



Spring Workshop

Sprint Boot Intro

https://github.com/Michaeli71/ADC_BOOTCAMP_SPRING

Michael Inden

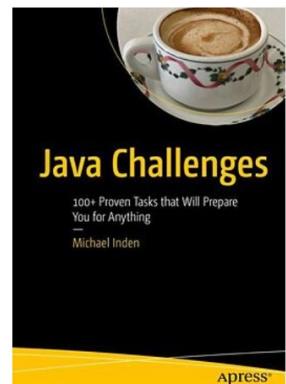
Speaker Intro



- **Michael Inden, Year of Birth 1971**
- **Diploma Computer Science, C.v.O. Uni Oldenburg**
- **~8 ¼ Years SSE at Heidelberger Druckmaschinen AG in Kiel**
- **~6 ¾ Years TPL, SA at IVU Traffic Technologies AG in Aachen**
- **~4 ¼ Years LSA / Trainer at Zühlke Engineering AG in Zurich**
- **~3 Years TL / CTO at Direct Mail Informatics / ASMIQ in Zurich**
- **Independent Consultant, Conference Speaker and Trainer**
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Introduction Spring Boot

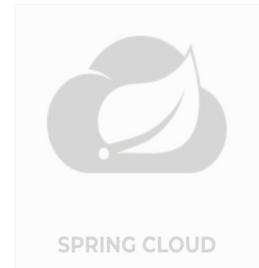
Major Spring Projects



SPRING FRAMEWORK



SPRING BOOT



SPRING CLOUD



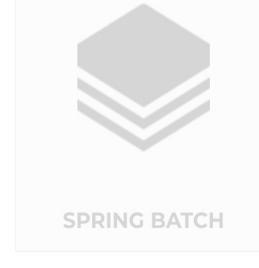
SPRING DATA



SPRING CLOUD DATA
FLOW



SPRING INTEGRATION



SPRING BATCH



SPRING SECURITY



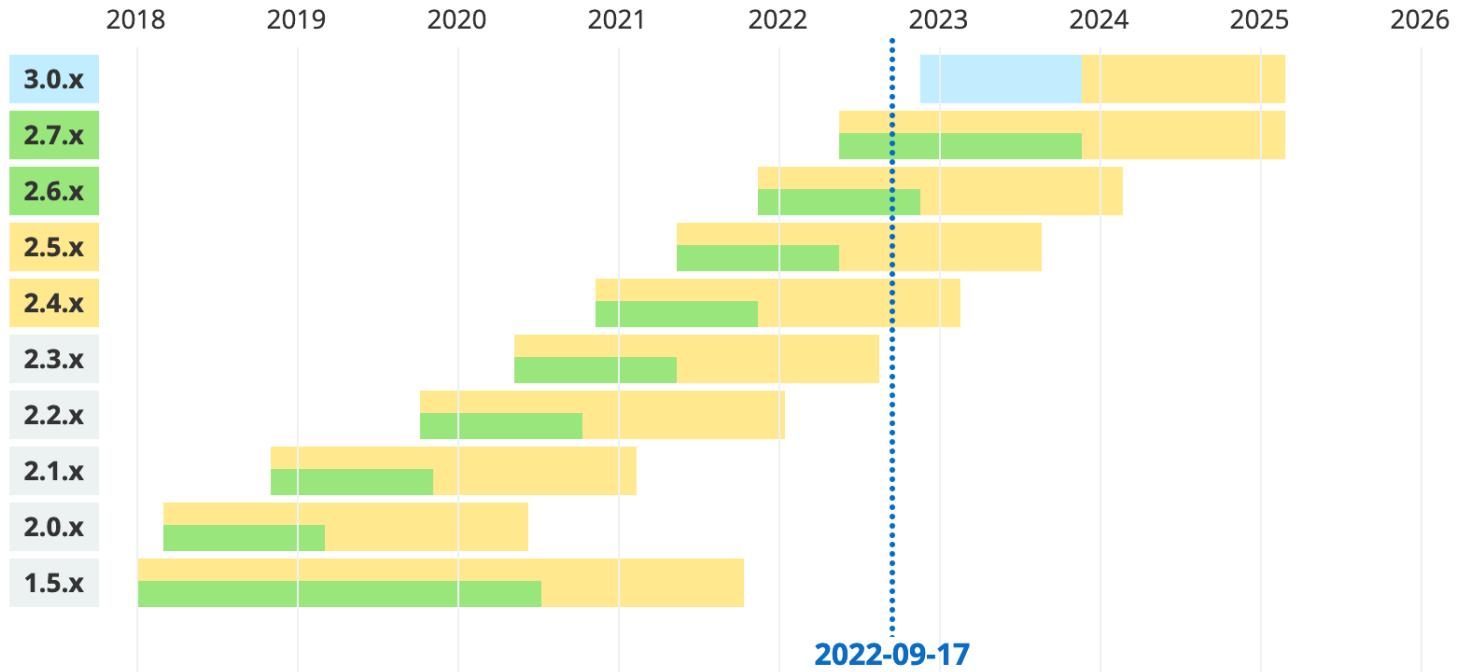
- RAD – Rapid Application Development
 - Easy integration of important features Web, Security, DB
 - Predefined dependencies that (really) fit together
 - Less configuration, no XML
 - Easy to build and run (embedded Tomcat)
-

Spring Boot - JDK Baseline



Version	JDK 6	JDK 7	JDK 8	JDK 9	JDK 10	JDK 11	JDK 12
1.5.x	👎👍	👍	👍	👎	👎	👎	👎
2.1.X	👎	👎	👍	👍	👍	👍	👎
2.2.x	👎	👎	👍	👍	👍	👍	👍

Spring Boot – Past, Present, and Future



OSS support

Free security updates and bugfixes with support from the Spring community. See [VMware Tanzu OSS support policy](#).

Commercial support

Business support from Spring experts during the OSS timeline, plus extended support after OSS End-Of-Life.

Publicly available releases for critical bugfixes and security issues when requested by customers.

Future release

Generation not yet released, timeline is subject to changes.

WebApp in Spring Framework (The hard way)



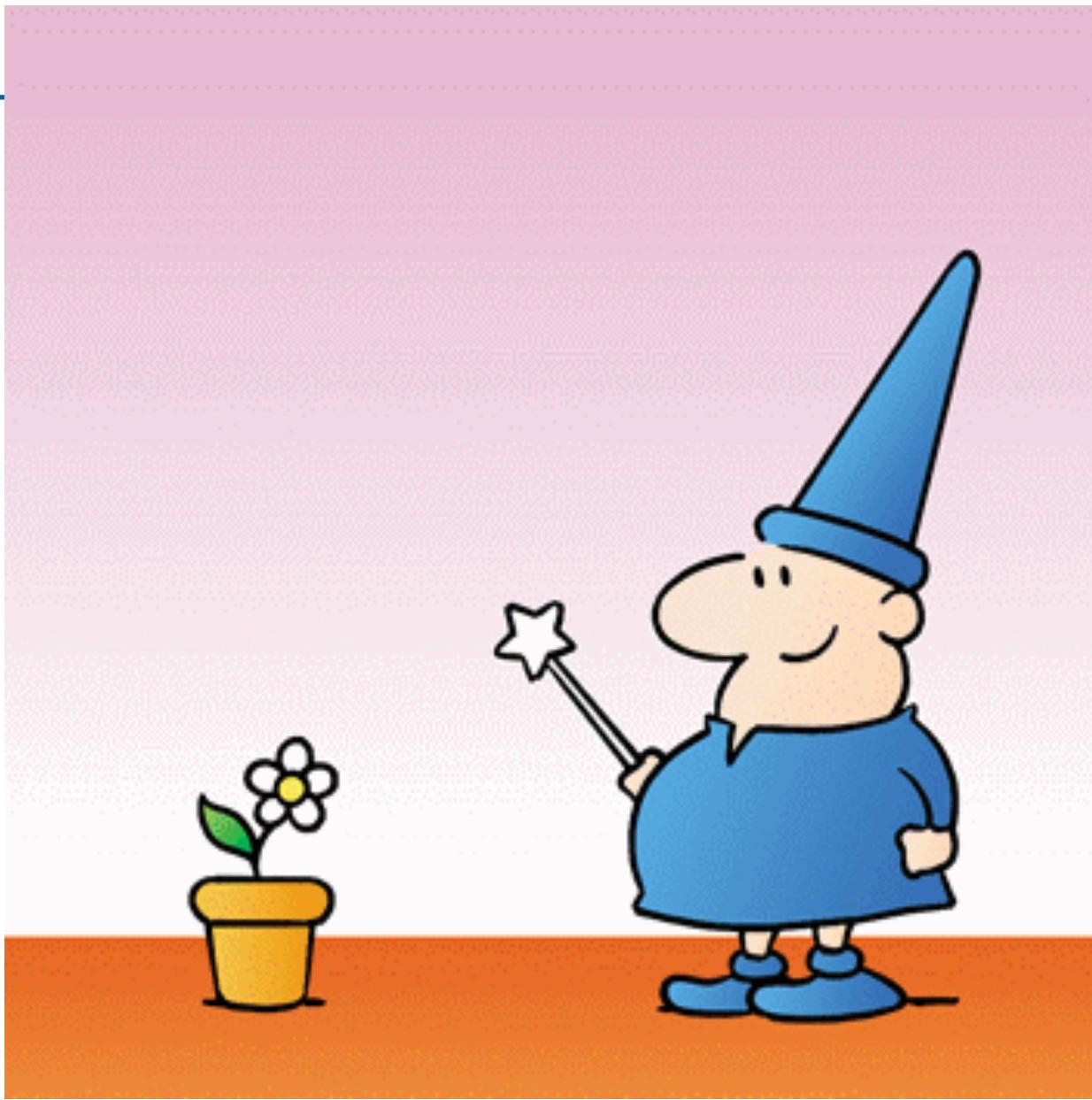
```
public class WebInitializer implements WebApplicationInitializer {  
  
    @Override  
    public void onStartup(ServletContext servletContext) {  
        //configure dispatcher servlet  
    }  
}
```

```
@Configuration  
@EnableWebMvc  
@ComponentScan("ch.karthi")  
public class WebAppConfig {
```

```
@Bean  
public MappingJackson2HttpMessageConverter jsonMessageConverter() {  
    return new MappingJackson2HttpMessageConverter();  
}  
}
```

```
    public static void startTomcat() {  
        final var tomcat = new Tomcat();  
        final var connector = new Connector();  
        //configure tomcat  
    }
```







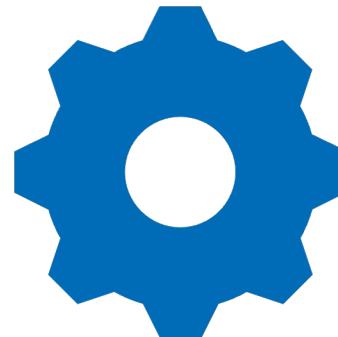
```
@SpringBootApplication  
public class App {  
  
    public static void main(String[] args) {  
        SpringApplication.run(App.class, args);  
    }  
  
}
```

@SpringBootApplication



```
@SpringBootApplication  
public class App {  
  
    public static void main(String[] args) {  
        SpringApplication.run(App.class, args);  
    }  
  
}
```

```
@SpringBootApplication  
@Configuration  
@ComponentScan  
@EnableAutoConfiguration
```



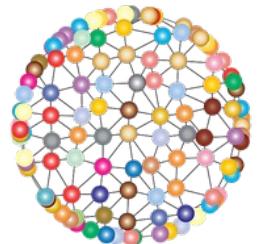
Configures beans automatically
> 100 Autoconfigurations available

Convention over Configuration – Autoconfiguration



Scans the classpath for dependencies and configures automatically





How to get started?



Use Spring Initializr

Spring Initializr -- <https://start.spring.io/>



Project

Maven Project Gradle Project

Language

Java Kotlin Groovy

Spring Boot

3.0.0 (SNAPSHOT) 3.0.0 (M4) 2.7.4 (SNAPSHOT) 2.7.3
 2.6.12 (SNAPSHOT) 2.6.11

Project Metadata

Group com.example

Artifact demo

Name demo

Description Demo project for Spring Boot

Package name com.example.demo

Packaging Jar War

Java 18 17 11 8

Dependencies

[ADD DEPENDENCIES... ⌘ + B](#)

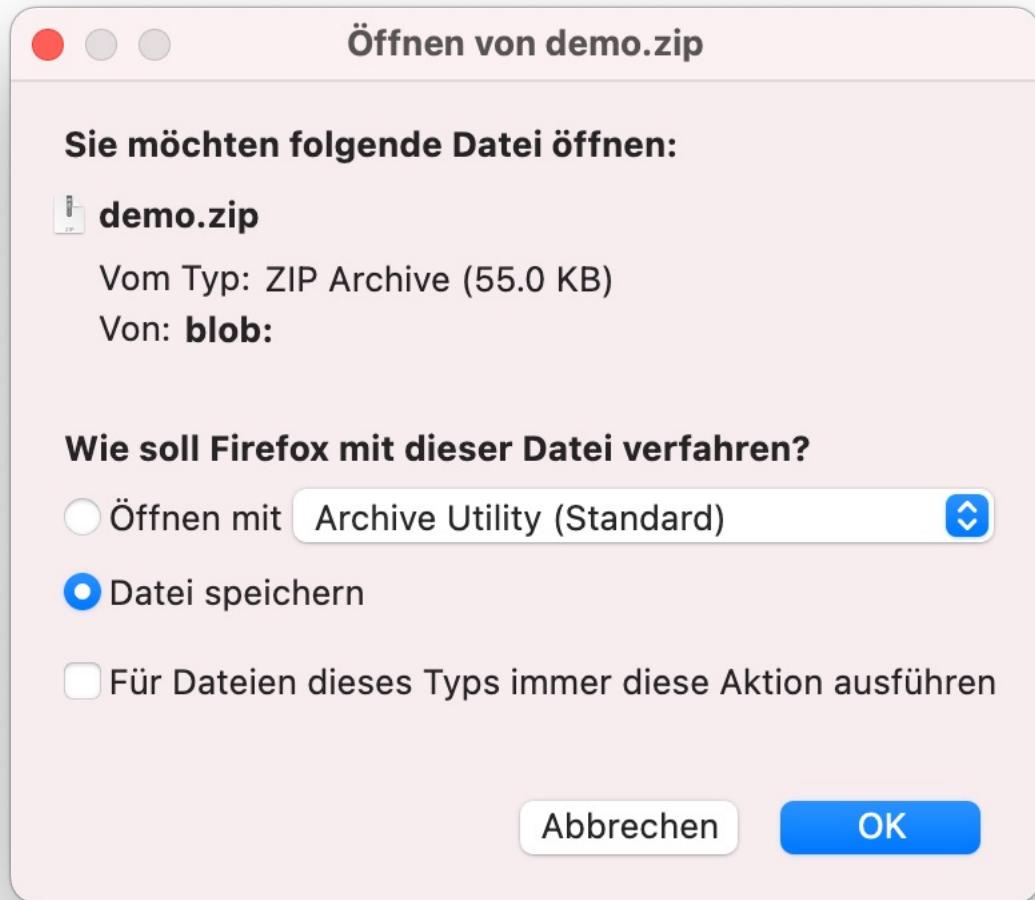
No dependency selected

[GENERATE ⌘ + ↵](#)

[EXPLORE CTRL + SPACE](#)

[SHARE...](#)

Spring Initializr -- <https://start.spring.io/>



▼	demo	-- Ordner
>	src	-- Ordner
	mvnw	10 KB Ausföh...ix-Datei
	mvnw.cmd	7 KB Dokument
>	.mvn	-- Ordner
	.gitignore	395 Byte Dokument
	pom.xml	1 KB XML Text
	HELP.md	429 Byte md Datei
	demo.zip	56 KB ZIP-Archiv

Spring Initializr -- <https://start.spring.io/>



demo	--
src	--
main	--
java	--
com	--
example	--
demo	--
DemoApplication.java	305 Byte
resources	--
application.properties	1 Byte
test	--
java	--
com	--
example	--
demo	--
DemoApplicationTests.java	206 Byte
mvnw	10 KB
mvnw.cmd	7 KB
.mvn	--
.gitignore	395 Byte
pom.xml	1 KB
HELP.md	429 Byte
demo.zip	56 KB

Spring Initializr -- <https://start.spring.io/>



- ▼ Maven
 - Check out Maven Projects from SCM
 - Existing Maven Projects
 - Install or deploy an artifact to a Maven repository
 - Materialize Maven Binary Project
 - Materialize Maven Projects from SCM

Spring Initializr -- <https://start.spring.io/>



demo

- src/main/java
 - com.example.demo
 - DemoApplication.java
 - DemoApplication
 - main(String[]) : void
- src/main/resources
- src/test/java
- JRE System Library [JavaSE-11]
- Maven Dependencies
- src
- target
- HELP.md
- mvnw
- mvnw.cmd
- pom.xml

```
1 package com.example.demo;
2
3+import org.springframework.boot.SpringApplication;[]
4
5 @SpringBootApplication
6 public class DemoApplication {
7
8     public static void main(String[] args) {
9         SpringApplication.run(DemoApplication.class, args);
10    }
11 }
12
13 }
14
```

Starting the Application

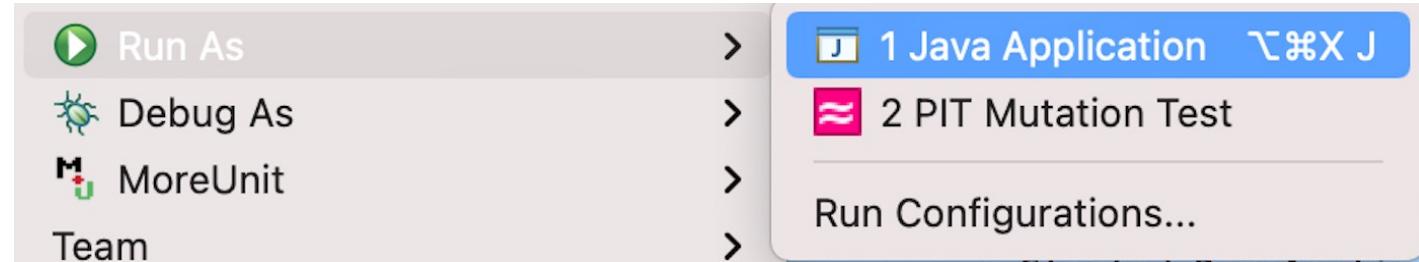


Maven

```
mvn clean package  
mvn spring-boot:run
```

Gradle

```
gradle clean assemble  
gradle bootRun
```



```
( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )  
:: Spring Boot :: (v2.5.5)
```

```
2021-09-28 09:40:15.251 INFO 89058 --- [  
2021-09-28 09:40:15.254 INFO 89058 --- [  
2021-09-28 09:40:16.138 INFO 89058 --- [
```

```
main] com.example.demo.DemoApplication  
main] com.example.demo.DemoApplication  
main] com.example.demo.DemoApplication
```

```
: Starting DemoApplication using Java 11.0.11 on Air-von-Michael.fritz.box  
: No active profile set, falling back to default profiles: default  
: Started DemoApplication in 1.632 seconds (JVM running for 2.289)
```

Getting Started — Maven Dependencies



```
<dependency>
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-starter</artifactId>
<version>2.7.3</version>
</dependency>

<dependency>
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-starter-test</artifactId>
<version>2.7.3</version>
<scope>test</scope>
</dependency>

<dependency>
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-starter-web</artifactId>
<version>2.7.3</version>
</dependency>
```



Create a Demo Project with Spring Initializr

<https://start.spring.io/>





RestService
to say
“hello”

```
@SpringBootApplication
public class App {

    public static void main(String[] args) {
        SpringApplication.run(App.class, args);
    }
}

@RestController
public class MyRestController{

    @GetMapping("/hello")
    public String hello(){
        return "hello amtc";
    }
}
```



More REST actions – simple Filtering

```
http://www.example.com/ <@PathVariable> /? queryParamName = <@RequestParam>
```

```
// "/names?startsWith=<prefix>&endsWith=<postfix>"  
@GetMapping("/names")  
public List<String> names(@RequestParam("startsWith") Optional<String> prefix,  
                           @RequestParam("endsWith") Optional<String> postfix) {  
  
    var filteredResult = Stream.of("Tim", "Tom", "Mike", "Michael", "Jim",  
                                   "John", "James");  
  
    if (prefix.isPresent())  
        filteredResult = filteredResult.filter(str -> str.startsWith(prefix.get()));  
  
    if (postfix.isPresent())  
        filteredResult = filteredResult.filter(str -> str.endsWith(postfix.get()));  
  
    return filteredResult.collect(Collectors.toList());  
}
```



More REST actions

http://www.example.com/ <@PathVariable> /? queryParamName = <@RequestParam>

```
@GetMapping("/items")
public void getItems(){
    ...
}

@GetMapping("/items/{itemId}")
public void getItems(@PathVariable String itemId){
    ...
}

@PostMapping("/items")
public void putItems(@RequestBody ShoppingItem item){
    ...
}
```

SpringBoot with CommandLineRunner // list all beans

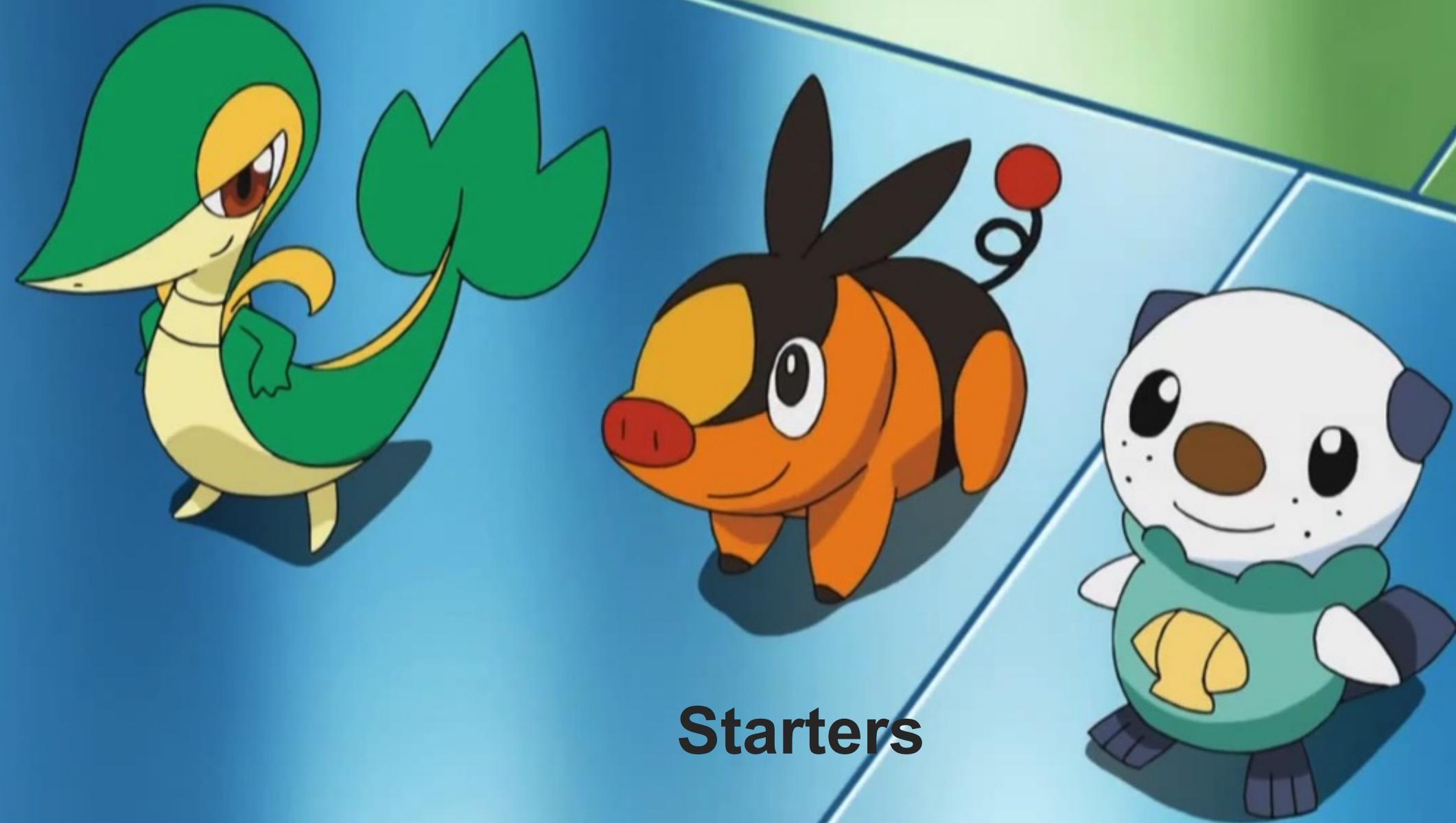


```
@SpringBootApplication
public class ExampleSpringBootApp {

    public static void main(String[] args) {
        SpringApplication.run(ExampleSpringBootApp.class, args);
    }

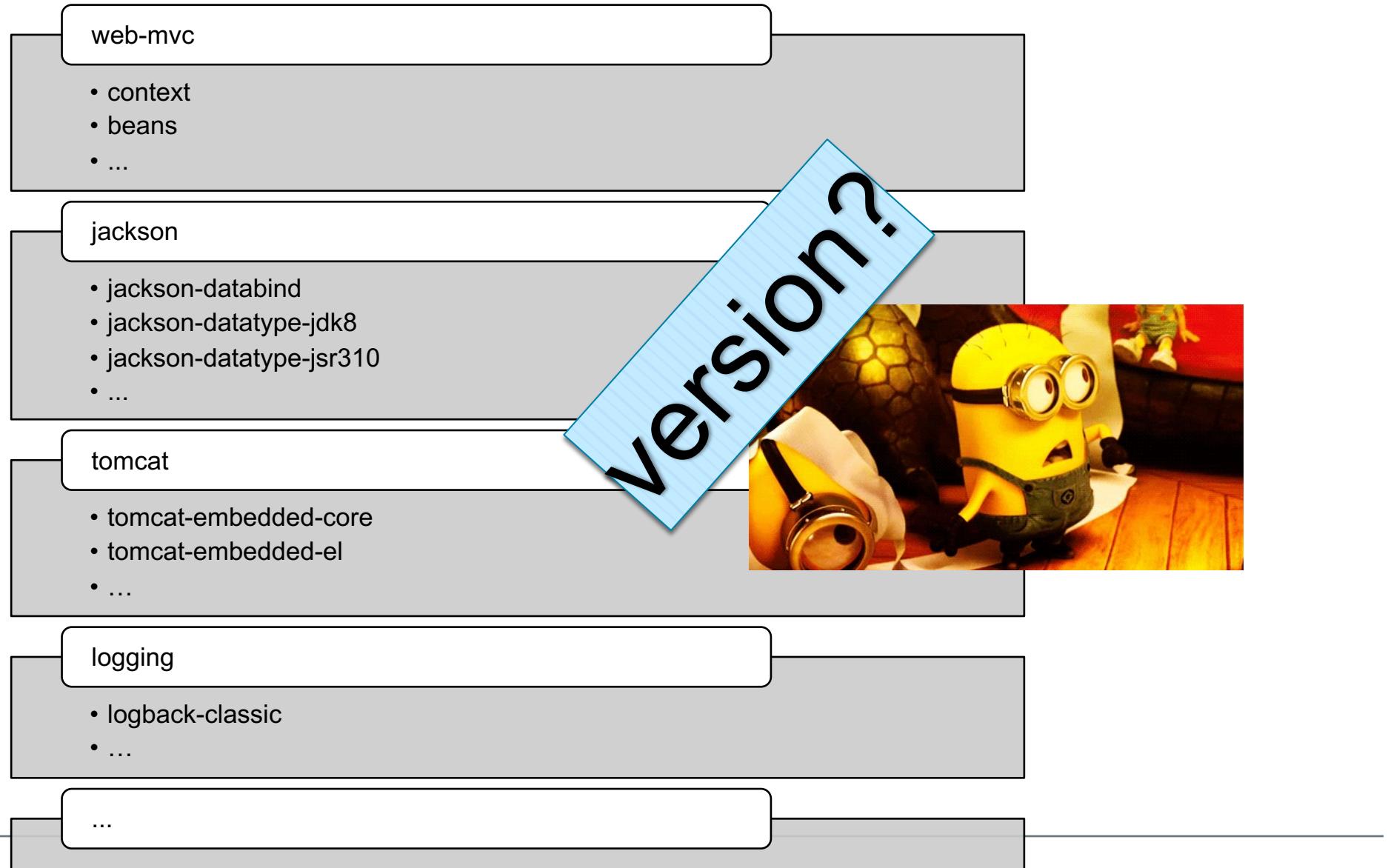
    @Bean
    public CommandLineRunner commandLineRunner(ApplicationContext ctx) {
        return args -> { inspectSpring(ctx); };
    }

    private void inspectSpring(ApplicationContext ctx) {
        System.out.println("Beans provided by Spring Boot:");
        String[] beanNames = ctx.getBeanDefinitionNames();
        Arrays.sort(beanNames);
        Arrays.stream(beanNames).forEach(System.out::println);
    }
}
```



Starters

Dependencies needed for a webapp





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

spring-boot-starter-web

```
\- org.springframework.boot:spring-boot-starter-web:jar:2.1.3.RELEASE:compile
  +- org.springframework.boot:spring-boot-starter:jar:2.1.3.RELEASE:compile
    +- org.springframework.boot:spring-boot:jar:2.1.3.RELEASE:compile
    +- org.springframework.boot:spring-boot-autoconfigure:jar:2.1.3.RELEASE:compile
    +- org.springframework.boot:spring-boot-starter-logging:jar:2.1.3.RELEASE:compile
      +- ch.qos.logback:logback-classic:jar:1.2.3:compile
        +- ch.qos.logback:logback-core:jar:1.2.3:compile
        \- org.slf4j:slf4j-api:jar:1.7.25:compile
      +- org.apache.logging.log4j:log4j-to-slf4j:jar:2.11.2:compile
        \- org.apache.logging.log4j:log4j-api:jar:2.11.2:compile
      \- org.slf4j:jul-to-slf4j:jar:1.7.25:compile
    +- javax.annotation:javax.annotation-api:jar:1.3.2:compile
    +- org.springframework:spring-core:jar:5.1.5.RELEASE:compile
      \- org.springframework:spring-jcl:jar:5.1.5.RELEASE:compile
    \- org.yaml:snakeyaml:jar:1.23:runtime
  +- org.springframework.boot:spring-boot-starter-json:jar:2.1.3.RELEASE:compile
    +- com.fasterxml.jackson.core:jackson-databind:jar:2.9.8:compile
      +- com.fasterxml.jackson.core:jackson-annotations:jar:2.9.0:compile
      \- com.fasterxml.jackson.core:jackson-core:jar:2.9.8:compile
    +- com.fasterxml.jackson.datatype:jackson-datatype-jdk8:jar:2.9.8:compile
    +- com.fasterxml.jackson.datatype:jackson-datatype-jsr310:jar:2.9.8:compile
    \- com.fasterxml.jackson.module:jackson-module-parameter-names:jar:2.9.8:compile
  +- org.springframework.boot:spring-boot-starter-tomcat:jar:2.1.3.RELEASE:compile
    +- org.apache.tomcat.embed:tomcat-embed-core:jar:9.0.16:compile
    +- org.apache.tomcat.embed:tomcat-embed-el:jar:9.0.16:compile
    \- org.apache.tomcat.embed:tomcat-embed-websocket:jar:9.0.16:compile
  +- org.hibernate.validator:hibernate-validator:jar:6.0.14.Final:compile
    +- javax.validation:validation-api:jar:2.0.1.Final:compile
    +- org.jboss.logging:jboss-logging:jar:3.3.2.Final:compile
    \- com.fasterxml:classmate:jar:1.4.0:compile
  +- org.springframework:spring-web:jar:5.1.5.RELEASE:compile
    \- org.springframework:spring-beans:jar:5.1.5.RELEASE:compile
  \- org.springframework:spring-webmvc:jar:5.1.5.RELEASE:compile
    +- org.springframework:spring-aop:jar:5.1.5.RELEASE:compile
    +- org.springframework:spring-context:jar:5.1.5.RELEASE:compile
    \- org.springframework:spring-expression:jar:5.1.5.RELEASE:compile
```





Starter Projects

[spring-boot](#) / [spring-boot-project](#) / [spring-boot-starters](#) /

[Create new file](#)

[Upload files](#)

[Find file](#)

[History](#)



spring-operator and wilkinsona Use HTTPS for external links in XML files [...](#)

Latest commit 00ab303 a day ago

..		
spring-boot-starter-activemq	Merge branch '2.1.x'	2 days ago
spring-boot-starter-actuator	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-amqp	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-aop	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-artemis	Merge branch '2.1.x'	2 days ago
spring-boot-starter-batch	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-cache	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-cloud-connectors	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-data-cassandra-re......	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-data-cassandra	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-data-couchbase-re......	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-data-couchbase	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-data-elasticsearch	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-data-jdbc	Update build and setup configuration to use HTTPS	2 days ago
spring-boot-starter-data-jpa	Merge branch '2.1.x'	2 days ago
spring-boot-starter-data-ldap	Merge branch '2.0.x' into 2.1.x	2 days ago
spring-boot-starter-data-mongodb-reac......	Merge branch '2.0.x' into 2.1.x	2 days ago



Automatic Restart

- any entry on the classpath
- NOT – static resources & templates

Default Configs

- Cache is disabled
- Log level DEBUG für “web“

LiveReload

- Triggers a browser refresh

Dev Tools



Service URL ▼

Frequently Used

Web Websocket

Available: Selected:

dev X

▼ Core X Web

DevTools

```
<dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-devtools</artifactId>
    <scope>runtime</scope>
</dependency>
```



Exercises 16 – 19

<https://github.com/Michaeli71/ADC BOOTCAMP SPRING>





Persistence and Spring Data



COMING
Soon

A black rectangular box with a white spotlight illuminating the word "COMING". The word "Soon" is written in a cursive, italicized font below it.



Questions?

More info / sources



- **Spring Tutorials**
 - https://www.tutorialspoint.com/spring_boot/index.htm
 - <https://www.javatpoint.com/spring-boot-tutorial>
-



Thank You