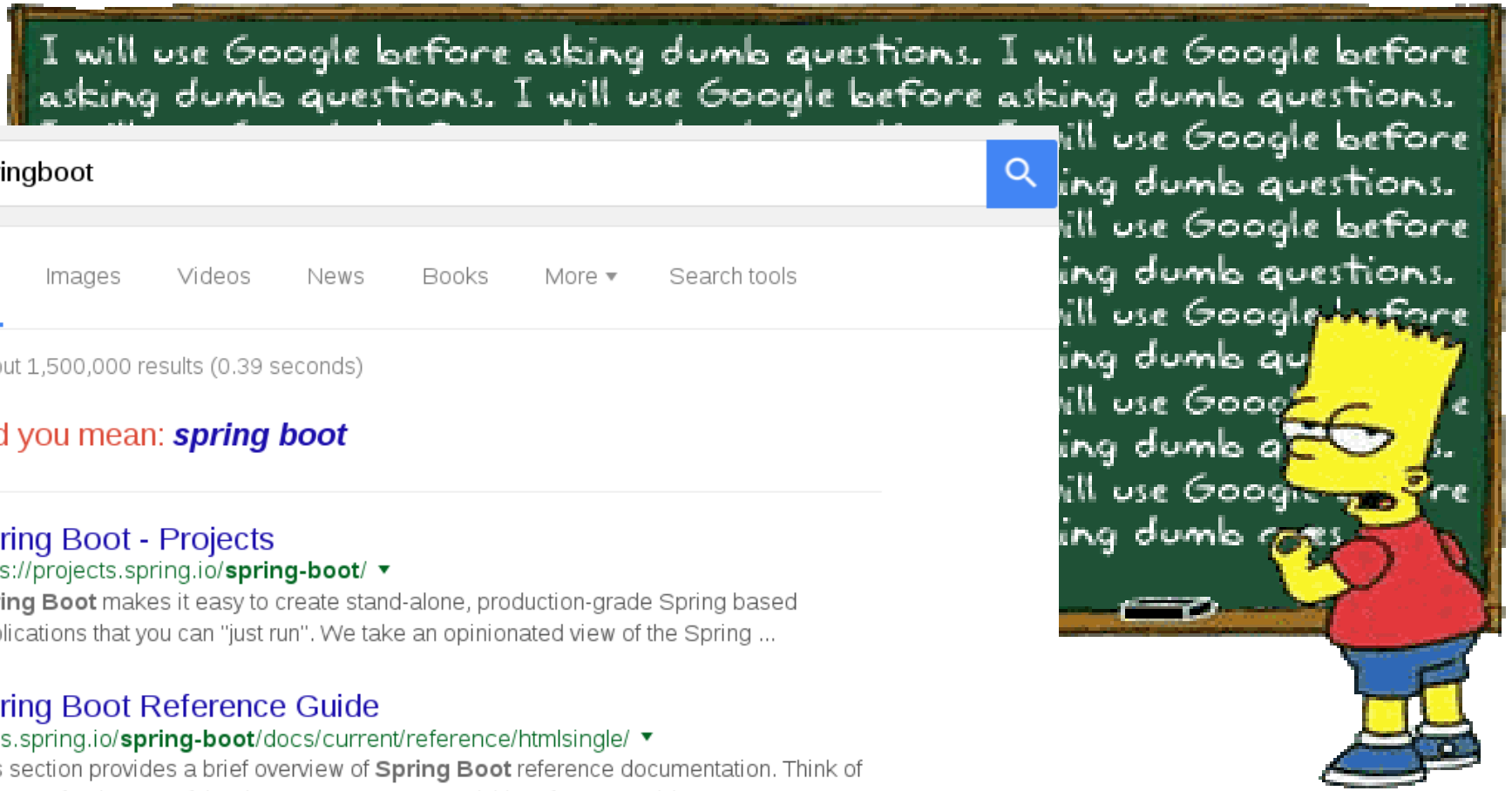
Introduction to SpringBoot

(Spring Framework @AutoConfigure...)

This document:
http://arnaud-nauwynck.github.io/docs/Intro-SpringBoot.pdf



Google springboot

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About 1,500,000 results (0.39 seconds)

Did you mean: ***spring boot***

Spring Boot - Projects
https://projects.spring.io/**spring-boot**/
Spring Boot makes it easy to create stand-alone, production-grade Spring based Applications that you can "just run". We take an opinionated view of the Spring ...

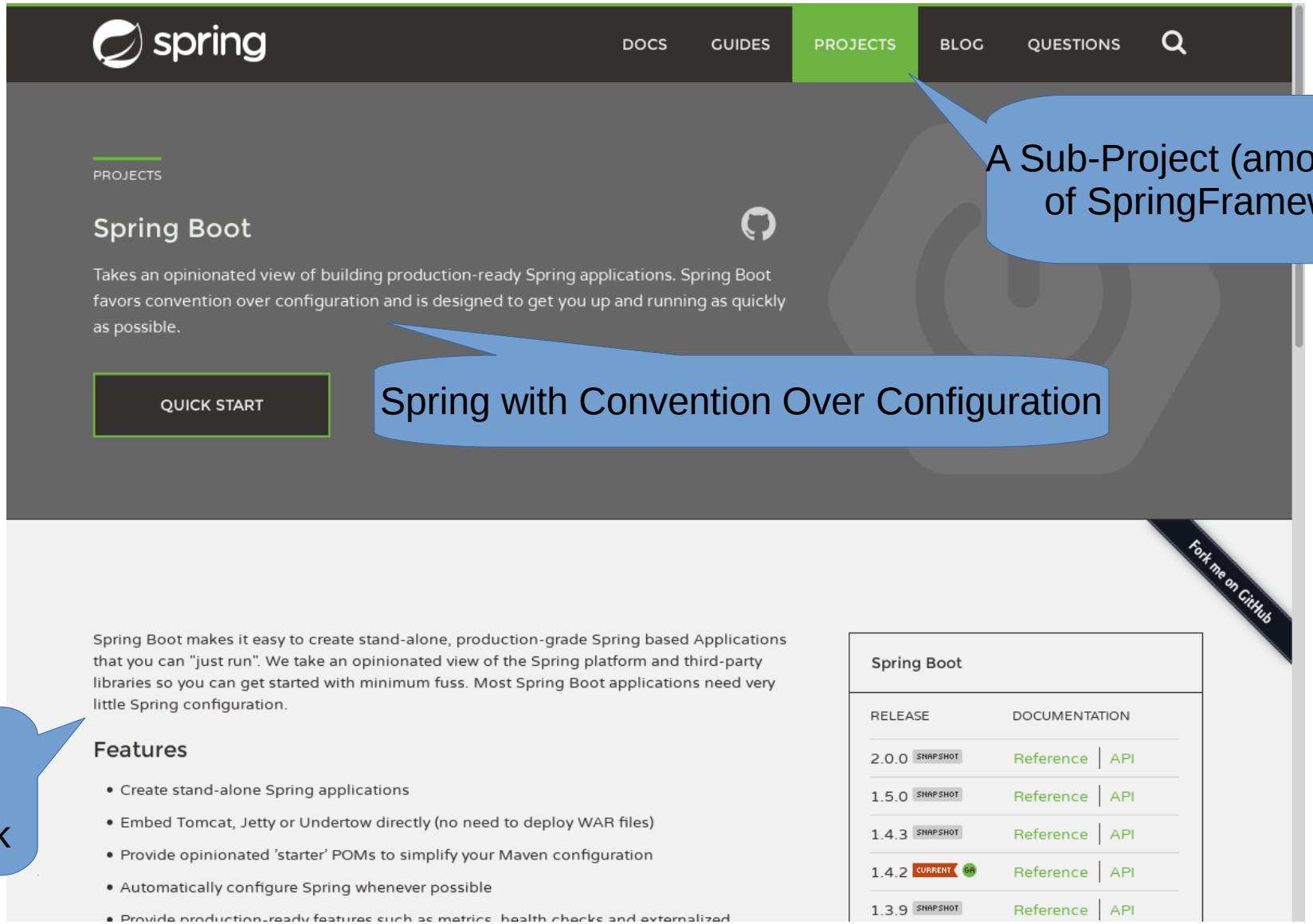
Spring Boot Reference Guide
docs.spring.io/**spring-boot**/docs/current/reference/htmlsingle/
This section provides a brief overview of **Spring Boot** reference documentation. Think of it as map for the rest of the document. You can read this reference guide ...

Getting Started · Building an Application with Spring Boot
https://spring.io/guides/gs/**spring-boot**/
This guide provides a sampling of how **Spring Boot** helps you accelerate and facilitate application development. As you read more Spring Getting Started guides ...

GitHub - spring-projects/spring-boot: Spring Boot
https://github.com/spring-projects/**spring-boot**
Spring Boot makes it easy to create Spring-powered, production-grade applications and services with absolute minimum fuss. It takes an opinionated view of the ...

Spring Boot 1.4 Release Notes · spring-projects/spring-boot ...
https://github.com/spring.../**spring-boot**/.../**Spring-Boot**-1.4-Release-Note...
Classes, methods and properties that were deprecated in **Spring Boot** 1.3 have been removed in this release. Please ensure that you aren't calling deprecated ...

Google Rank #1 “springboot”
https://projects.spring.io/spring-boot/
no Wikipedia?



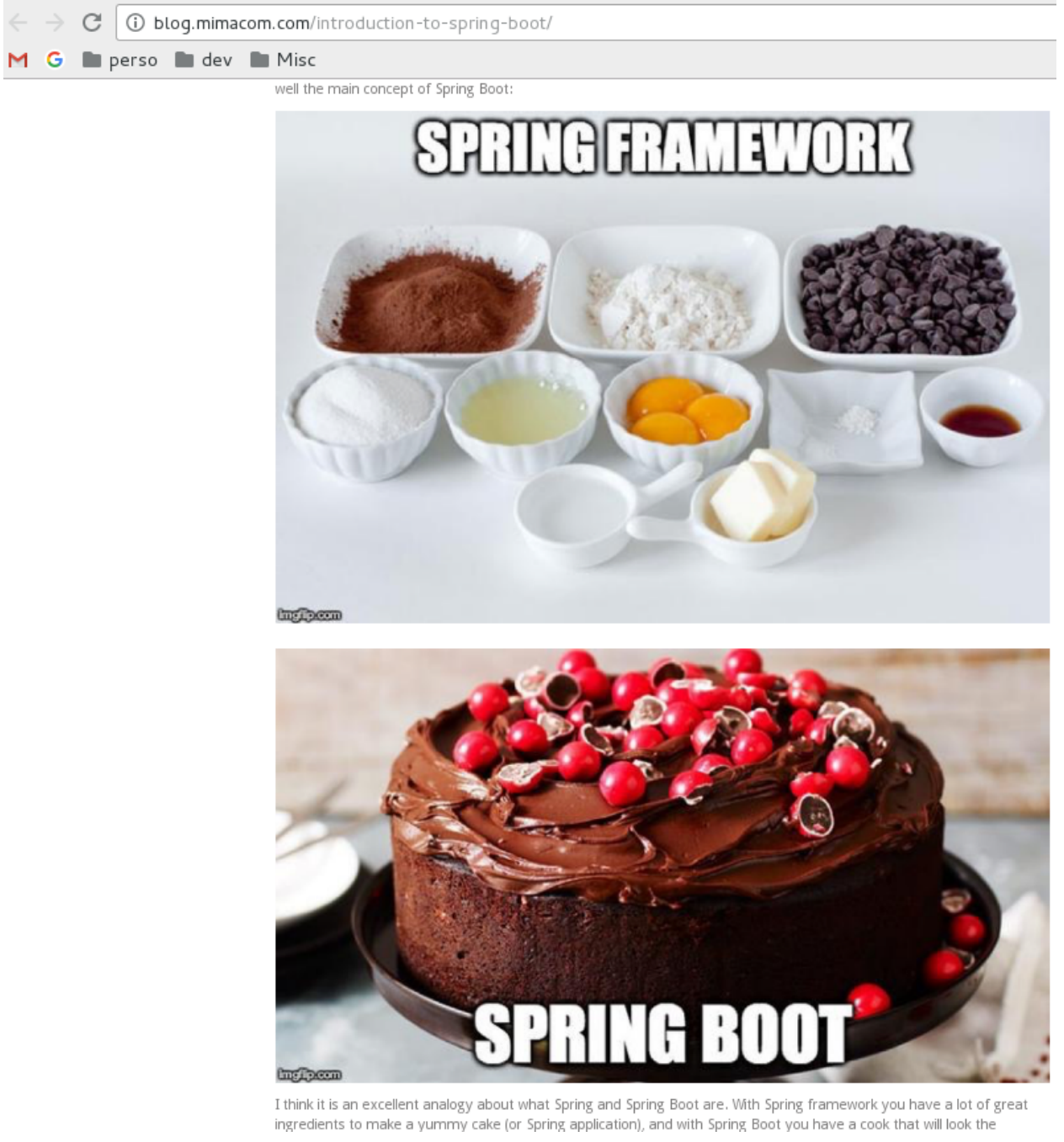
Easier
Smaller
Just work

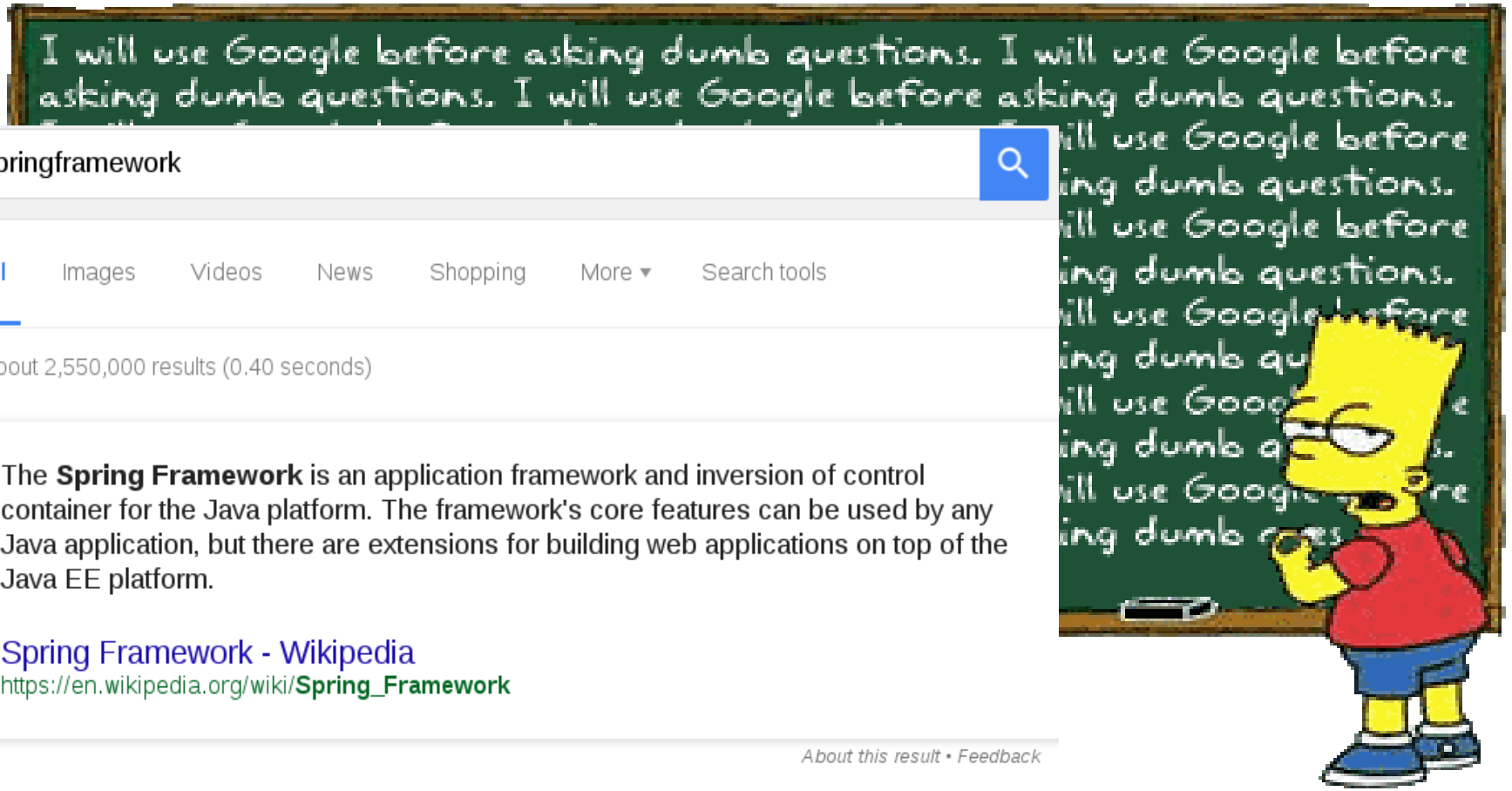
SpringBoot = a Sub-Project of SpringFramework

“What is SpringBoot ? “
=

“What is SpringFramework ?”
+
“What is in SpringBoot & not in SpringFramework ?”

http://blog.mimacom.com/introduction-to-spring-boot/





Google springframework

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About 2,550,000 results (0.40 seconds)

The **Spring Framework** is an application framework and inversion of control container for the Java platform. The framework's core features can be used by any Java application, but there are extensions for building web applications on top of the Java EE platform.

Spring Framework - Wikipedia
https://en.wikipedia.org/wiki/**Spring_Framework**

About this result • Feedback

Spring Framework - Projects
https://projects.spring.io/**spring-framework**/
A key element of Spring is infrastructural support at the application level: Spring focuses on the "plumbing" of enterprise applications so that teams can focus on application-level business logic, without unnecessary ties to specific deployment environments.

Spring
https://spring.io/
Spring helps development teams everywhere build simple, portable, fast and flexible JVM-based systems and applications.

Spring Framework Reference Documentation
docs.spring.io/spring/docs/current/**spring-framework**-reference/htmlsingle/
I. Overview of **Spring Framework**. 1. Getting Started with Spring; 2. Introduction to the **Spring Framework**. 2.1. Dependency Injection and Inversion of Control; 2.2.

“SpringFramework” Wikipedia

Spring Framework

From Wikipedia, the free encyclopedia

The **Spring Framework** is an application framework and inversion of control container for the Java platform. The framework's core features can be used by any Java application, but there are extensions for building web applications on top of the Java EE platform. Although the framework does not impose any specific programming model, it has become popular in the Java community as an alternative to, replacement for, or even addition to the Enterprise JavaBeans (EJB) model. The Spring Framework is open source.

Contents [hide]

Spring Framework

spring by Pivotal

Developer(s)	Pivotal Software
Initial release	1 October 2002; 14 years ago
Stable release	4.3.2 [1] / June 10, 2016
Preview release	5.0.0 M2 / September 21, 2016
Repository	github.com/spring-projects/spring-framework
Development status	Active
Written in	Java
Operating system	Cross-platform
Platform	Java Virtual Machine
Type	Application framework
License	Apache License 2.0
Website	spring.io

Wikipedia Extract

The Spring Framework is an **application framework** and **inversion of control container** for the Java platform.

can be used by any Java application ..
.. extensions for web applications.

… popular in the Java community .. alternative EJB.

open source

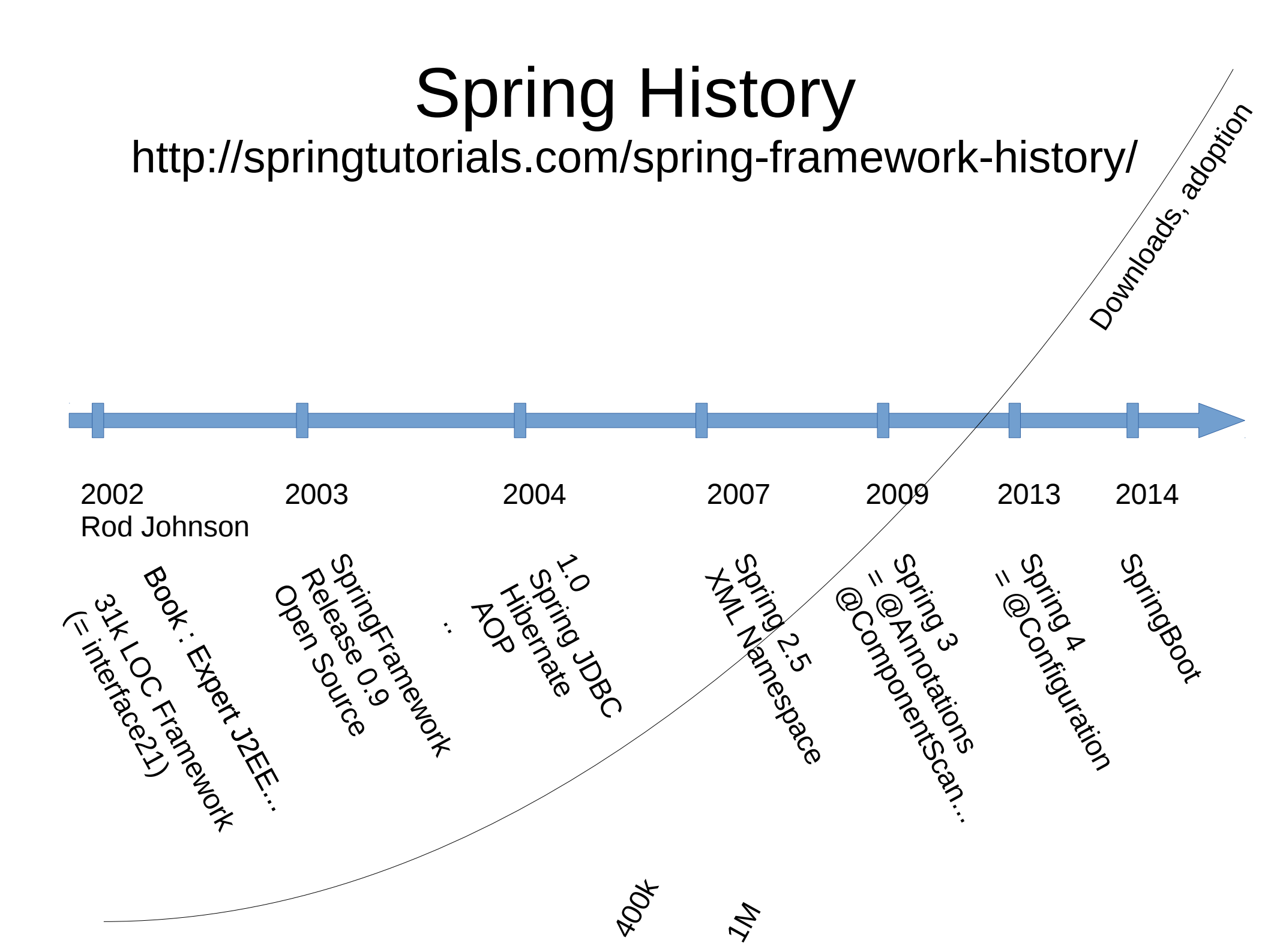
History & Authors

- framework for J2EE-* libs in <xml>…
  - Developped by Rod Johnson & Juergen Hoeller
  - in ~ 2003


- SpringBoot is @Automagic without </xml>
  - From Dave Sayer & Phil Webb
  - In ~ 2014


Spring History

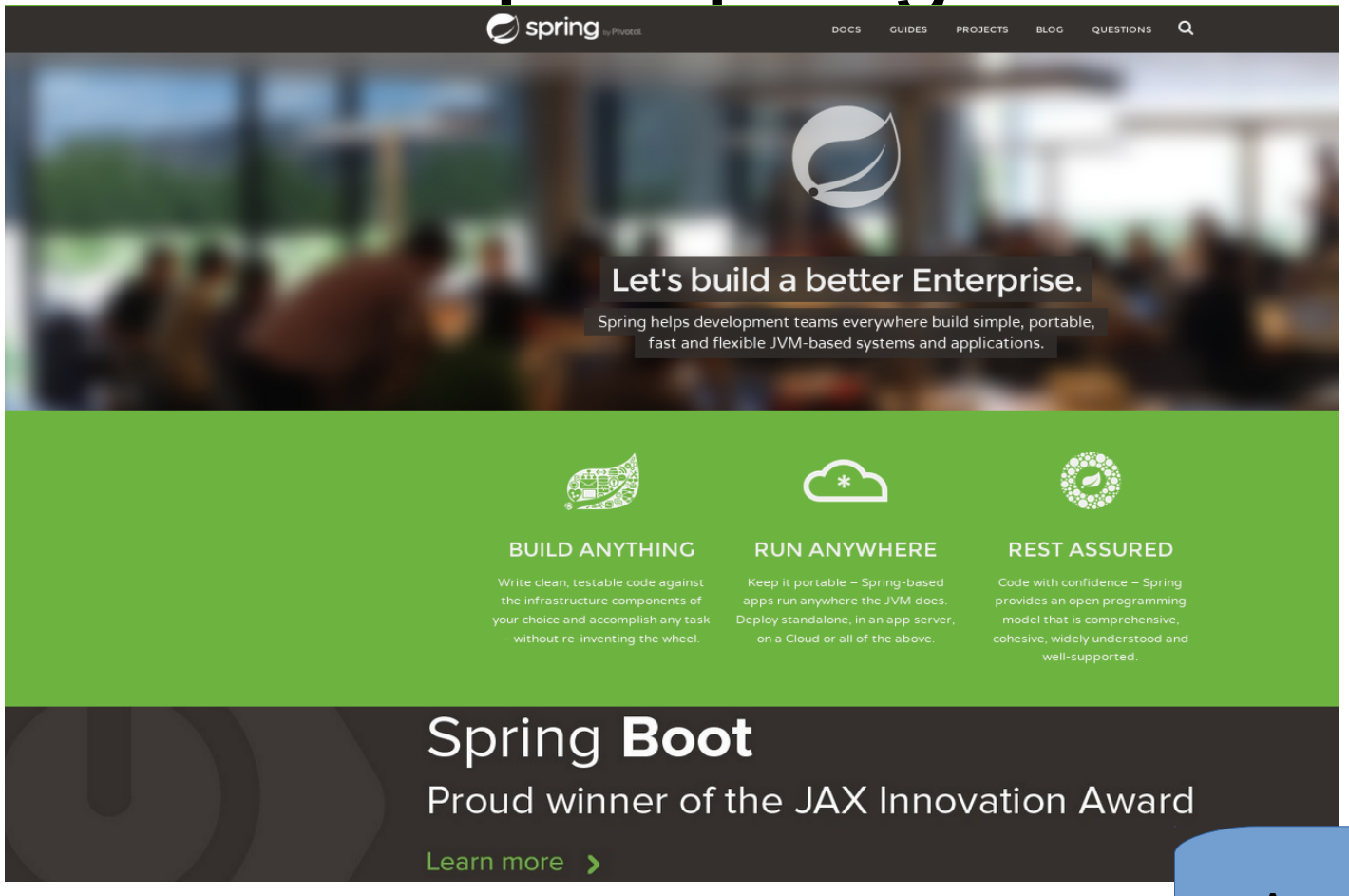
http://springtutorials.com/spring-framework-history/

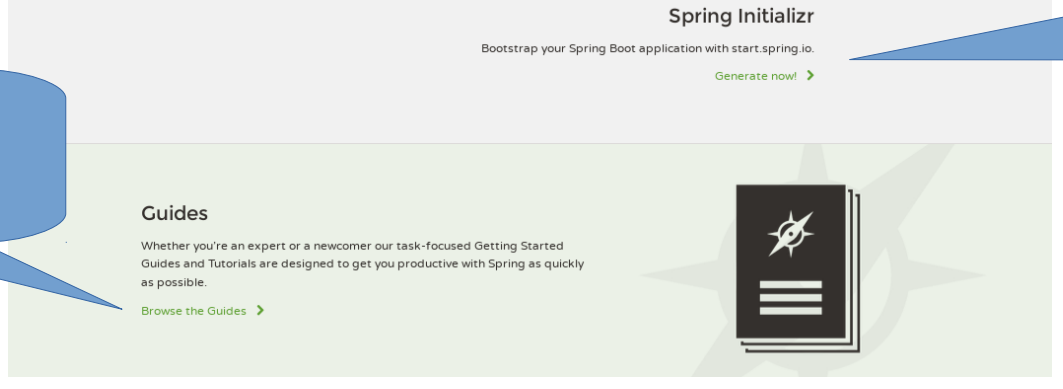


Game of the Name (French Translation)

- Spring = “ressort”, “printemps”, “renouveau”
  - After the cold winter of ugly EJB specs 1.0, 2.0, …
- Framework = “Cadre de Travail”
  - = Way of working, proposed / imposed by library
- Boot = “démarrage”
  - = your app is a 1 line main() with @magic

http://spring.io

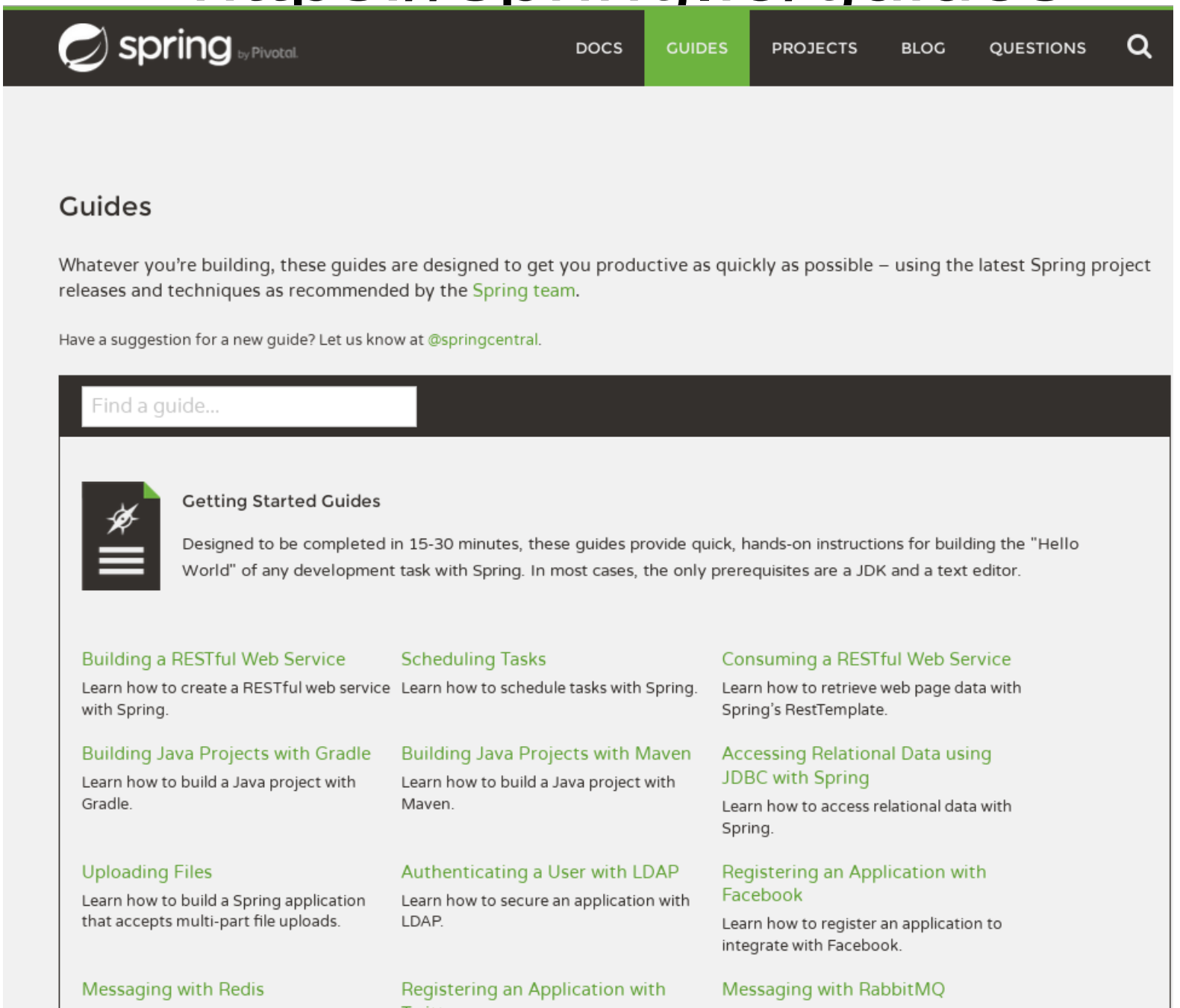




Amazing Starter

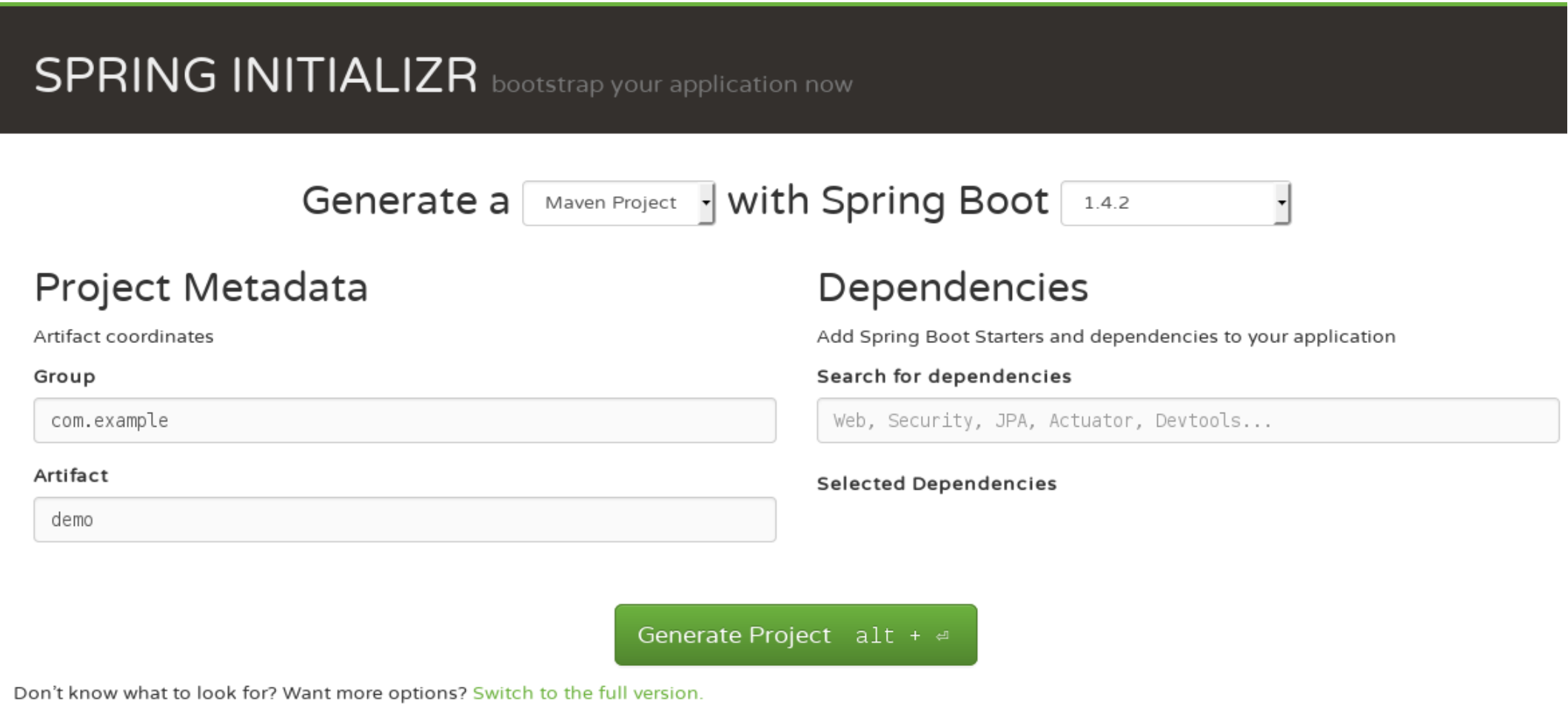
Amazing Tutorials & Doc

https://spring.io/guides



1/ Download + 2/ Mvn + 3/ Eclipse

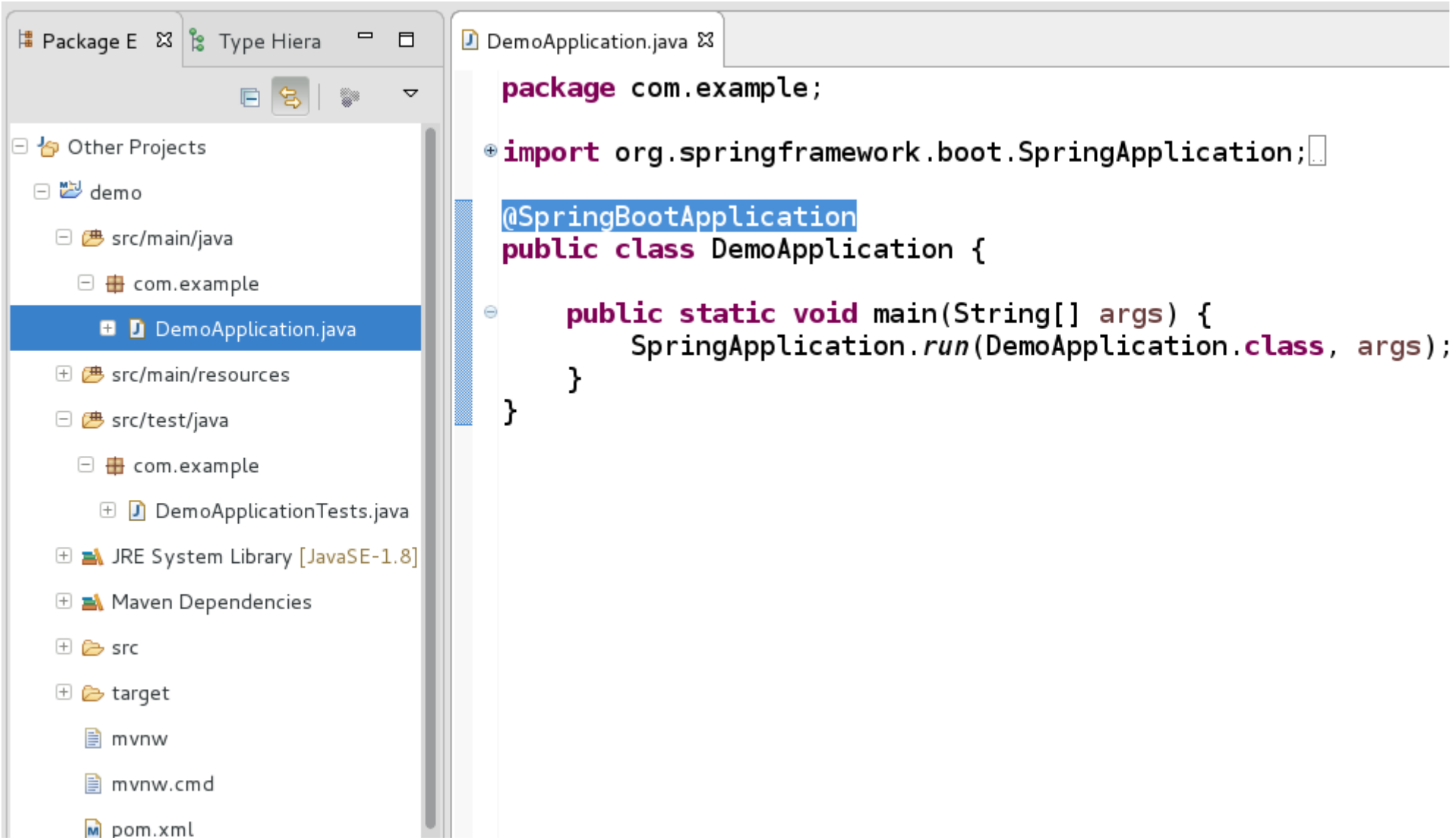
http://start.spring.io/



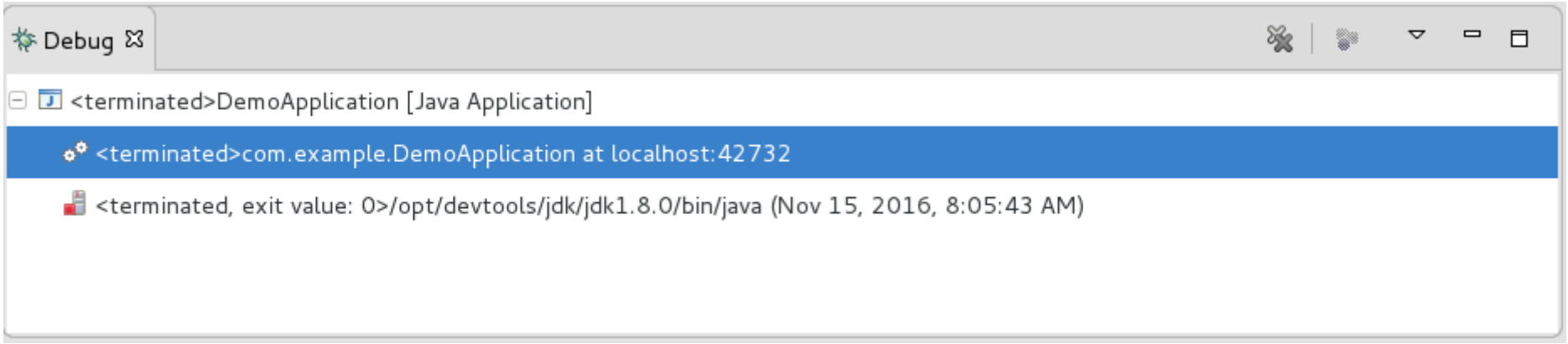
1/ Download + **2/ Mvn** + 3/ Eclipse

```
$ mvn clean compile
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] Building demo 0.0.1-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- maven-clean-plugin:2.6.1:clean (default-clean) @ demo ---
[INFO] Deleting /mnt/a_1tera2/homeData/arnaud/perso/devPerso/my-github/test-snip
arget
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ demo ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 1 resource
[INFO] Copying 0 resource
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ demo ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to /mnt/a_1tera2/homeData/arnaud/perso/devPerso/m
/test-springboot/target/classes
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 1.380 s
[INFO] Finished at: 2016-11-15T07:57:46+01:00
[INFO] Final Memory: 18M/82M
[INFO] ------------------------------------------------------------------------
$
```

1/ Download + 2/ Mvn + **3/ Eclipse**



4/ Run IT …
Just Another Hello World App ?

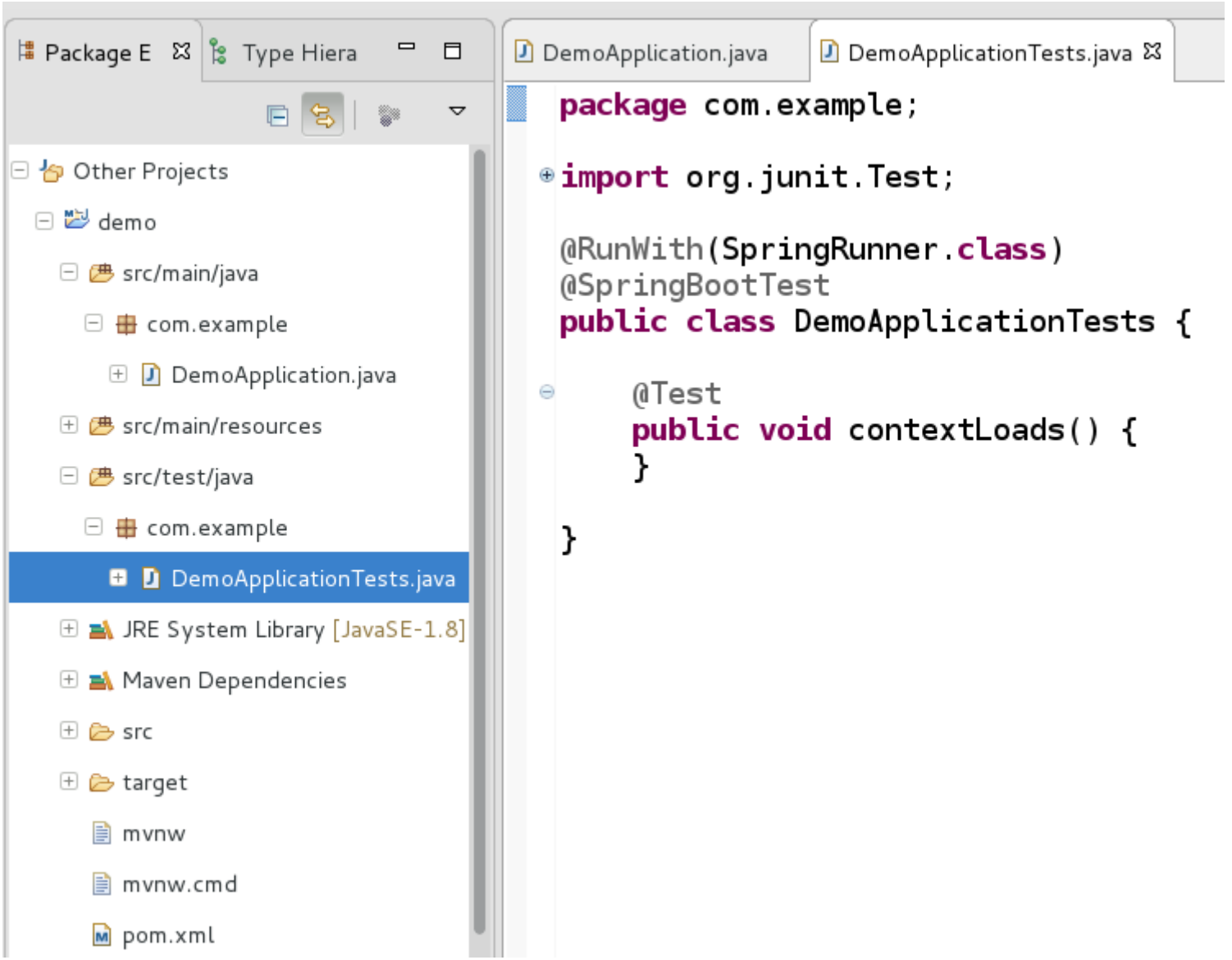


Console | Display | JUnit | Search | Call Hierarchy | Progress

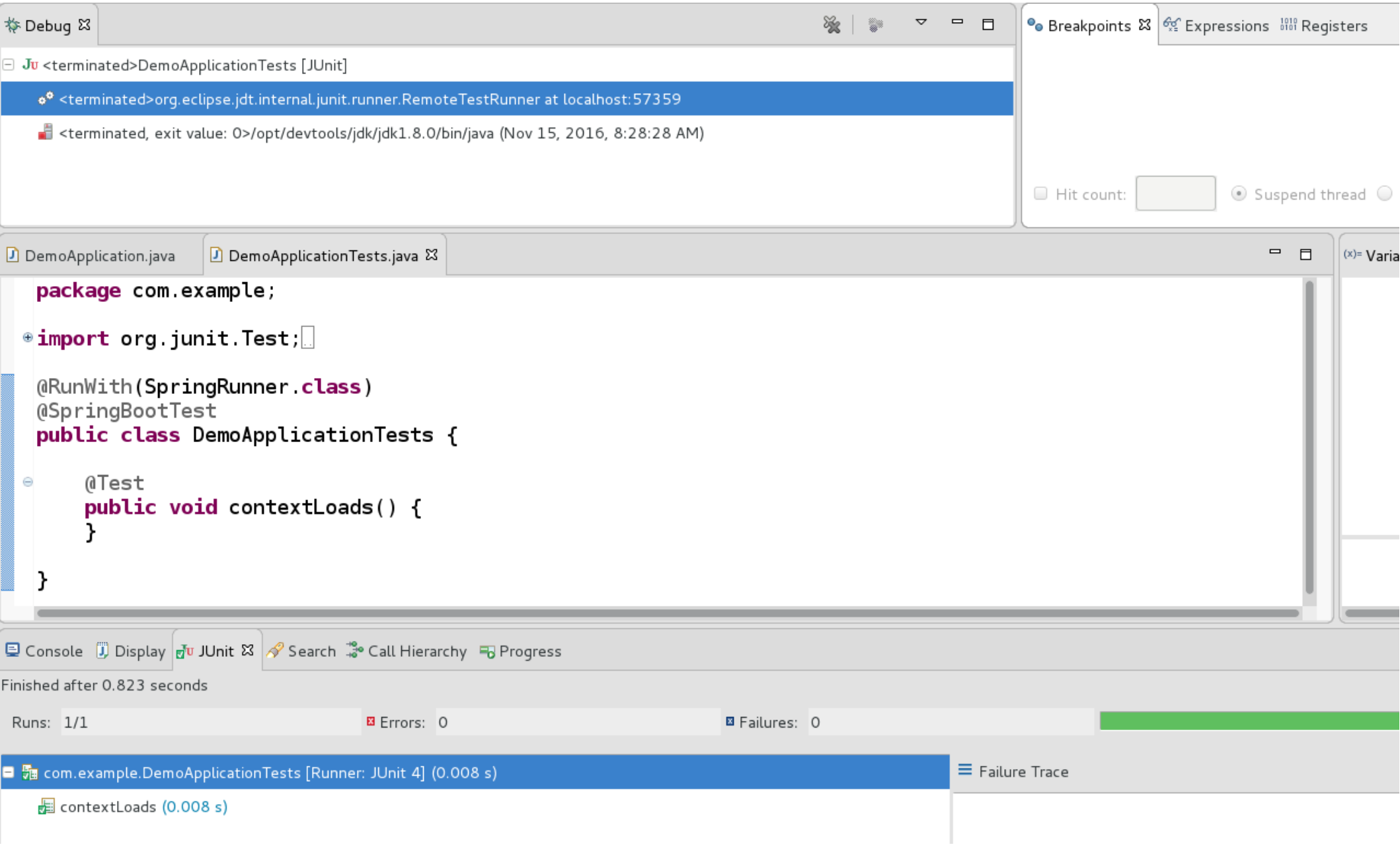
<terminated> DemoApplication [Java Application] /opt/devtools/jdk/jdk1.8.0/bin/java (Nov 15, 2016, 8:05:43 AM)

```
  .   ____          _            __ _ _
 /\\ / ___'_ __ _ _(_)_ __  __ _ \ \ \ \
( ( )\___ | '_ | '_| | '_ \/ _` | \ \ \ \
 \\/  ___)| |_)| | | | | || (_| |  ) ) ) )
  '  |____| .__|_| |_|_| |_\__, | / / / /
 =========|_|==============|___/=/_/_/_/
 :: Spring Boot ::        (v1.4.2.RELEASE)

2016-11-15 08:05:44.555  INFO 3784 --- [           main] com.example.DemoApplication              : Starting DemoApplication on arn with PID 3784 (/mnt/a_1tera2/homeData/ar
2016-11-15 08:05:44.565  INFO 3784 --- [           main] com.example.DemoApplication              : No active profile set, falling back to default profiles: default
2016-11-15 08:05:44.639  INFO 3784 --- [           main] s.c.a.AnnotationConfigApplicationContext : Refreshing org.springframework.context.annotation.AnnotationConfigApplic
2016-11-15 08:05:45.201  INFO 3784 --- [           main] o.s.j.e.a.AnnotationMBeanExporter        : Registering beans for JMX exposure on startup
2016-11-15 08:05:45.213  INFO 3784 --- [           main] com.example.DemoApplication              : Started DemoApplication in 0.918 seconds (JVM running for 1.492)
2016-11-15 08:05:45.215  INFO 3784 --- [       Thread-1] s.c.a.AnnotationConfigApplicationContext : Closing org.springframework.context.annotation.AnnotationConfigApplicati
2016-11-15 08:05:45.216  INFO 3784 --- [       Thread-1] o.s.j.e.a.AnnotationMBeanExporter        : Unregistering JMX-exposed beans on shutdown
```

5/ Junit Test It !!



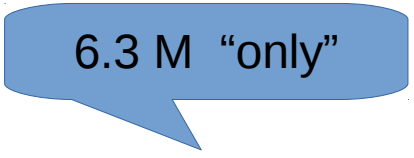
5/ Junit OK


Debug
<terminated>DemoApplicationTests [JUnit]
<terminated>org.eclipse.jdt.internal.junit.runner.RemoteTestRunner at localhost:57359
<terminated, exit value: 0>/opt/devtools/jdk/jdk1.8.0/bin/java (Nov 15, 2016, 8:28:28 AM)
Breakpoints
Expressions
Registers
Hit count:
Suspend thread
DemoApplication.java
DemoApplicationTests.java
package com.example;
import org.junit.Test;
@RunWith(SpringRunner.class)
@SpringBootTest
public class DemoApplicationTests {
@Test
public void contextLoads() {
}
}
Console
Display
JUnit
Search
Call Hierarchy
Progress
Finished after 0.823 seconds
Runs: 1/1
Errors: 0
Failures: 0
com.example.DemoApplicationTests [Runner: JUnit 4] (0.008 s)
contextLoads (0.008 s)
Failure Trace

6/ Easy packaging to launch main … **java -jar**

```
$ java -jar target/demo-0.0.1-SNAPSHOT.jar

  .   ____          _            __ _ _
 /\\ / ___'_ __ _ _(_)_ __  __ _ \ \ \ \
( ( )\___ | '_ | '_| | '_ \/ _` | \ \ \ \
 \\/  ___)| |_)| | | | | || (_| |  ) ) ) )
  '  |____| .__|_| |_|_| |_\__, | / / / /
 =========|_|==============|___/=/_/_/_/
 :: Spring Boot ::        (v1.4.2.RELEASE)

2016-11-16 21:31:59.078  INFO 4894 --- [           main] com.example.DemoApplication              : Starting DemoApplication v0.0.1-SNAPSHOT on
n with PID 4894 (/mnt/a_1tera2/homeData/arnaud/perso/devPerso/my-github/test-snippets.github/test-springboot/target/demo-0.0.1-SNAPSHOT.jar star
d by arnaud in /mnt/a_1tera2/homeData/arnaud/perso/devPerso/my-github/test-snippets.github/test-springboot)
2016-11-16 21:31:59.081  INFO 4894 --- [           main] com.example.DemoApplication              : No active profile set, falling back to defau
 profiles: default
2016-11-16 21:31:59.166  INFO 4894 --- [           main] s.c.a.AnnotationConfigApplicationContext : Refreshing org.springframework.context.annot
ion.AnnotationConfigApplicationContext@579bb367: startup date [Wed Nov 16 21:31:59 CET 2016]; root of context hierarchy
2016-11-16 21:31:59.595  INFO 4894 --- [           main] o.s.j.e.a.AnnotationMBeanExporter        : Registering beans for JMX exposure on startu
2016-11-16 21:31:59.603  INFO 4894 --- [           main] com.example.DemoApplication              : Started DemoApplication in 0.736 seconds (JV
running for 0.997)
2016-11-16 21:31:59.604  INFO 4894 --- [       Thread-1] s.c.a.AnnotationConfigApplicationContext : Closing org.springframework.context.annotati
.AnnotationConfigApplicationContext@579bb367: startup date [Wed Nov 16 21:31:59 CET 2016]; root of context hierarchy
2016-11-16 21:31:59.605  INFO 4894 --- [       Thread-1] o.s.j.e.a.AnnotationMBeanExporter        : Unregistering JMX-exposed beans on shutdown
$
```

Small all-in-one target/jar

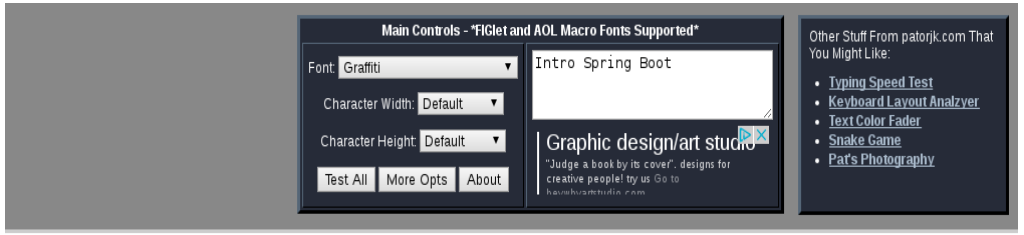



```
$ ls -lh target
total 6.3M
drwxr-xr-x 3 arnaud arnaud 4.0K Nov 16 21:29 classes
-rw-r--r-- 1 arnaud arnaud 6.3M Nov 16 21:29 demo-0.0.1-SNAPSHOT.jar
-rw-r--r-- 1 arnaud arnaud 2.7K Nov 16 21:29 demo-0.0.1-SNAPSHOT.jar.original
drwxr-xr-x 3 arnaud arnaud 4.0K Nov 16 21:29 generated-sources
drwxr-xr-x 3 arnaud arnaud 4.0K Nov 16 21:29 generated-test-sources
drwxr-xr-x 2 arnaud arnaud 4.0K Nov 16 21:29 maven-archiver
drwxr-xr-x 3 arnaud arnaud 4.0K Nov 16 21:29 maven-status
drwxr-xr-x 3 arnaud arnaud 4.0K Nov 16 21:29 test-classes
$
$ jar tf target/demo-0.0.1-SNAPSHOT.jar
META-INF/
META-INF/MANIFEST.MF
BOOT-INF/
BOOT-INF/classes/
BOOT-INF/classes/com/
BOOT-INF/classes/com/example/
BOOT-INF/classes/application.properties
BOOT-INF/classes/com/example/DemoApplication.class
META-INF/maven/
META-INF/maven/com.example/
META-INF/maven/com.example/demo/
META-INF/maven/com.example/demo/pom.xml
META-INF/maven/com.example/demo/pom.properties
BOOT-INF/lib/
BOOT-INF/lib/spring-beans-4.3.4.RELEASE.jar
BOOT-INF/lib/spring-boot-starter-logging-1.4.2.RELEASE.jar
BOOT-INF/lib/slf4j-api-1.7.21.jar
BOOT-INF/lib/jul-to-slf4j-1.7.21.jar
BOOT-INF/lib/spring-context-4.3.4.RELEASE.jar
BOOT-INF/lib/spring-core-4.3.4.RELEASE.jar
BOOT-INF/lib/spring-boot-starter-1.4.2.RELEASE.jar
BOOT-INF/lib/spring-aop-4.3.4.RELEASE.jar
BOOT-INF/lib/spring-boot-autoconfigure-1.4.2.RELEASE.jar
BOOT-INF/lib/logback-classic-1.1.7.jar
BOOT-INF/lib/spring-boot-1.4.2.RELEASE.jar
BOOT-INF/lib/spring-expression-4.3.4.RELEASE.jar
```

“Hello World” ok
But what is Really SpringBoot?

What's Next ?

An “Ascii Art Banner” Printer ?

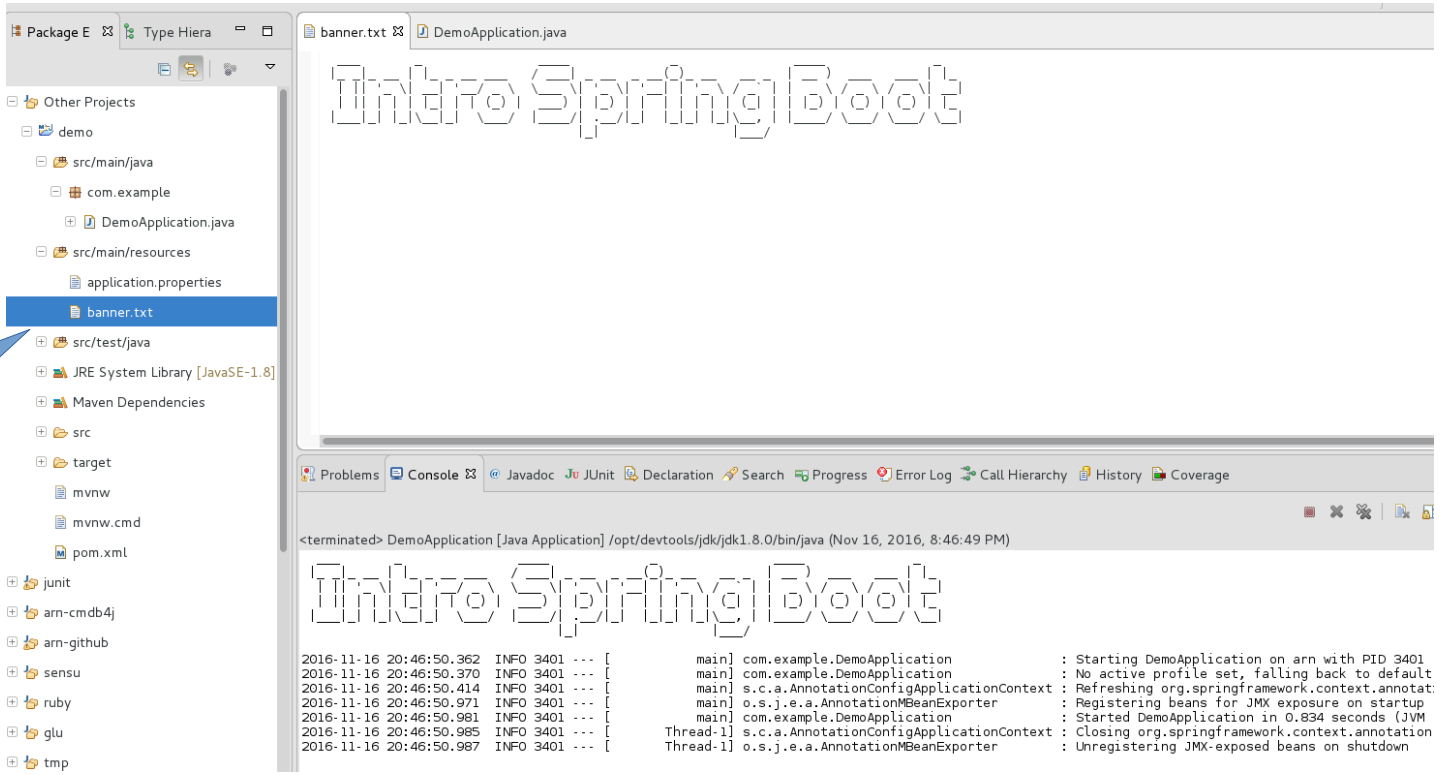


http://patorjk.com/software/taag/

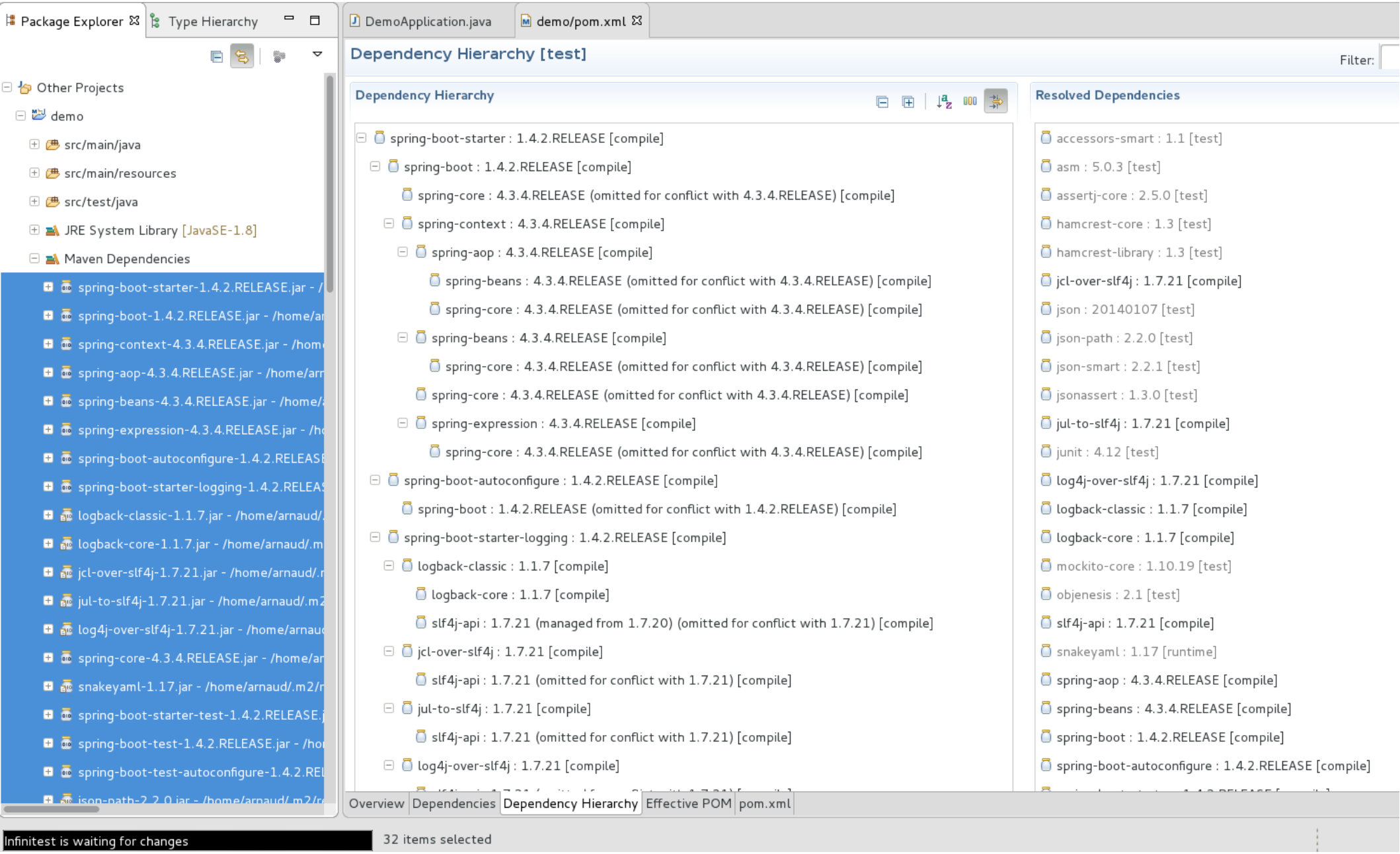
Font Name: Slant

Use Font | Select & Copy

src/main/resources/
banner.txt



“Hello” that contains the “World” jars



mvn dependency:tree

Same as in eclipse, using command line

```
$ mvn dependency:tree
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] Building demo 0.0.1-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- maven-dependency-plugin:2.10:tree (default-cli) @ demo ---
[INFO] com.example:demo:jar:0.0.1-SNAPSHOT
[INFO] +- org.springframework.boot:spring-boot-starter:jar:1.4.2.RELEASE:compile
[INFO] |  +- org.springframework.boot:spring-boot:jar:1.4.2.RELEASE:compile
[INFO] |  |  \- org.springframework:spring-context:jar:4.3.4.RELEASE:compile
[INFO] |  |     +- org.springframework:spring-aop:jar:4.3.4.RELEASE:compile
[INFO] |  |     +- org.springframework:spring-beans:jar:4.3.4.RELEASE:compile
[INFO] |  |     \- org.springframework:spring-expression:jar:4.3.4.RELEASE:compile
[INFO] |  +- org.springframework.boot:spring-boot-autoconfigure:jar:1.4.2.RELEASE:compile
[INFO] |  +- org.springframework.boot:spring-boot-starter-logging:jar:1.4.2.RELEASE:compile
[INFO] |  |  +- ch.qos.logback:logback-classic:jar:1.1.7:compile
[INFO] |  |  |  \- ch.qos.logback:logback-core:jar:1.1.7:compile
[INFO] |  |  +- org.slf4j:jcl-over-slf4j:jar:1.7.21:compile
[INFO] |  |  +- org.slf4j:jul-to-slf4j:jar:1.7.21:compile
[INFO] |  |  \- org.slf4j:log4j-over-slf4j:jar:1.7.21:compile
[INFO] |  +- org.springframework:spring-core:jar:4.3.4.RELEASE:compile
[INFO] |  \- org.yaml:snakeyaml:jar:1.17:runtime
[INFO] \- org.springframework.boot:spring-boot-starter-test:jar:1.4.2.RELEASE:test
[INFO]    +- org.springframework.boot:spring-boot-test:jar:1.4.2.RELEASE:test
[INFO]    +- org.springframework.boot:spring-boot-test-autoconfigure:jar:1.4.2.RELEASE:test
[INFO]    +- com.jayway.jsonpath:json-path:jar:2.2.0:test
[INFO]    |  +- net.minidev:json-smart:jar:2.2.1:test
[INFO]    |  |  \- net.minidev:accessors-smart:jar:1.1:test
[INFO]    |  |     \- org.ow2.asm:asm:jar:5.0.3:test
[INFO]    |  \- org.slf4j:slf4j-api:jar:1.7.21:compile
[INFO]    +- junit:junit:jar:4.12:test
[INFO]    +- org.assertj:assertj-core:jar:2.5.0:test
[INFO]    +- org.mockito:mockito-core:jar:1.10.19:test
[INFO]    |  \- org.objenesis:objenesis:jar:2.1:test
[INFO]    +- org.hamcrest:hamcrest-core:jar:1.3:test
[INFO]    +- org.hamcrest:hamcrest-library:jar:1.3:test
[INFO]    +- org.skyscreamer:jsonassert:jar:1.3.0:test
[INFO]    |  \- org.json:json:jar:20140107:test
[INFO]    \- org.springframework:spring-test:jar:4.3.4.RELEASE:test
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
```

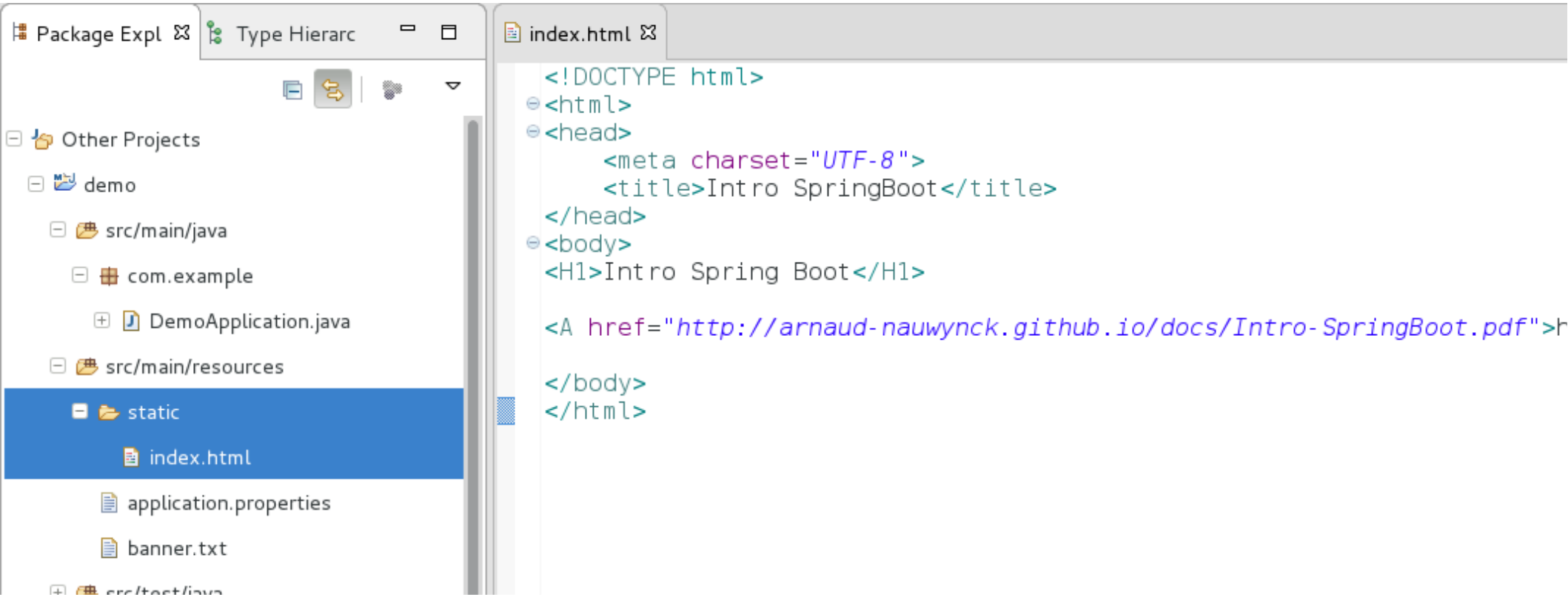
Dependencies … (excluding <scope>test<scope>)

```
$ mvn dependency:list | grep -v :test
[INFO] Scanning for projects...
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] Building demo 0.0.1-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- maven-dependency-plugin:2.10:list (default-cli) @ demo ---
[INFO]
[INFO] The following files have been resolved:
[INFO]    org.slf4j:jul-to-slf4j:jar:1.7.21:compile
[INFO]    org.springframework:spring-aop:jar:4.3.4.RELEASE:compile
[INFO]    org.yaml:snakeyaml:jar:1.17:runtime
[INFO]    org.springframework:spring-beans:jar:4.3.4.RELEASE:compile
[INFO]    org.springframework.boot:spring-boot-starter-logging:jar:1.4.2.RELEASE:compile
[INFO]    org.slf4j:slf4j-api:jar:1.7.21:compile
[INFO]    org.springframework:spring-context:jar:4.3.4.RELEASE:compile
[INFO]    org.springframework:spring-core:jar:4.3.4.RELEASE:compile
[INFO]    org.springframework.boot:spring-boot-starter:jar:1.4.2.RELEASE:compile
[INFO]    org.springframework.boot:spring-boot-autoconfigure:jar:1.4.2.RELEASE:compile
[INFO]    ch.qos.logback:logback-classic:jar:1.1.7:compile
[INFO]    org.springframework.boot:spring-boot:jar:1.4.2.RELEASE:compile
[INFO]    org.springframework:spring-expression:jar:4.3.4.RELEASE:compile
[INFO]    ch.qos.logback:logback-core:jar:1.1.7:compile
[INFO]    org.slf4j:jcl-over-slf4j:jar:1.7.21:compile
[INFO]    org.slf4j:log4j-over-slf4j:jar:1.7.21:compile
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
```

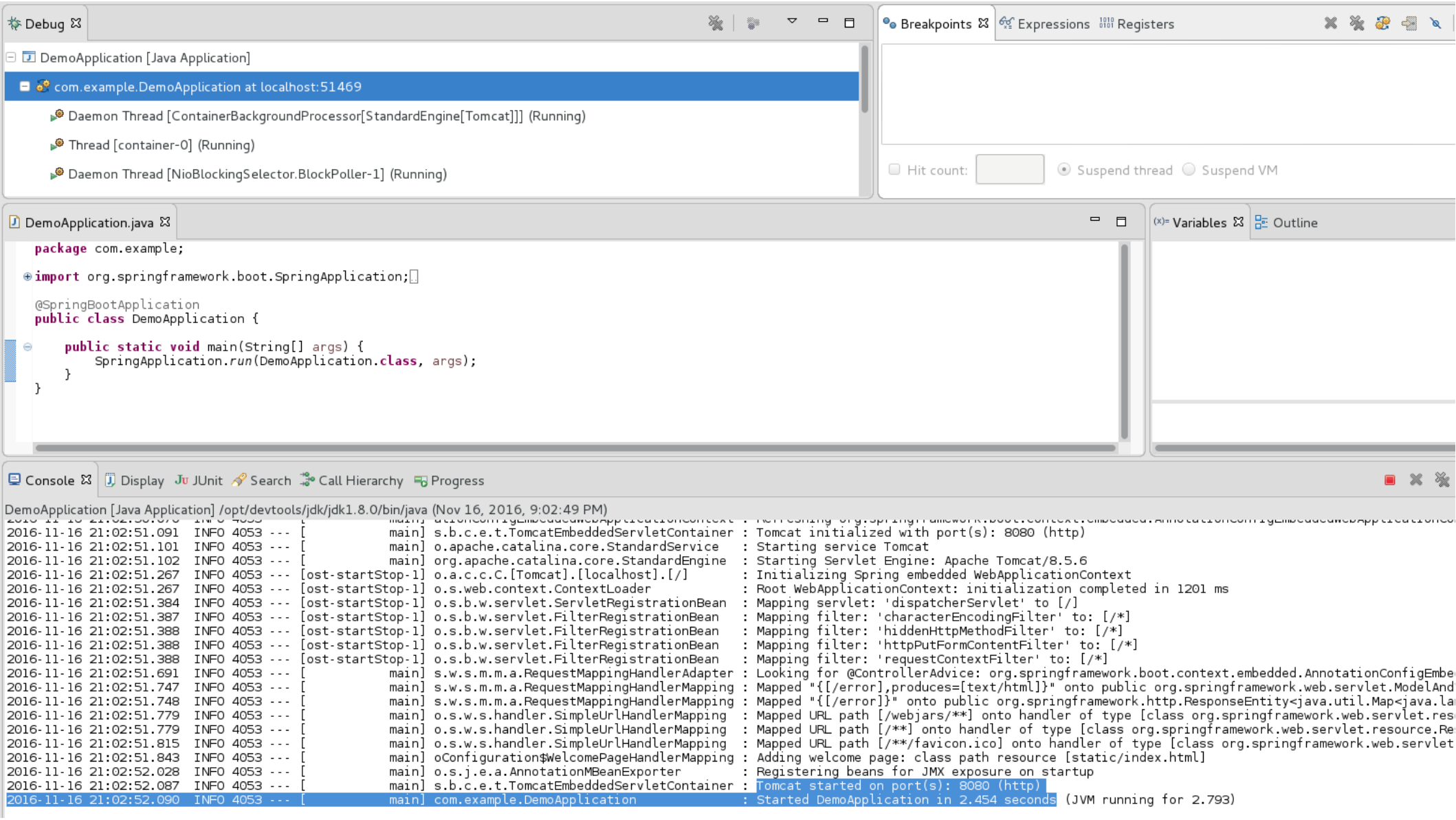
Almost a WebApp (add 4 lines)...

```
<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-web</artifactId>
</dependency>
```

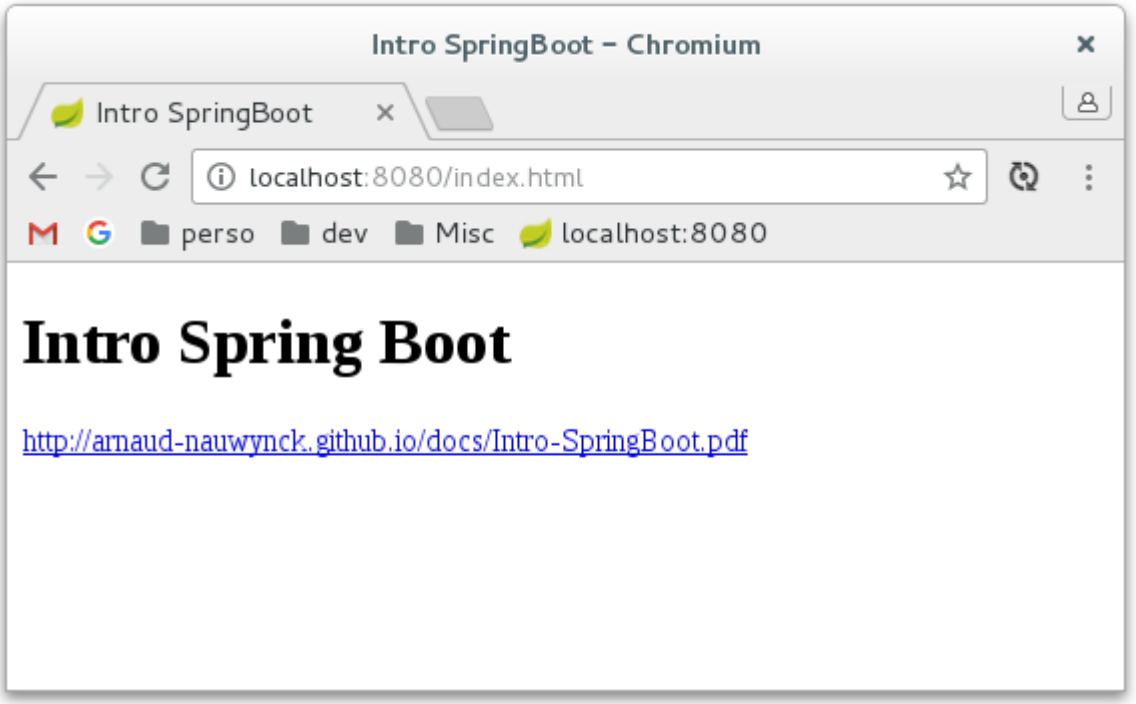
Add Web page resources/static/index.html



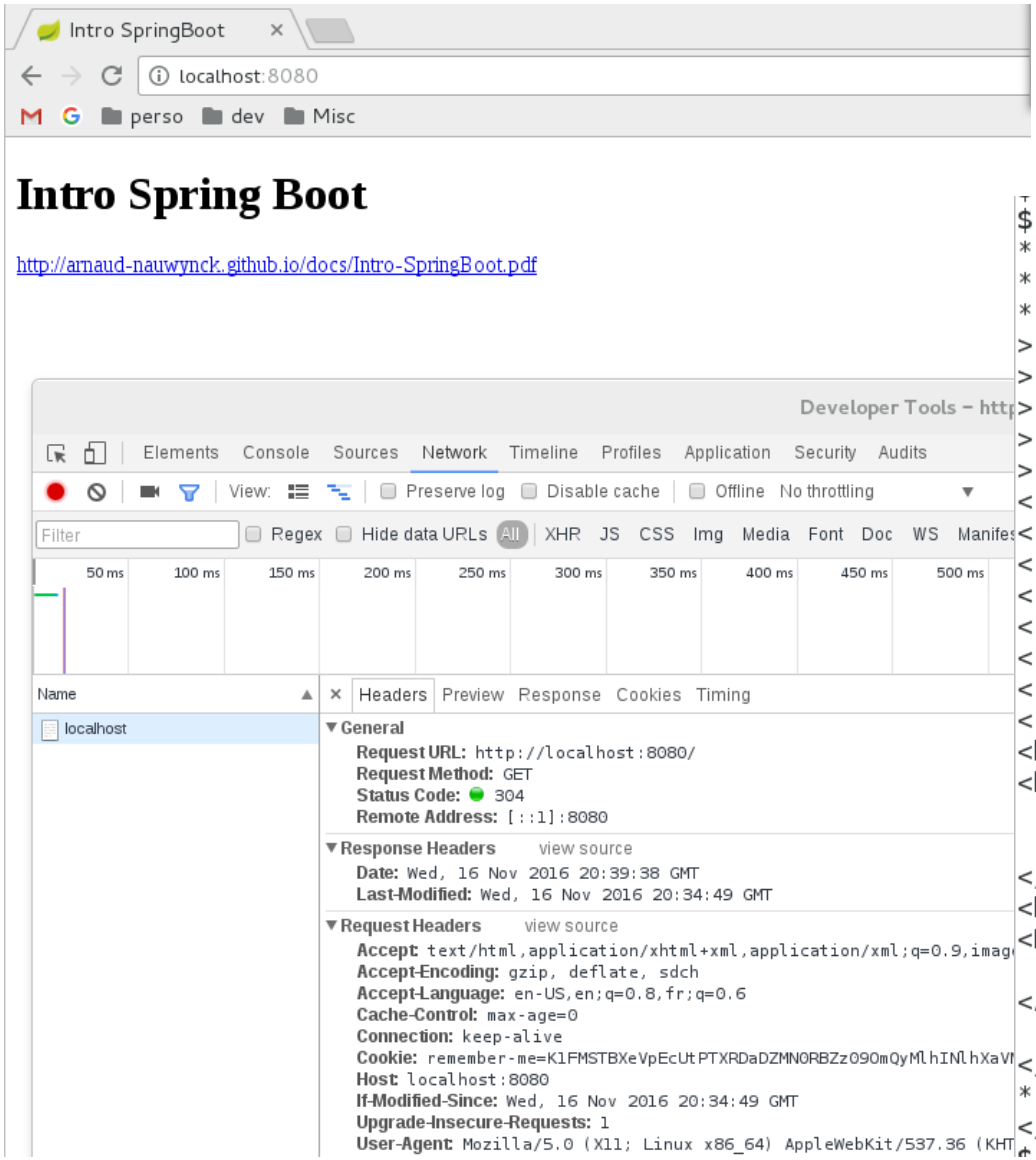
Restart... your Web Application running in 2 seconds



http://localhost:8080/
… “Just work”



Details HTTP Protocol,Header




```
$ curl -v http://localhost:8080/index.html
* Hostname was NOT found in DNS cache
*   Trying ::1...
* Connected to localhost (::1) port 8080 (#0)
> GET /index.html HTTP/1.1
> User-Agent: curl/7.38.0
> Host: localhost:8080
> Accept: */*
>
< HTTP/1.1 200
< Last-Modified: Wed, 16 Nov 2016 20:34:49 GMT
< Accept-Ranges: bytes
< Content-Type: text/html
< Content-Length: 279
< Date: Wed, 16 Nov 2016 20:37:25 GMT
<
<!DOCTYPE html>
<html>
<head>
        <meta charset="UTF-8">
        <title>Intro SpringBoot</title>
</head>
<body>
<H1>Intro Spring Boot</H1>

<A href="http://arnaud-nauwynck.github.io/docs/Intro-SpringBoot.pdf

</body>
* Connection #0 to host localhost left intact
</html>$
```

Add Dynamic Page (jsp, velocity, thymeleaf, ...)

For old-school html-1.0

… only for poor PHP lost guies

Now in 2016 … Using html-5
… You need/should/must NOT do like that

Dynamic Java Page = MVC

http://localhost:8080/dynamic-page

Spring-mvc **filter** (cookie,security...)

Spring-mvc **dispatcher** (by URL mapping)

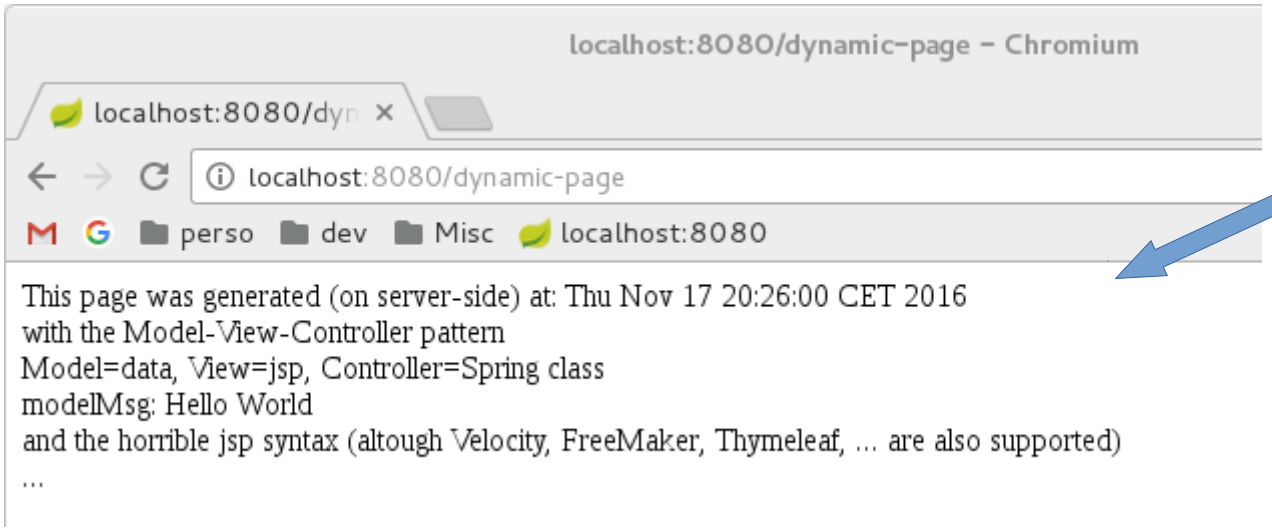
```
@Controller
public class DynamicPageController {

    @RequestMapping("/dynamic-page")
    return "page-view";
}
```

C = Controller

M = Model

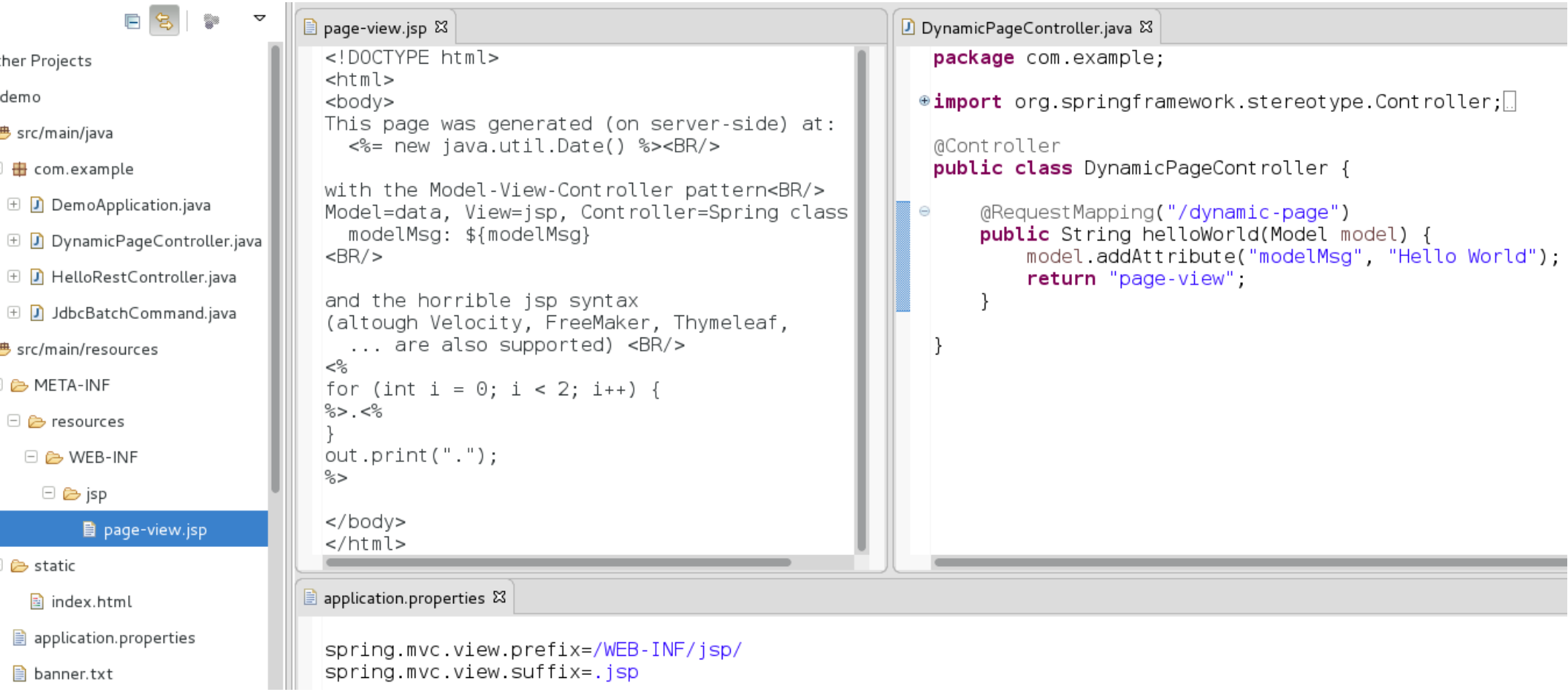
Spring-mvc "**viewResolver**"
WEB-INF/jsp/page-view.jsp

V = View

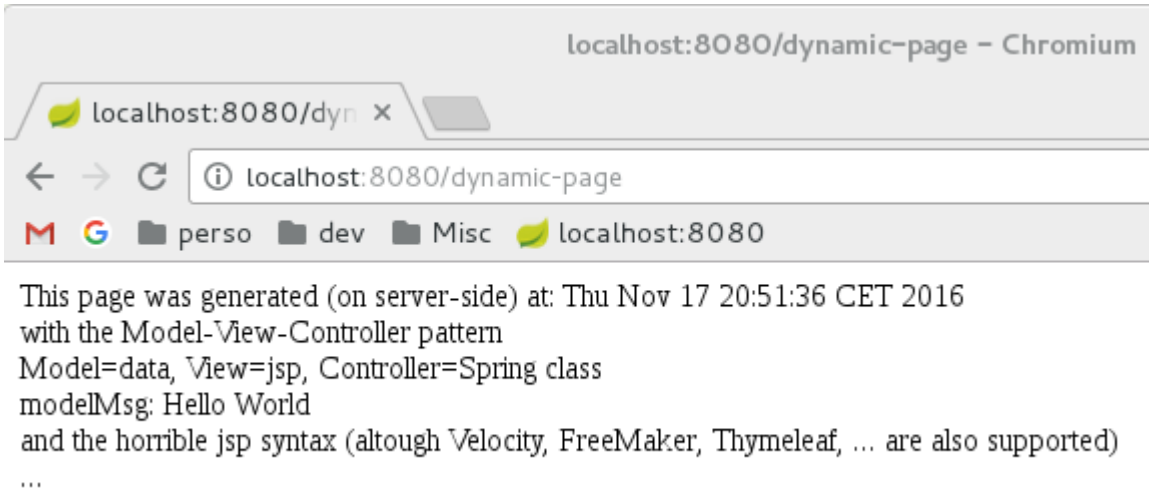


WEB-INF = internal
..not public from outside
(no /page-view.jsp URL)

Springboot for Dynamic Pages



Dynamic Page JUST Work



Type-Safe, Multi-Thread-Safe, Compiled, Performant,
Garbage-Collected,
JRE Portable, Debuggable, Monitorable, Bytecode Agent
Object-Oriented, Aspect-Oriented, Annotations Processed,
Functional Lambda,
Multi-JDK-Langages (Groovy,Scala,Kotling,..)
Rich Libs, Rich Ecosystem, Huge Community...

Poor PHP
Jalous Developpers

I am looking at you

Don't say “PHP” Again

Once Upon a Time … Html5 JavaScript, Json, DOM, Ajax, WebSocket, WebComponent, ...

Your web-site = 1 web-page = 1 APPLICATION
running on the browser
Using client-side CPU, GraphicCard,Cookies,WebStorage,..

You don't explicitely “install” an app,
you just see **1 “html/css” page + also downloaded 1 “app.js”**

Then you GET+POST Rest/Json data … and RealTime WS

Web App = (static) Html + Rest API

Static resources part
html, css, js, png, …
(**1=Frontend**, LoadBalancer)

Get static
html, css, app.js
(download + cache)

1

2

3

Dynamic part
2=**Backend**...
business logic...

Cookies,
LocalStorage

Rest/Json Request GET,POST,PUT...

Rest/Json Response

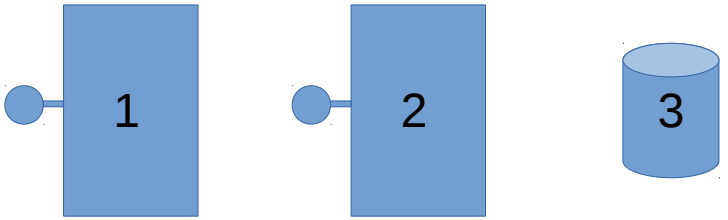
3-Tiers Architecture
(sometimes, 1=2)

WebSocket PUSH (RealTime ..exemple : chat)

Springboot = for Backend Devs

De facto tools= nodejs gulp+npm+bower...
(in JS world … also GWT,and others)

De facto tools (in JVM world)
springboot + maven + ...



Pure Web-Designer

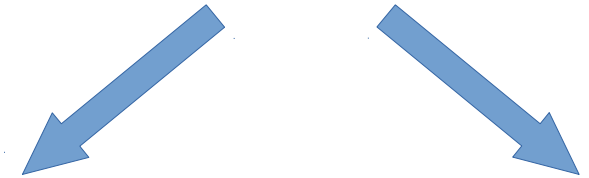
Front-end Developper

Back-end Developper

DBA, BigData-Analyst

Full-Stack Developper

Add REST/Json Web API



Using “Built-in”
spring-web-mvc

specific annotations
@RequestMapping
@RequestBody ...

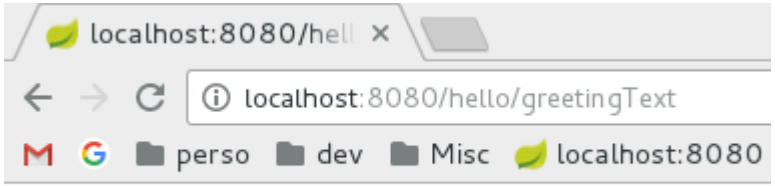
Bind to JAX-RS
standard

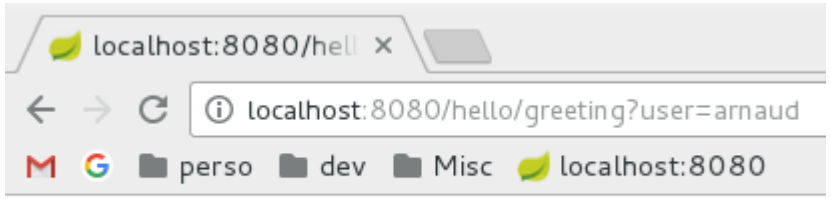
standard annotations
@Path @GET
@ ...

Using Spring-web-mvc @RestController @RequestMapping

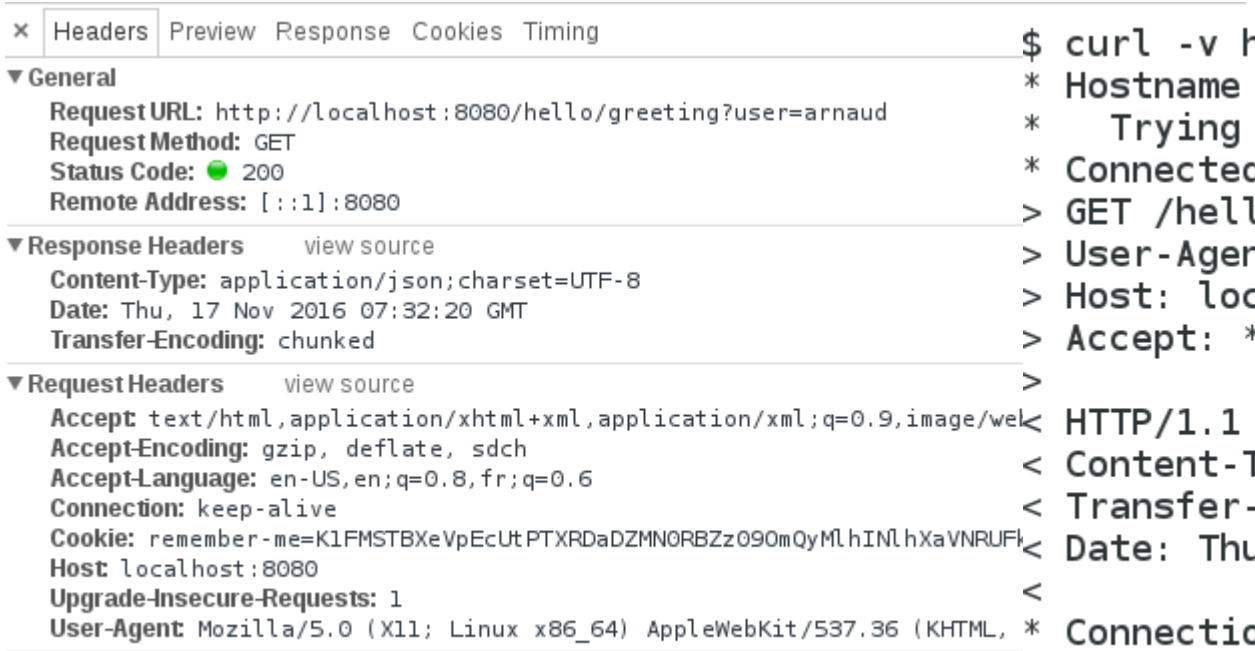
```java
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestParam;
import org.springframework.web.bind.annotation.RestController;

@RestController
@RequestMapping(path="/hello")
public class HelloRestController {

    public static class Greeting {
        public String msg;
        public Greeting(String msg) { this.msg = msg; }
    }

    @RequestMapping(path="/greeting")
    public Greeting greetingTo(
            @RequestParam(name="user", required=false) String user) {
        return new Greeting("Hello " + ((user != null)? user : "springboot user"));
    }

    @RequestMapping(path="/greetingText")
    public String greetingTextTo(
            @RequestParam(name="user", required=false) String user) {
        return "Hello " + ((user != null)? user : "springboot user");
    }

}
```

Run REST/Json Web API






```
$ curl http://localhost:8080/hello/greeting?user=arnaud
{"msg":"Hello arnaud"}$
$ _
```




```
$ curl -v http://localhost:8080/hello/greeting?u
* Hostname was NOT found in DNS cache
*   Trying ::1...
* Connected to localhost (::1) port 8080 (#0)
> GET /hello/greeting?user=arnaud HTTP/1.1
> User-Agent: curl/7.38.0
> Host: localhost:8080
> Accept: */*
>
< HTTP/1.1 200
< Content-Type: application/json;charset=UTF-8
< Transfer-Encoding: chunked
< Date: Thu, 17 Nov 2016 07:34:04 GMT
<
* Connection #0 to host localhost left intact
{"msg":"Hello arnaud"}$
```

AutoReload & LiveReload

```
<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-devtools</artifactId>
    <optional>true</optional>
</dependency>
```

- AutoReload :
  change your spring app
  => server auto restart (partial)

- LiveReload:
  change Html/Css/Typescript/...
  => client Web Browser auto refresh!!

For fast developer experience
… prefer gulp …
in particular if in Eclipse <=2016

```
2016-11-16 23:25:59.119  INFO 7916 --- [  restartedMain] oConfiguration$WelcomePageHandlerMapping : Adding welcome page: class path resource [static/
2016-11-16 23:25:59.222  INFO 7916 --- [  restartedMain] o.s.b.d.a.OptionalLiveReloadServer       : LiveReload server is running on port 35729
2016-11-16 23:25:59.324  INFO 7916 --- [  restartedMain] o.s.j.e.a.AnnotationMBeanExporter        : Registering beans for JMX exposure on startup
2016-11-16 23:25:59.383  INFO 7916 --- [  restartedMain] s.b.c.e.t.TomcatEmbeddedServletContainer : Tomcat started on port(s): 8080 (http)
2016-11-16 23:25:59.391  INFO 7916 --- [  restartedMain] com.example.DemoApplication              : Started DemoApplication in 2.665 seconds (JVM runn
```

<script>... :35729/ livereload.js</script>

index.html | DevToolsPropertie | OptionalLiveRelo | LocalDevToolsAut | LocalDevToolsAut | FileSystemWatche

```
<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Intro SpringBoot</title>
    <script>
    document.write('<script src="http://' + (location.host || 'localhost').split(':')[0] +
            ':35729/livereload.js?snipver=1"></' + 'script>')
    </script>
<!-- usually equivalent to
    <script src="http://localhost:35729/livereload.js?snipver=1"></script>
 -->
</head>
<body>
<H1>Intro Spring Boot</H1>

<A href="http://arnaud-nauwynck.github.io/docs/Intro-SpringBoot.pdf">http://arnaud-nauwynck.githu

<H2>LiveReload</H2>
test reload OK

<H3>Even In Eclipse?</H3>
Yes ... but after removing settings "copy exclude **" src/main/resources to target/classes only!


</body>
</html>
```

Still Deploy with “java -jar …. “

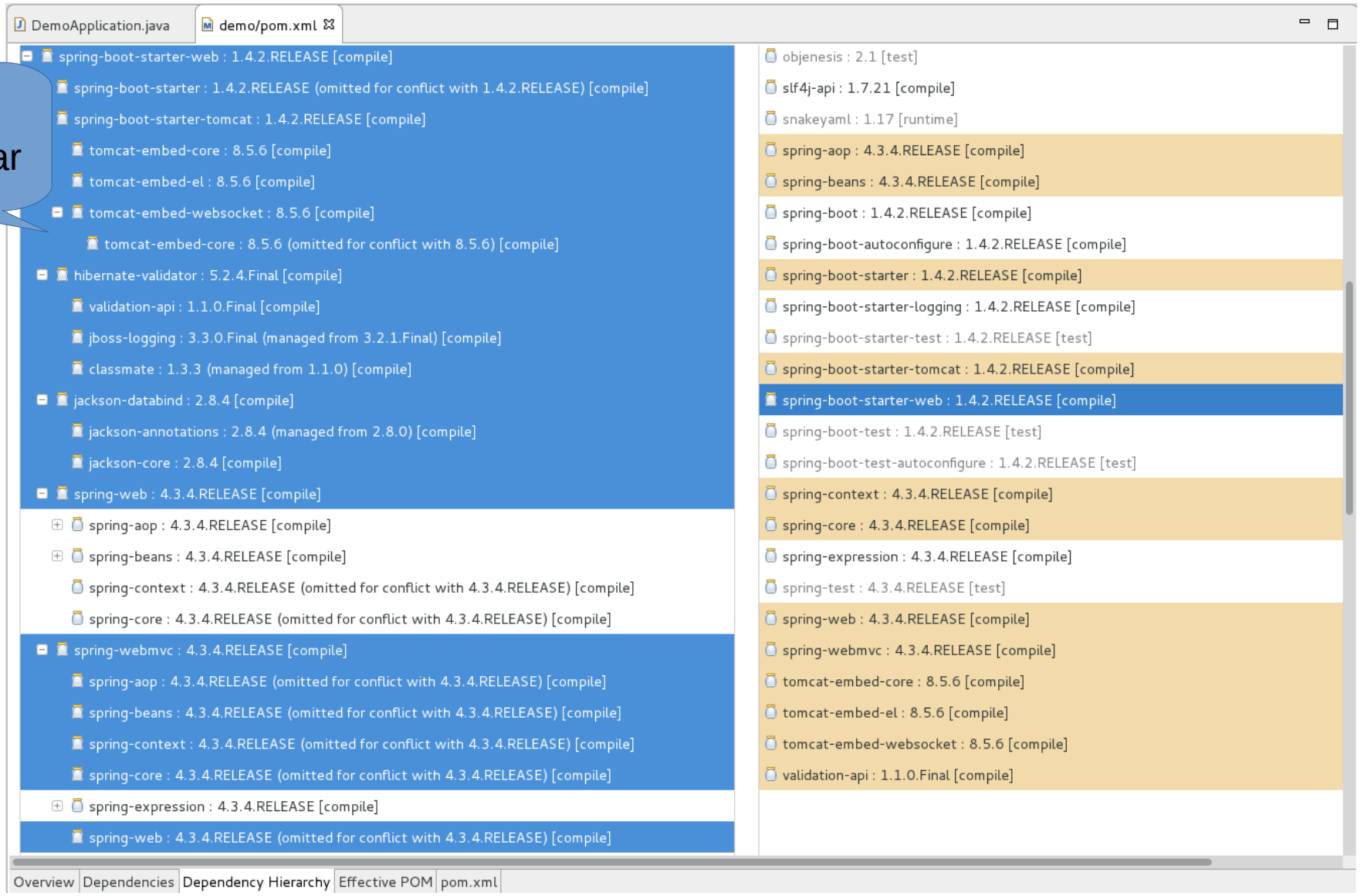
```
$ ls -lh target/
total 14M
drwxr-xr-x 4 arnaud arnaud 4.0K Nov 16 21:45 classes
-rw-r--r-- 1 arnaud arnaud  14M Nov 16 21:45 demo-0.0.1-SNAPSHOT.jar
-rw-r--r-- 1 arnaud arnaud 3.3K Nov 16 21:45 demo-0.0.1-SNAPSHOT.jar.original
drwxr-xr-x 3 arnaud arnaud 4.0K Nov 16 21:45 generated-sources
drwxr-xr-x 3 arnaud arnaud 4.0K Nov 16 21:45 generated-test-sources
drwxr-xr-x 2 arnaud arnaud 4.0K Nov 16 21:45 maven-archiver
drwxr-xr-x 3 arnaud arnaud 4.0K Nov 16 21:45 maven-status
drwxr-xr-x 3 arnaud arnaud 4.0K Nov 16 21:45 test-classes
$
$ java -jar target/demo-0.0.1-SNAPSHOT.jar
  .   ____          _            __ _ _
 /\\ / ___'_ __ _ _(_)_ __  __ _ \ \ \ \
( ( )\___ | '_ | '_| | '_ \/ _` | \ \ \ \
 \\/  ___)| |_)| | | | | || (_| |  ) ) ) )
  '  |____| .__|_| |_|_| |_\__, | / / / /
 =========|_|==============|___/=/_/_/_/
 :: Spring Boot ::        (v1.4.2.RELEASE)

2016-11-16 21:46:02.461  INFO 5415 --- [           main] com.example.DemoApplication              : Starting DemoApplication v0.0.1
n with PID 5415 (/mnt/a_1tera2/homeData/arnaud/perso/devPerso/my-github/test-snippets.github/test-springboot/target/demo-0.0.1-SNAP
d by arnaud in /mnt/a_1tera2/homeData/arnaud/perso/devPerso/my-github/test-snippets.github/test-springboot)
```

now 14M jar ...

java -jar … = Web App !

Dependencies Added for spring-boot-start-web

Tomcat embedded .jar



JAR > WAR
ClassLoader in springboot
can zip nested jar

```
<plugin>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-maven-plugin</artifactId>
</plugin>
```

```
$ jar tf target/demo-0.0.1-SNAPSHOT.jar | grep '\.jar'
BOOT-INF/lib/spring-web-4.3.4.RELEASE.jar
BOOT-INF/lib/jul-to-slf4j-1.7.21.jar
BOOT-INF/lib/spring-boot-starter-tomcat-1.4.2.RELEASE.jar
BOOT-INF/lib/hibernate-validator-5.2.4.Final.jar
BOOT-INF/lib/tomcat-embed-el-8.5.6.jar
BOOT-INF/lib/spring-aop-4.3.4.RELEASE.jar
BOOT-INF/lib/tomcat-embed-websocket-8.5.6.jar
BOOT-INF/lib/snakeyaml-1.17.jar
BOOT-INF/lib/tomcat-embed-core-8.5.6.jar
BOOT-INF/lib/spring-beans-4.3.4.RELEASE.jar
BOOT-INF/lib/spring-boot-starter-logging-1.4.2.RELEASE.jar
BOOT-INF/lib/slf4j-api-1.7.21.jar
BOOT-INF/lib/spring-webmvc-4.3.4.RELEASE.jar
BOOT-INF/lib/spring-boot-starter-web-1.4.2.RELEASE.jar
BOOT-INF/lib/spring-context-4.3.4.RELEASE.jar
BOOT-INF/lib/spring-core-4.3.4.RELEASE.jar
BOOT-INF/lib/jackson-databind-2.8.4.jar
BOOT-INF/lib/spring-boot-starter-1.4.2.RELEASE.jar
BOOT-INF/lib/spring-boot-autoconfigure-1.4.2.RELEASE.jar
BOOT-INF/lib/logback-classic-1.1.7.jar
BOOT-INF/lib/jackson-core-2.8.4.jar
BOOT-INF/lib/spring-boot-1.4.2.RELEASE.jar
BOOT-INF/lib/spring-expression-4.3.4.RELEASE.jar
BOOT-INF/lib/logback-core-1.1.7.jar
BOOT-INF/lib/validation-api-1.1.0.Final.jar
BOOT-INF/lib/classmate-1.3.3.jar
BOOT-INF/lib/jcl-over-slf4j-1.7.21.jar
BOOT-INF/lib/log4j-over-slf4j-1.7.21.jar
BOOT-INF/lib/jboss-logging-3.3.0.Final.jar
BOOT-INF/lib/jackson-annotations-2.8.4.jar
$
```

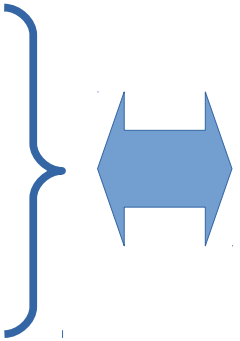
RIP WebLogic / WebSphere / GlassFish / WildFly / ...

Comparatively …

1 day to install the server
1 week to read JEE doc
1 month to read specific doc
1 month to struggle in /console & wlst

5 minutes to stop-restart a server

1 minute to rebuild
3 minutes to redeploy a war
(+ **5mn** : often restart anyway ..)
+ **1 minute** remote debugging



2 Seconds
to build / start / hot-restart

either in Eclipse
Or java -jar

0 Value added
-10000 $ on your bank account

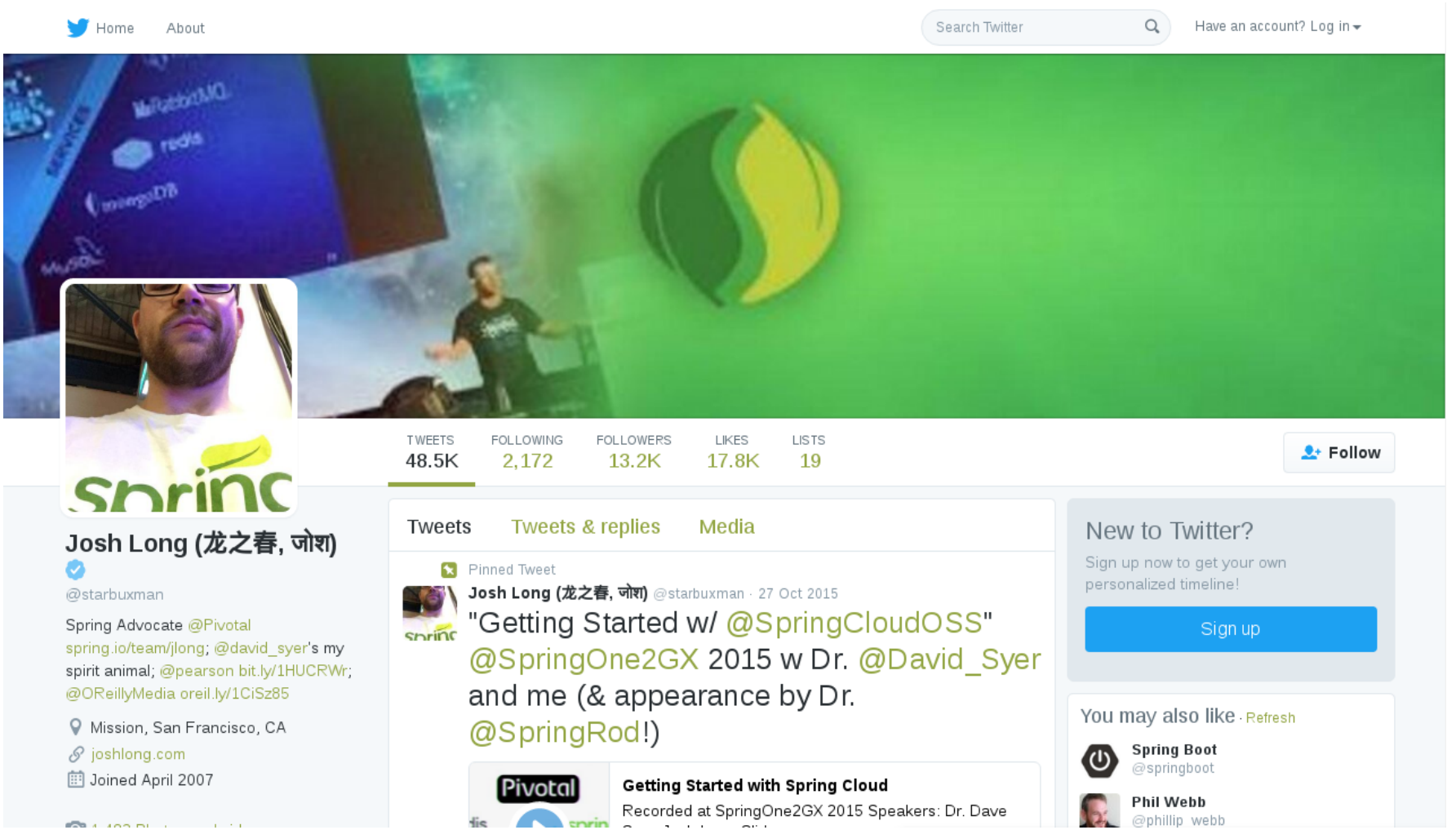
as Josh Long said in one of his talks in the Spring IO
“it is better to make Jar, not War”.

Josh Long

the Spring Developer Advocate at Pivotal

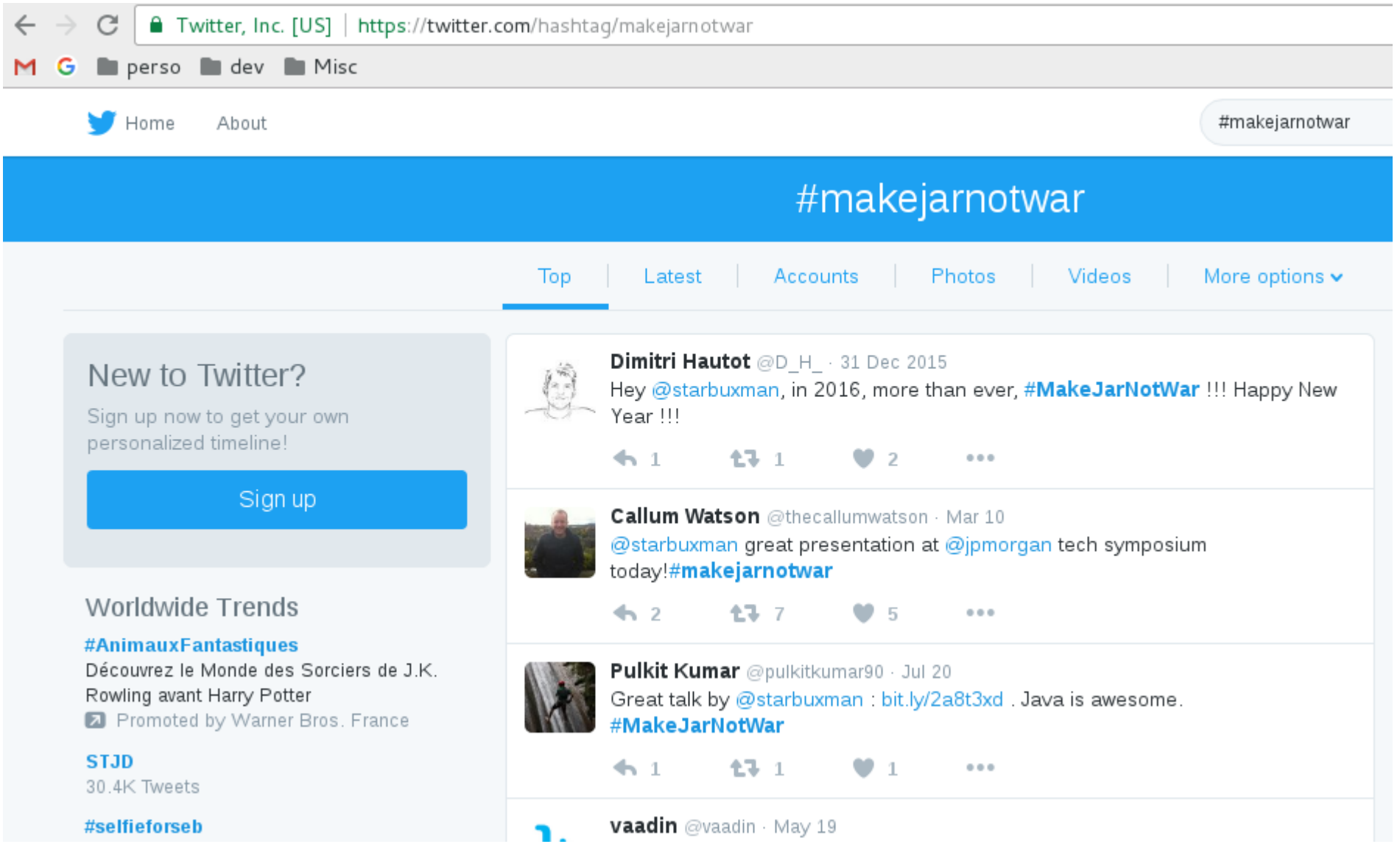
@starbuxman

Amazing Conferences example at Devoxx



#MakeJarNotWar @starbuxman

https://twitter.com/hashtag/makejarnotwar



Google "make jar not war"

All Shopping Images Videos News More Search tools

About 2,040 results (0.35 seconds)

2000 “make jar not war”

Introduction to Spring Boot » blog
blog.mimacom.com/introduction-to-spring-boot/
Sep 30, 2015 - ... WAR file and deploy it in any server of your choice, but as Josh Long sa talks in the Spring IO “it is better to **make Jar, not War**”.

Make Jar, Not War - GitHub
https://github.com/making/**make-jar-not-war**
Make Jar, Not War. Contribute to **make-jar-not-war** development by crea

Images for "make jar not war"

More images for "make jar not war"

Make JAR not WAR ! - YouTube


https://www.youtube.com/watch?v=O8JljPRD3OE
May 22, 2016 - Uploaded by Pierre FEVRIER
Présentation en 30 min des principales fonctionnalité ... MVP Java 10,303 views ...

(0 Articles : $ 0.00)

SSL secure | Help?

Page 1 of 1 1 Products 1 to 8 of 8

Make .jar, not .war geeky t-shirt


Men's T-Shirt
Size ...
~~$ 17.99~~
$ 13.99

Make .jar, not .war geeky t-shirt


Men's T-Shirt
Size ...
~~$ 19.49~~
$ 13.99

Make .jar, not .war geeky t-shirt


Men's T-Shirt by American Apparel
Size ...
~~$ 26.99~~
$ 21.99

Make .jar, not .war geeky t-shirt


Men's Ringer T-Shirt
Size ...

Make .jar, not .war geeky t-shirt


Men's Hoodie
Size ...

Make .jar, not .war geeky t-shirt


Women's T-Shirt
Size ...

App Embedded Server > Server Deployed War

Your JAR packaging also contains embedded tomcat

Your paid $$$ webserver

Your WAR + classes

Your WAR is deployed into a WebServer

Historical Reasons
1 Server = 1 JVM – Several Apps

1 Server = 1 JVM process
… serves several Apps

JSP Web Portal calling other JSP ?

Web $$$ Expensive => use 1 server for many apps

Limited RAM (1-8 G) …
jvm overhead = 100M
=> share RAM on workstations

Problems:
bad isolation …
OutOfMemory Error App1 => also crash App2,App3...
Redeploy / Restart App1 => stop all App2,App3...

“Hello Web World” ok
Only yet another Web Framework ?

What's Next ?

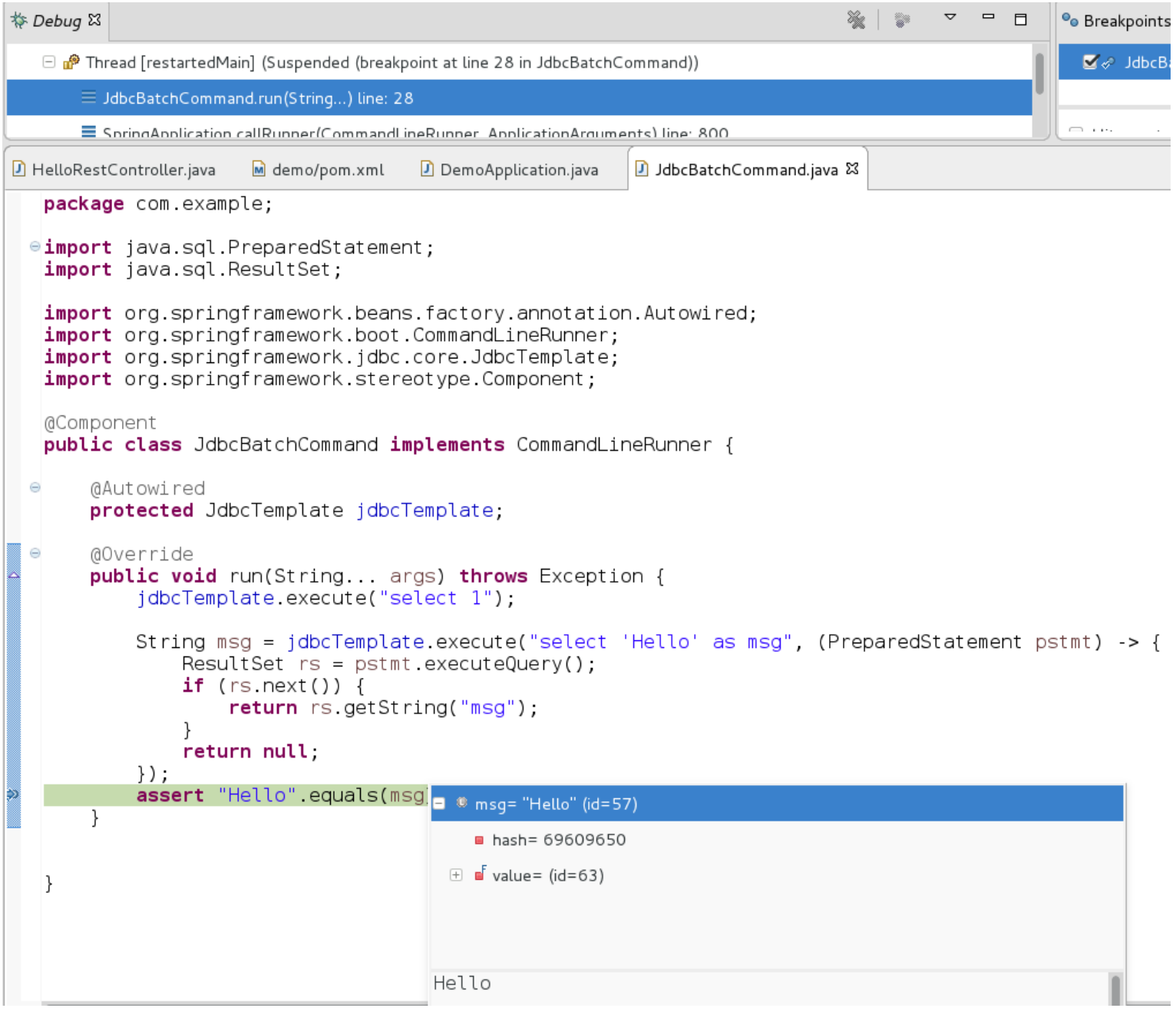
Springboot Almost contains a Jdbc Database App (add 4 lines)...

```
<!-- choose your poison (Postgresql,MySql,Oracle,H2,..) -->
<dependency>
    <groupId>com.h2database</groupId>
    <artifactId>h2</artifactId>
</dependency>
```

spring-jdbc

```java
import java.sql.PreparedStatement;
import java.sql.ResultSet;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.CommandLineRunner;
import org.springframework.jdbc.core.JdbcTemplate;
import org.springframework.stereotype.Component;

@Component
public class JdbcBatchCommand implements CommandLineRunner {

    @Autowired
    protected JdbcTemplate jdbcTemplate;

    @Override
    public void run(String... args) throws Exception {
        jdbcTemplate.execute("select 1");

        String msg = jdbcTemplate.execute("select 'Hello' as msg", (PreparedStatement pstmt) -> {
            ResultSet rs = pstmt.executeQuery();
            if (rs.next()) {
                return rs.getString("msg");
            }
            return null;
        });
        assert "Hello".equals(msg);

    }
```

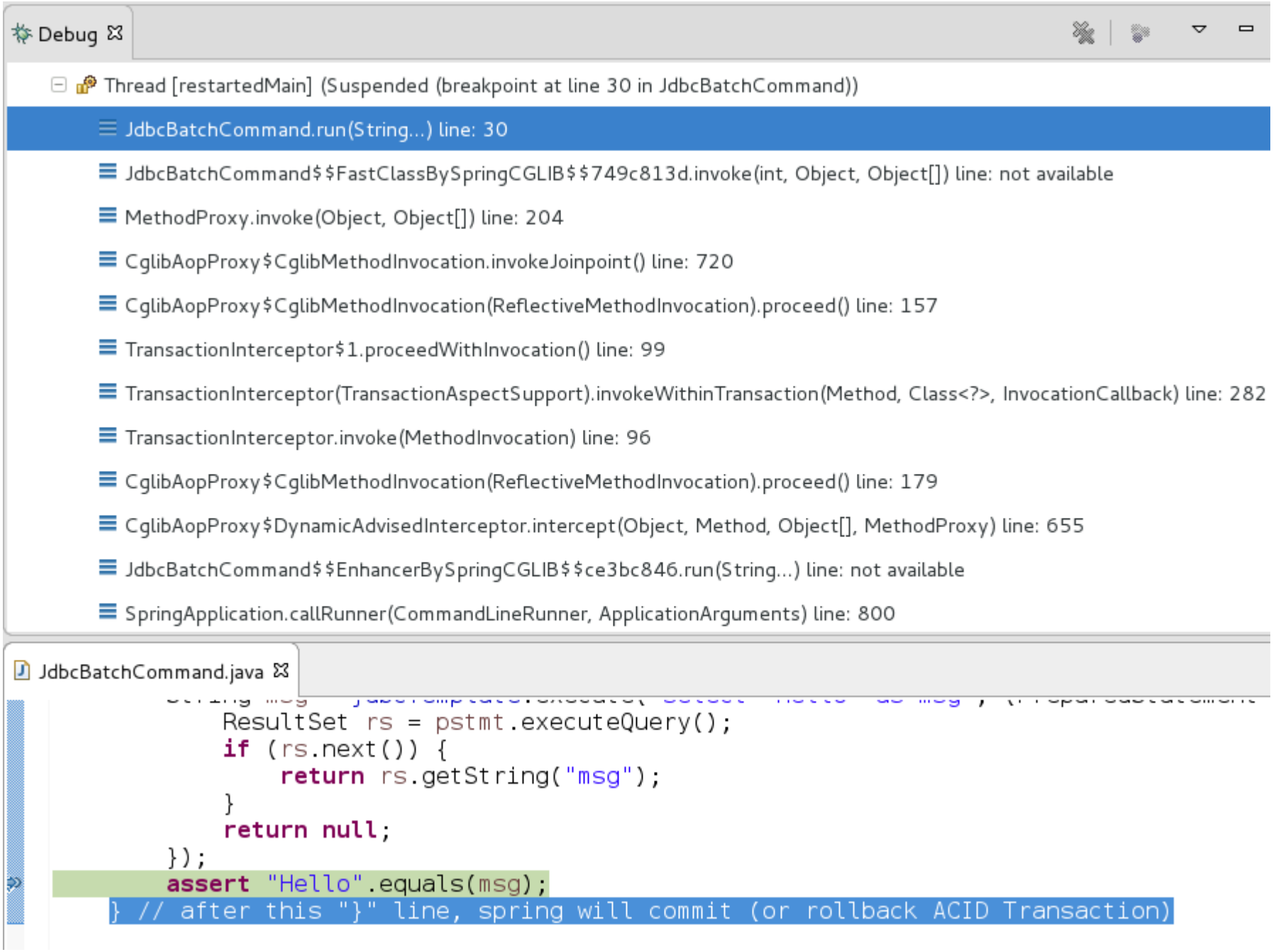
Run Jdbc App


Debug
Thread [restartedMain] (Suspended (breakpoint at line 28 in JdbcBatchCommand))
JdbcBatchCommand.run(String...) line: 28
Breakpoints
HelloRestController.java
demo/pom.xml
DemoApplication.java
JdbcBatchCommand.java
package com.example;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.CommandLineRunner;
import org.springframework.jdbc.core.JdbcTemplate;
import org.springframework.stereotype.Component;
@Component
public class JdbcBatchCommand implements CommandLineRunner {
@Autowired
protected JdbcTemplate jdbcTemplate;
@Override
public void run(String... args) throws Exception {
jdbcTemplate.execute("select 1");
String msg = jdbcTemplate.execute("select 'Hello' as msg", (PreparedStatement pstmt) -> {
ResultSet rs = pstmt.executeQuery();
if (rs.next()) {
return rs.getString("msg");
}
return null;
});
assert "Hello".equals(msg
}
}
msg= "Hello" (id=57)
hash= 69609650
value= (id=63)
Hello

Springboot built-in supports JTA @Transactional

```java
import org.springframework.transaction.annotation.Transactional;

@Component
@Transactional
public class JdbcBatchCommand implements CommandLineRunner {

    @Autowired
    protected JdbcTemplate jdbcTemplate;

    @Override
    // @Transactional // repeat on each method is useless, say once on class
    public void run(String... args) throws Exception {
        jdbcTemplate.execute("select 1");

        String msg = jdbcTemplate.execute("select 'Hello' as msg", (PreparedStatement pstmt) -> {
            ResultSet rs = pstmt.executeQuery();
            if (rs.next()) {
                return rs.getString("msg");
            }
            return null;
        });
        assert "Hello".equals(msg);
    } // after this "}" line, spring will commit (or rollback ACID Transaction)
```

@Transactional JUST Works



Almost a Rich JPA-Data Db App (add 4 lines)...

```
<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-data-jpa</artifactId>
</dependency>

<!-- choose your poison (Postgresql,MySql,Oracle,H2,..) -->
<dependency>
    <groupId>com.h2database</groupId>
    <artifactId>h2</artifactId>
</dependency>
```

Code using JPA CRUD findOne,findBy,save()...

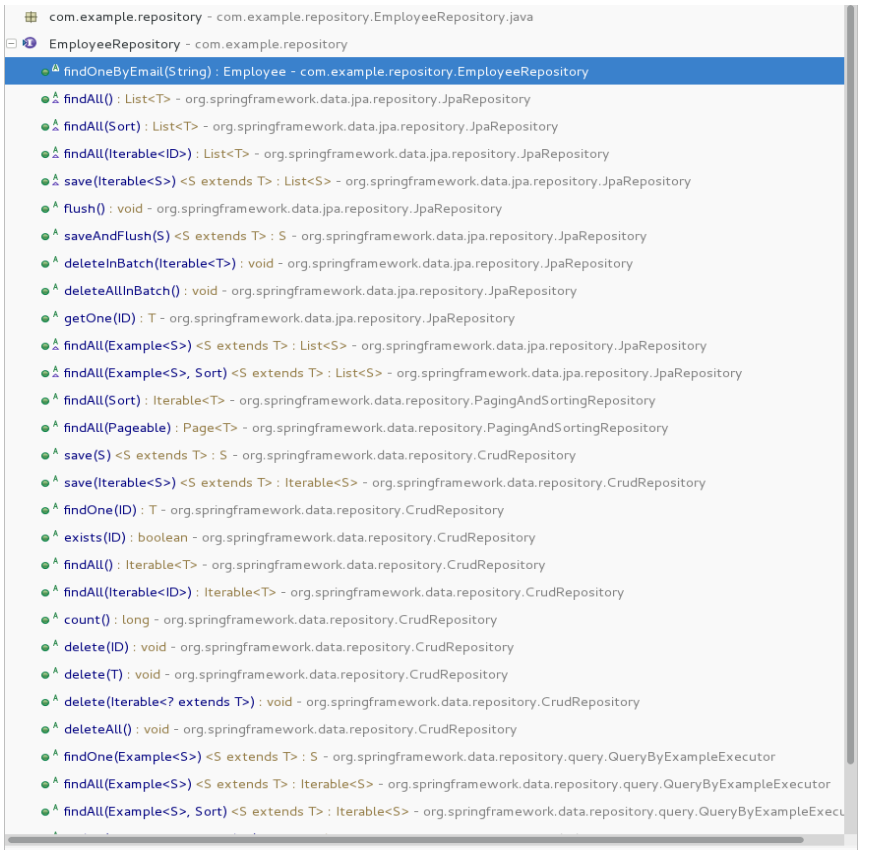
```
@Component
@Transactional
public class JPARepositoryBatchCommand implements CommandLineRunner {

    private static final Logger LOG = LoggerFactory.getLogger(JPARepositoryBatchCommand.class);

    @Autowired
    protected EmployeeRepository employeeDAO;

    @Override
    public void run(String... args) throws Exception {
        Employee empById1 = employeeDAO.findOne(1);
        if (empById1 != null) LOG.info("Hello employee #1 : " + empById1.getFirstName() + " " +
        Employee empJohn = employeeDAO.findOneByEmail("john.smith@gmail.com");
        if (empJohn == null) {
            empJohn = new Employee();
            empJohn.setEmail("john.smith@gmail.com");
            employeeDAO.save(empJohn);
        }
    }
```

Repository … autoconfigured at runtime

EmployeeRepository.java

```
package com.example.repository;

import org.springframework.data.jpa.repository.JpaRepository;

public interface EmployeeRepository extends JpaRepository<Employee,Integer> {

    Employee findOneByEmail(String email);

}
```

By naming convention .. Equivalent to:
“Select * from EMPLOYEE where email=?”



Extends JpaRepository
built-in CRUD …
findAll, by Page, save, delete...
(no update, use Setters)

@Entity, @Id (optionnal @Version) @OneToMany, @ManyToOne

Employee.java

```java
package com.example.domain;

import java.util.ArrayList;

@Entity
public class Employee {

    @Id
    private int id;

    @Version
    private int version;

    private String firstName, lastName, email, address;

    private Date birthDate;

    @ManyToOne
    private Department department;

    @OneToMany
    private List<UserProject> projects = new ArrayList<>();
```

Department.java

```java
package com.example.domain;

import javax.persistence.Entity;

@Entity
public class Department {

    @Id
    private int id;

    private String name;
```

Database table “EMPLOYEE”
(id (PK), version, first_name, last_name, ….
department_id (FK department.id)

Database table “DEPARTMENT”
(id (PK), name)

Springboot @JPA configuration

```java
import org.springframework.context.annotation.Configuration;

@Configuration
//@EnableJpaRepositories(basePackages="com.example.repository")
//@EntityScan(basePackages="com.example.domain")
public class DemoJPAConfig {

}
```

springboot dark magic
not even 1 line .. all optional !!!

```java
import org.springframework.boot.autoconfigure.domain.EntityScan;
import org.springframework.context.annotation.Configuration;
import org.springframework.data.jpa.repository.config.EnableJpaRepositories;

@Configuration
@EnableJpaRepositories(basePackages="com.example.repository")
@EntityScan(basePackages="com.example.domain")
public class DemoJPAConfig {

}
```

Useless equivalent
2 implicit lines

application.properties

```
spring.jpa.show-sql=true
# spring.jpa.properties.hibernate.format_sql=true
```

Optional
for debug (see next)

Springboot hibernate… “JUST work”


```
2016-11-17 22:42:01.527  INFO 9504 --- [  restartedMain] s.b.c.e.t.TomcatEmbeddedServletContainer : Tomcat started on port(s): 8080 (http)
Hibernate: select employee0_.id as id1_1_0_, employee0_.address as address2_1_0_, employee0_.birth_date as birth_da3_1_0_, employee0_.department_id as departme8_1_0_, e
2016-11-17 22:48:26.530  INFO 9504 --- [  restartedMain] o.h.h.i.QueryTranslatorFactoryInitiator  : HHH000397: Using ASTQueryTranslatorFactory
Hibernate: select employee0_.id as id1_1_, employee0_.address as address2_1_, employee0_.birth_date as birth_da3_1_, employee0_.department_id as departme8_1_, employee0
Hibernate: insert into employee (address, birth_date, department_id, email, first_name, last_name, version, id) values (?, ?, ?, ?, ?, ?, ?, ?)
2016-11-17 22:48:28.194  INFO 9504 --- [  restartedMain] com.example.DemoApplication              : Started DemoApplication in 391.821 seconds (JVM running for 392.191)
```

CRUD …
select * from EMPLOYEE where …
insert into EMPLOYEE (..) values (..)

When/How/Where are my “create Table ()” ???

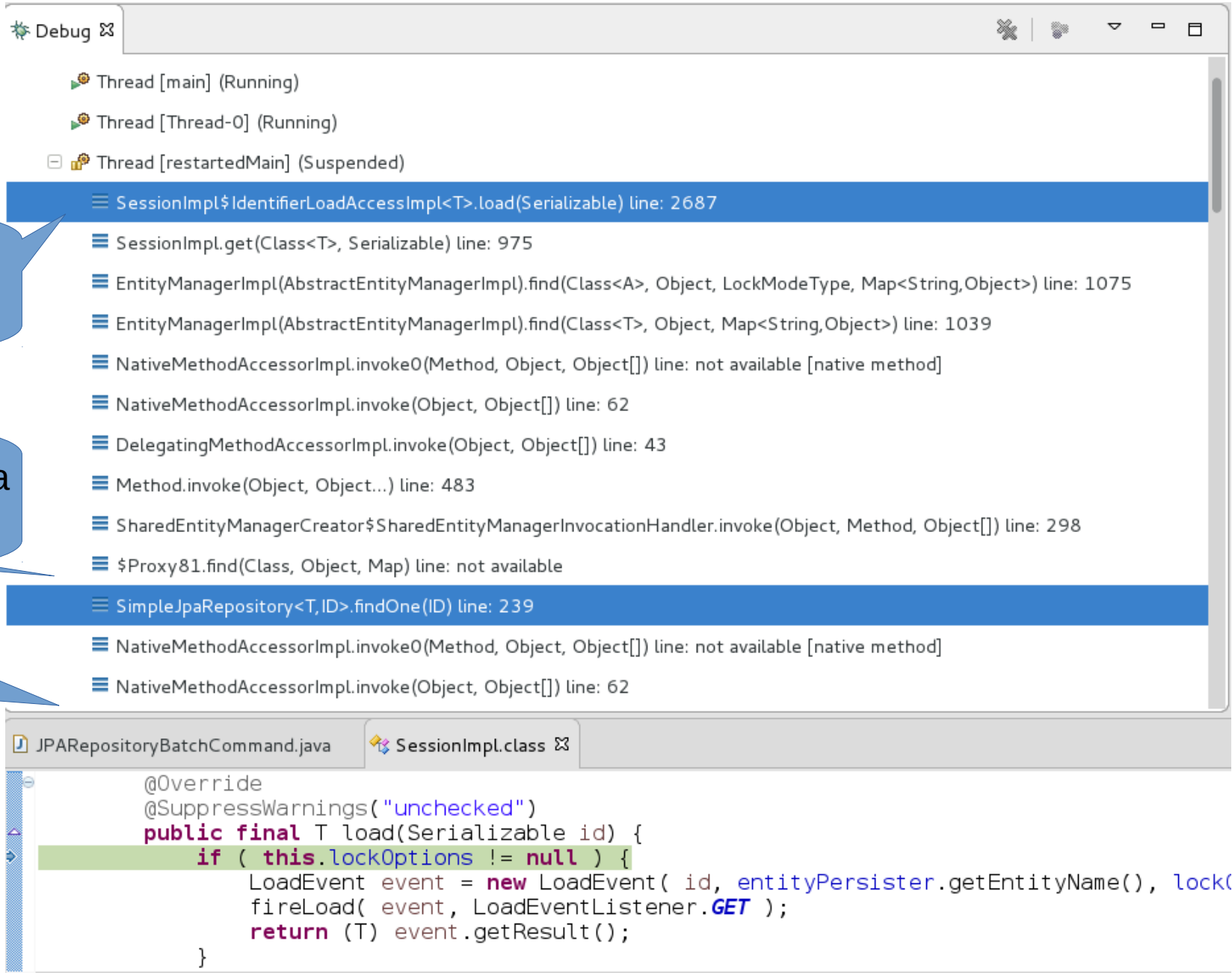
Tables are created/updated at startup

```
2016-11-17 22:41:59.753  INFO 9504 --- [  restartedMain] o.hibernate.annotations.common.Version   : HCANN000001: Hibernate Commons Annotations {5.0.1.Final}
2016-11-17 22:41:59.851  INFO 9504 --- [  restartedMain] org.hibernate.dialect.Dialect            : HHH000400: Using dialect: org.hibernate.dialect.H2Dialect
2016-11-17 22:42:00.269  INFO 9504 --- [  restartedMain] org.hibernate.tool.hbm2ddl.SchemaExport  : HHH000227: Running hbm2ddl schema export
Hibernate: drop table department if exists
Hibernate: drop table employee if exists
Hibernate: drop table employee_projects if exists
Hibernate: drop table user_project if exists
Hibernate: create table department (id integer not null, name varchar(255), primary key (id))
Hibernate: create table employee (id integer not null, address varchar(255), birth_date timestamp, email varchar(255), first_name varchar(255), last_name varchar(255),
Hibernate: create table employee_projects (employee_id integer not null, projects_id integer not null)
Hibernate: create table user_project (id integer not null, employee_id integer, primary key (id))
Hibernate: alter table employee_projects add constraint UK_4jypfcavfedhsivky8co9wvqa unique (projects_id)
Hibernate: alter table employee add constraint FKbejtwvg9bxus2mffsm3swj3u9 foreign key (department_id) references department
Hibernate: alter table employee_projects add constraint FK25ggdalg559udqdvhwxu3p4j3 foreign key (projects_id) references user_project
Hibernate: alter table employee_projects add constraint FK97jl81fsrbblkqfoqwg2o7yps foreign key (employee_id) references employee
Hibernate: alter table user_project add constraint FKmlfr43vjmqglnaleuarwhhveq foreign key (employee_id) references employee
2016-11-17 22:42:00.286  INFO 9504 --- [  restartedMain] org.hibernate.tool.hbm2ddl.SchemaExport  : HHH000230: Schema export complete
2016-11-17 22:42:00.318  INFO 9504 --- [  restartedMain] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
```

Detected H2 Database SQL langage

Also create PK/FK indexes

How??

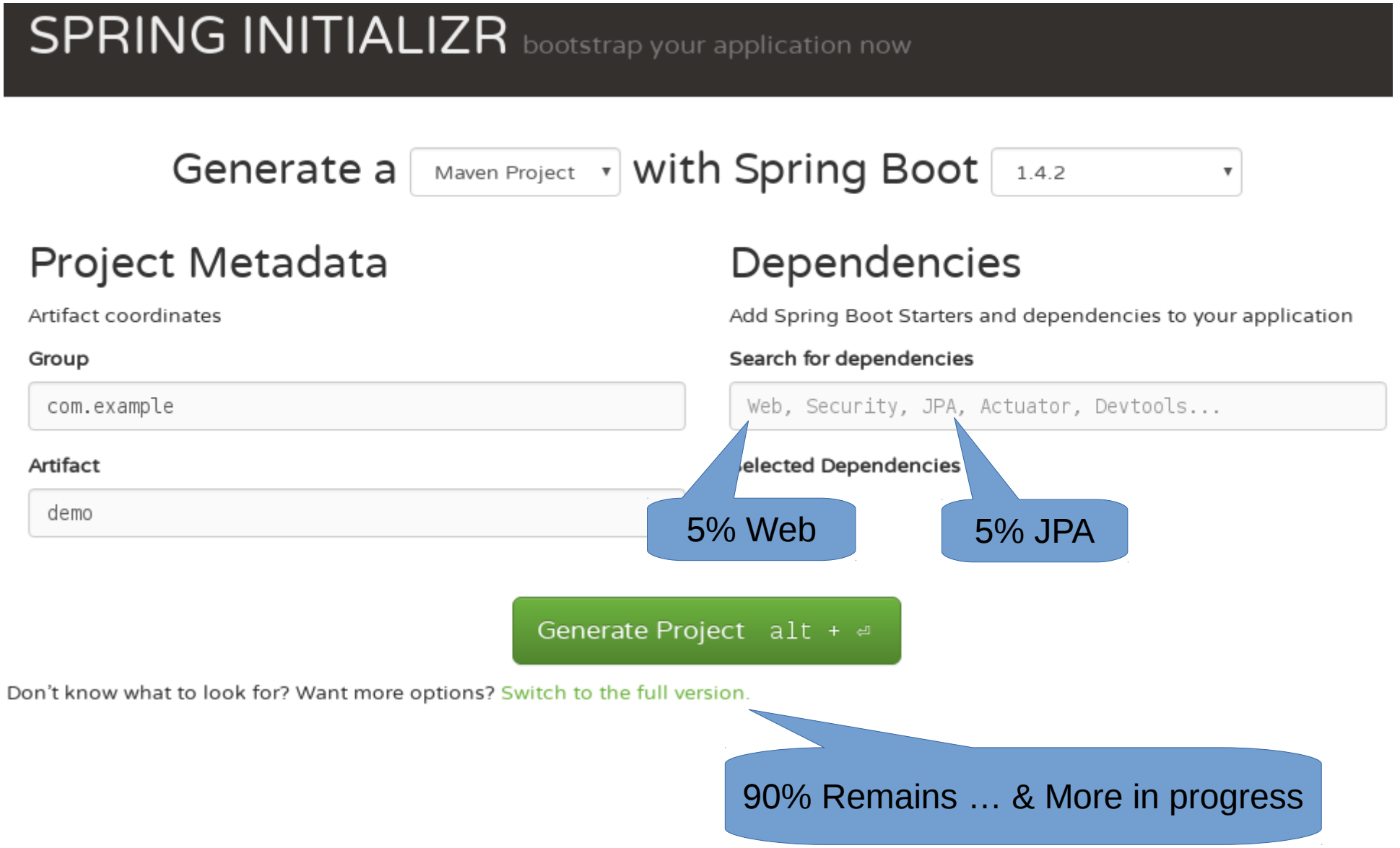


Which call JPA..
→ Hibernate...
→ JDBC

Call springboot-data JpaRepository

You code calls a generated Proxy..

This was “only” 10% of springboot and spring-*



Springboot-* page1/5

Generate Project alt + ⏎

Core

- Security
  Secure your application via spring-security
- AOP
  Aspect-oriented programming including spring-aop and AspectJ
- Atomikos (JTA)
  JTA distributed transactions via Atomikos
- Bitronix (JTA)
  JTA distributed transactions via Bitronix
- Narayana (JTA)
  JTA distributed transactions via Narayana
- Cache
  Spring's Cache abstraction
- DevTools
  Spring Boot Development Tools
- Configuration Processor
  Generate metadata for your custom configuration keys
- Validation
  JSR-303 validation infrastructure (already included with web)
- Session
  API and implementations for managing a user's session information
- Retry
  Provide declarative retry support via spring-retry
- Lombok
  Java annotation library which helps to reduce boilerplate code and code faster

Web

- Web
  Full-stack web development with Tomcat and Spring MVC
- Websocket
  Websocket development with SockJS and STOMP
- Web Services
  Contract-first SOAP service development with Spring Web Services
- Jersey (JAX-RS)
  RESTful Web Services framework
- Ratpack
  Spring Boot integration for the Ratpack framework
- Vaadin
  Vaadin java web application framework
- Rest Repositories
  Exposing Spring Data repositories over REST via spring-data-rest-webmvc
- HATEOAS
  HATEOAS-based RESTful services
- Rest Repositories HAL Browser
  Browsing Spring Data REST repositories in your browser
- Mobile
  Simplify the development of mobile web applications with spring-mobile
- REST Docs
  Document RESTful services by combining hand-written and auto-generated documentation

Template Engines

- Freemarker
  FreeMarker templating engine
- Velocity
  Velocity templating engine
- Groovy Templates
  Groovy templating engine
- Thymeleaf
  Thymeleaf templating engine, including integration with Spring
- Mustache
  Mustache templating engine

Springboot-* page 2/5

SQL

- **JPA**
  Java Persistence API including spring-data-jpa, spring-orm and Hibernate
- **JOOQ**
  Persistence support using Java Object Oriented Querying
- **MyBatis**
  Persistence support using MyBatis
- **JDBC**
  JDBC databases
- **H2**
  H2 database (with embedded support)
- **HSQLDB**
  HSQLDB database (with embedded support)
- **Apache Derby**
  Apache Derby database (with embedded support)
- **MySQL**
  MySQL jdbc driver
- **PostgreSQL**
  PostgreSQL jdbc driver
- **Flyway**
  Flyway Database Migrations library
- **Liquibase**
  Liquibase Database Migrations library

NoSQL

- **MongoDB**
  MongoDB NoSQL Database, including spring-data-mongodb
- **Cassandra**
  Cassandra NoSQL Database, including spring-data-cassandra
- **Couchbase**
  Couchbase NoSQL database, including spring-data-couchbase
- **Neo4j**
  Neo4j NoSQL graph database, including spring-data-neo4j
- **Redis**
  REDIS key-value data store, including spring-redis
- **Gemfire**
  GemFire distributed data store including spring-data-gemfire
- **Solr**
  Apache Solr search platform, including spring-data-solr
- **Elasticsearch**
  Elasticsearch search and analytics engine including spring-data-elasticsearch

NoSQL Databases:

Key-Values,
Columns,
Graphs
FullText

Cloud Core

- **Cloud Connectors**
  Simplifies connecting to services in cloud platforms, including spring-cloud-connector and spring-cloud-cloudfoundry-connector
- **Cloud Bootstrap**
  spring-cloud-context (e.g. Bootstrap context and @RefreshScope)
- **Cloud Security**
  Secure load balancing and routing with spring-cloud-security
- **Cloud OAuth2**
  OAuth2 and distributed application patterns with spring-cloud-security
- **Cloud Task**
  Task result tracking along with integration with batch and streams

Springboot-* page 3/5

PostgreSQL jdbc driver

- Flyway
  Flyway Database Migrations library
- Liquibase
  Liquibase Database Migrations library

Cloud Core

- Cloud Connectors
  Simplifies connecting to services in cloud platforms, including spring-cloud-connector and spring-cloud-cloudfoundry-connector
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  spring-cloud-context (e.g. Bootstrap context and @RefreshScope)
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  Secure load balancing and routing with spring-cloud-security
- Cloud OAuth2
  OAuth2 and distributed application patterns with spring-cloud-security
- Cloud Task
  Task result tracking along with integration with batch and streams

Cloud Config

- Config Client
  spring-cloud-config Client
- Config Server
  Central management for configuration via a git or svn backend
- Zookeeper Configuration
  Configuration management with Zookeeper and spring-cloud-zookeeper-config
- Consul Configuration
  Configuration management with Hashicorp Consul

Cloud Discovery

- Eureka Discovery
  Service discovery using spring-cloud-netflix and Eureka
- Eureka Server
  spring-cloud-netflix Eureka Server
- Zookeeper Discovery
  Service discovery with Zookeeper and spring-cloud-zookeeper-discovery
- Cloud Foundry Discovery
  Service discovery with Cloud Foundry
- Consul Discovery
  Service discovery with Hashicorp Consul

Cloud
=
For DataCenters
(10 000 PCs..)

discovery+failover
+load-balancer+
...

Cloud Routing

- Zuul
  Intelligent and programmable routing with spring-cloud-netflix Zuul
- Ribbon
  Client side load balancing with spring-cloud-netflix and Ribbon
- Feign
  Declarative REST clients with spring-cloud-netflix Feign

Cloud Circuit Breaker

- Hystrix
  Circuit breaker with spring-cloud-netflix Hystrix
- Hystrix Dashboard
  Circuit breaker dashboard with spring-cloud-netflix Hystrix
- Turbine
  Circuit breaker metric aggregation using spring-cloud-netflix with Turbine and server-sent events
- Turbine AMQP
  Circuit breaker metric aggregation using spring-cloud-netflix with Turbine and AMQP
- Turbine Stream
  Circuit breaker metric aggregation using spring-cloud-netflix with Turbine and Spring Cloud Stream (choose a specific Stream binder implementation to complement this)

Springboot-* page 4/5

Cloud Tracing

- **Sleuth**
  Distributed tracing via logs with spring-cloud-sleuth
- **Zipkin Client**
  Distributed tracing with an existing Zipkin installation and spring-cloud-sleuth-zipkin. Alternatively, consider Sleuth Stream.
- **Sleuth Stream**
  Marshals Spring Cloud Sleuth Spans over a Spring Cloud Stream binder
- **Zipkin Stream**
  Consumes span data in messages from Spring Cloud Sleuth Stream and writes them to a Zipkin store
- **Zipkin UI**
  add the Zipkin UI module to the Zipkin server to get a Zipkin service that accepts Spans and provides visualization
- **Zipkin Server**
  Consumes span data over HTTP and writes them to a span store

Cloud Messaging

- **Cloud Bus AMQP**
  A simple control bus with AMQP and spring-cloud-bus-amqp
- **Cloud Bus Kafka**
  A simple control bus with Kafka and spring-cloud-bus
- **Stream Rabbit**
  Messaging microservices with RabbitMQ
- **Stream Kafka**
  Messaging microservices with Kafka

Asynchronous Messages Bus

Cloud AWS

- **AWS Core**
  AWS native services from spring-cloud-aws
- **AWS JDBC**
  Relational databases on AWS with RDS and spring-cloud-aws-jdbc
- **AWS Messaging**
  Messaging on AWS with SQS and spring-cloud-aws-messaging

Cloud Data Flow

- **Local Data Flow Server**
  Local Data Flow Server implementation
- **Data Flow Shell**
  Data Flow Shell

Cloud Cluster

- **Cluster Redis**
  Leadership election and global state with Redis and spring-cloud-cluster-redis
- **Cluster Zookeeper**
  Leadership election and global state with Zookeeper and spring-cloud-cluster-zookeeper
- **Cluster Hazelcast**
  Leadership election and global state with Hazelcast and spring-cloud-cluster-hazelcast
- **Cluster Etcd**
  Leadership election and global state with Etcd and spring-cloud-cluster-etcd

Cloud Contract

- **Cloud Contract Verifier**
  Test dependencies required for autogenerated tests
- **Cloud Contract Stub Runner**
  Stub Runner for HTTP/Messaging based communication
- **Cloud Contract WireMock**
  Test dependencies required for the WireMock HTTP server

Pivotal Cloud Foundry

- **Config Client (PCF)**
  Config client on Pivotal Cloud Foundry
- **Service Registry (PCF)**
  Eureka service discovery on Pivotal Cloud Foundry
- **Circuit Breaker (PCF)**
  Hystrix circuit breaker on Pivotal Cloud Foundry

Springboot-* page 5/5

Social

- Facebook
  spring-social-facebook
- LinkedIn
  spring-social-linkedin
- Twitter
  spring-social-twitter

I/O

- Batch
  Spring Batch including HSQLDB datab
- Integration
  Common spring-integration mo
- Activiti
  Activiti BPMN workflow engine
- Apache Camel
  Integration using Apache Camel
- JMS (ActiveMQ)
  Java Message Service API via Apache ActiveMQ
- JMS (Artemis)
  Java Message Service API via Apache Artemis
- JMS (HornetQ)
  Java Message Service API via HornetQ
- AMQP
  Advanced Message Queuing Protocol via spring-rabbit
- Mail
  javax.mail

Input-Processing-Output for files/messages/events

Mail

Monitoring Statistics, Management

Ops

- Actuator
  Production ready features to help you monitor and manage your application
- Actuator Docs
  API documentation for the Actuator endpoints
- Remote Shell
  CRaSH shell integration

Experimental

- Reactive Web
  Reactive web development with Apache Tomcat and Spring Reactive (experimental)

Springboot : Lot of Cloud ...

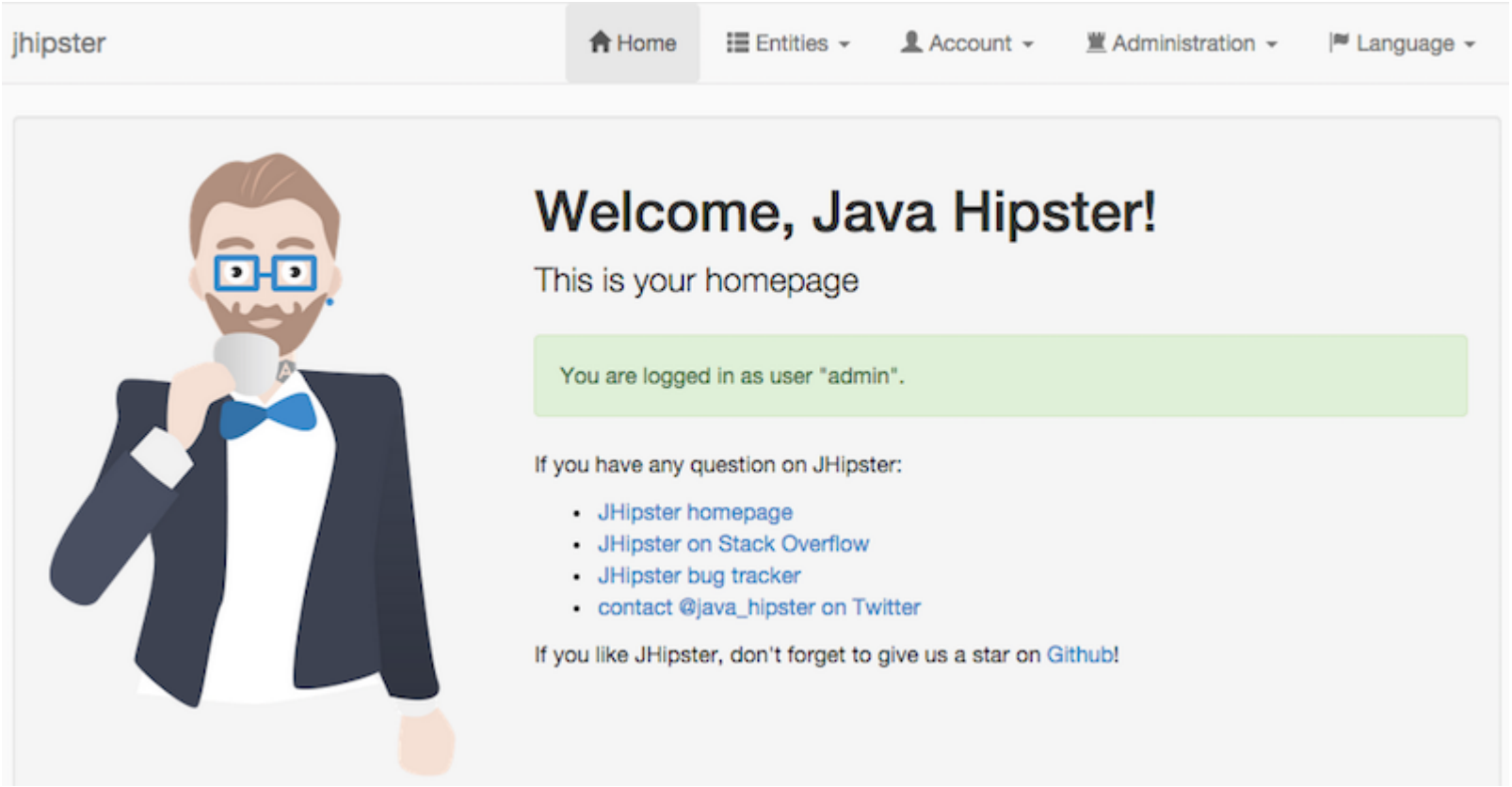
Because it is used by HUUUGE companies to run their business DataCenters

- Alibaba
- Amazon
- Netflix
- Linked-In
- Twitter
- ...

Play This Video !!!

AngularJS + Springboot

In Jhipster … you have 100% springboot on server-side
… with Code Generator
And also Hipe code on client-side : Html / Css + AngularJS + ..



Java is Hipe
Make Jar nor WAR – NO PHP
NO NodeJS on server

20 years of Java
Just The Beginning

Its HIPE ...because of springboot
& open-source & java community

Conclusion


inversionofcontrol
Springpowered
standaloneapplications
easy
SpringBoot
Boot
Spring
just
absolute
springio
opinionated
many
helps
minimum
Starters
Initializr
build
Selected
Search
Wikipedia
Add
Embed Tomcat
take
standalone
options
view
short
dependencyinjection
startspringio
create
applications
productiongrade
Dependencies
SpringFramework
web
based
application
Switch
services
makes
framework
run

Conclusion

Only a very short introduction to spring-boot

This document:
http://arnaud-nauwynck.github.io/docs/Intro-SpringBoot.pdf