



# Spring Boot Intro

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# Speaker Intro



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- ~8 ¼ Jahre SSE bei Heidelberger Druckmaschinen AG in Kiel
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Kurse: Bitte sprecht mich an!





# Einführung in Spring Boot

# Major Spring Projects

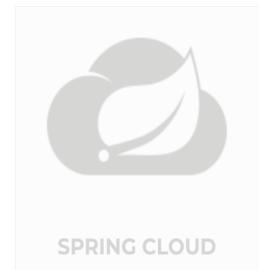
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SPRING FRAMEWORK



SPRING BOOT



SPRING CLOUD



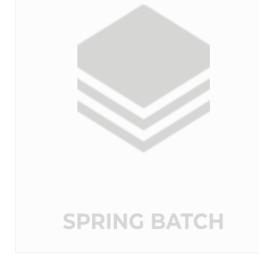
SPRING DATA



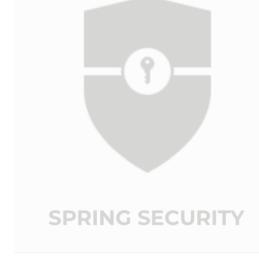
SPRING CLOUD DATA  
FLOW



SPRING INTEGRATION



SPRING BATCH



SPRING SECURITY



- RAD – Rapid Application Development
  - Leichte Integration wichtiger Features Web, Security, DB
  - Vordefinierte Abhängigkeiten, die (wirklich) zueinander passen
  - Weniger Konfiguration, kein XML
  - Einfach zu erstellen und auszuführen (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	👎	👎	👍	👍	👍	👍	👍

# WebApp in Spring Framework (The hard way)



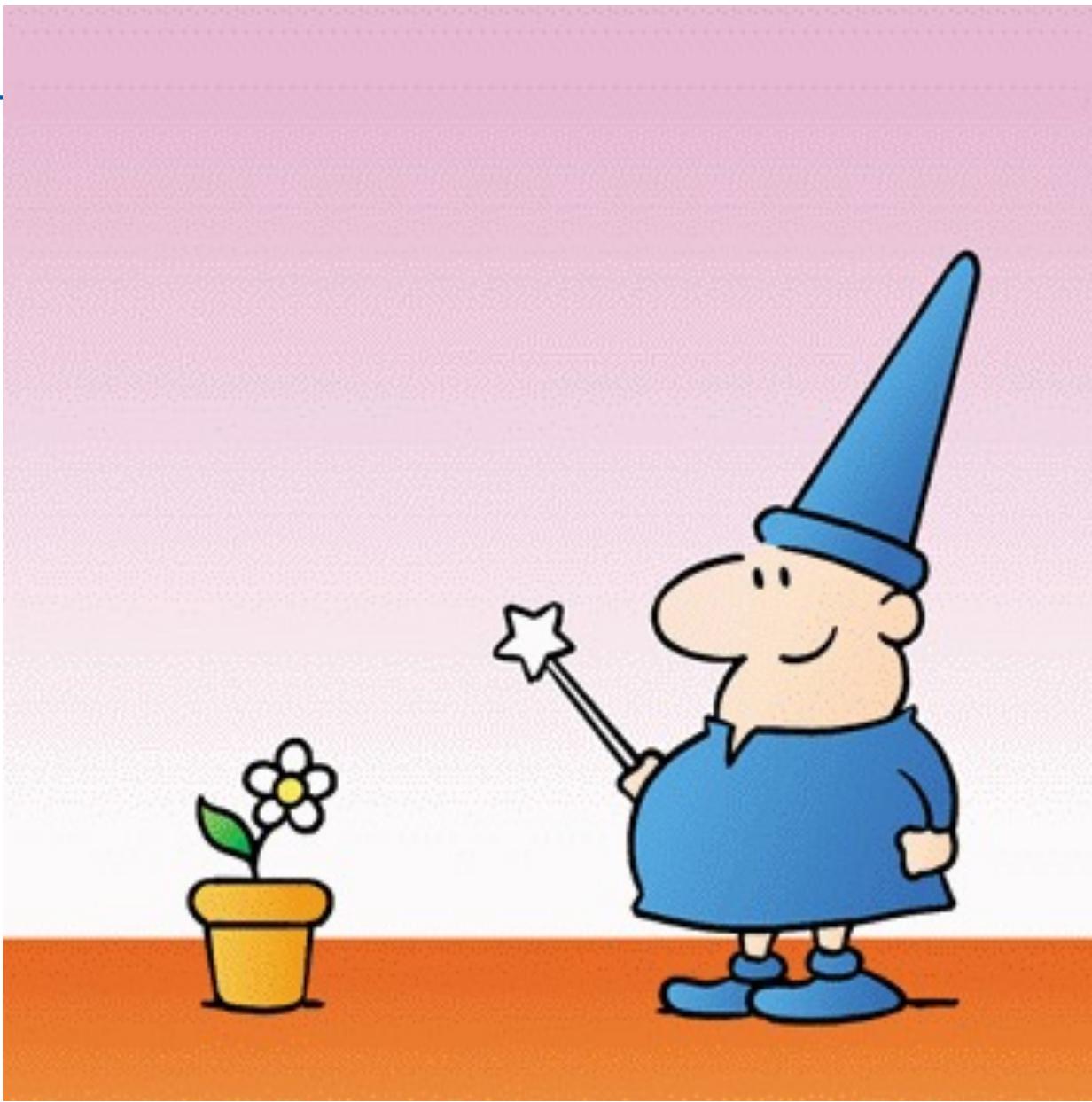
```
public class WebInitializer implements WebApplicationInitializer {  
  
    @Override  
    public void onStartup(ServletContext servletContext) {  
        //configure dispatcher servlet  
    }  
}
```

```
@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  
    }
```







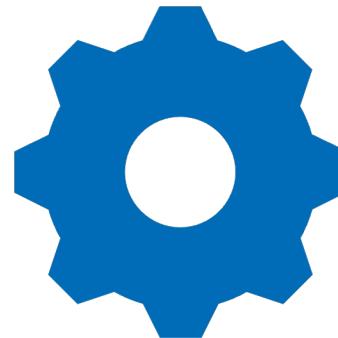
```
@SpringBootApplication  
public class App {  
  
    public static void main(String[] args) {  
        SpringApplication.run(App.class, args);  
    }  
  
}
```

# @SpringBootApplication



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

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



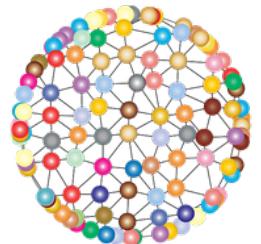
Configures beans automatically  
> 100 Autoconfigurations available

## Convention over Configuration – Autoconfiguration



Scans the classpath for dependencies and configures automatically





**Wie legen wir los?**



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# Nutze den Spring Initializr

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



 **spring® initializr**

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**Project**  Maven Project  Gradle Project      **Language**  Java  Kotlin  Groovy

**Spring Boot**  2.6.0 (SNAPSHOT)  2.6.0 (M3)  2.5.6 (SNAPSHOT)  2.5.5  
 2.4.12 (SNAPSHOT)  2.4.11

**Project Metadata**

Group	com.example
Artifact	demo
Name	demo
Description	Demo project for Spring Boot
Package name	com.example.demo
Packaging	<input checked="" type="radio"/> Jar <input type="radio"/> War
Java	<input type="radio"/> 17 <input checked="" type="radio"/> 11 <input type="radio"/> 8

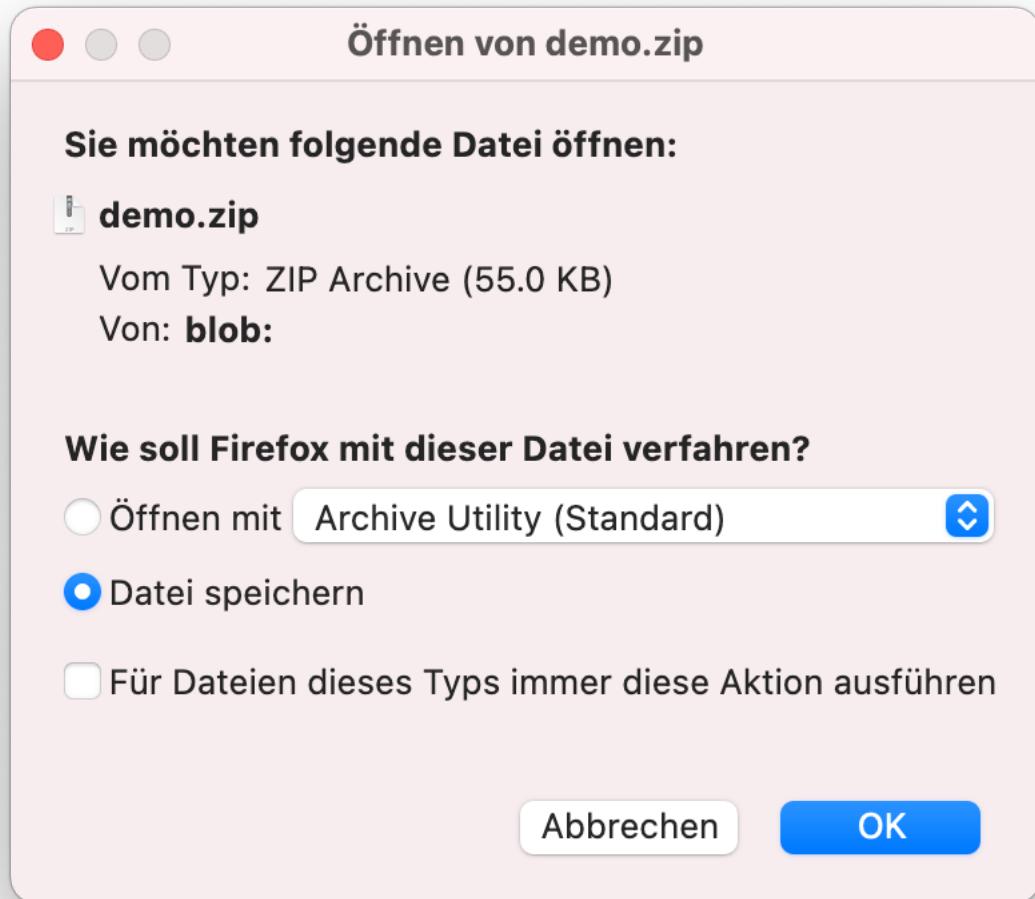
**Dependencies** [ADD DEPENDENCIES... ⌘ + B](#)

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
9-     public static void main(String[] args) {
10         SpringApplication.run(DemoApplication.class, args);
11     }
12
13 }
14
```

# Applikation starten

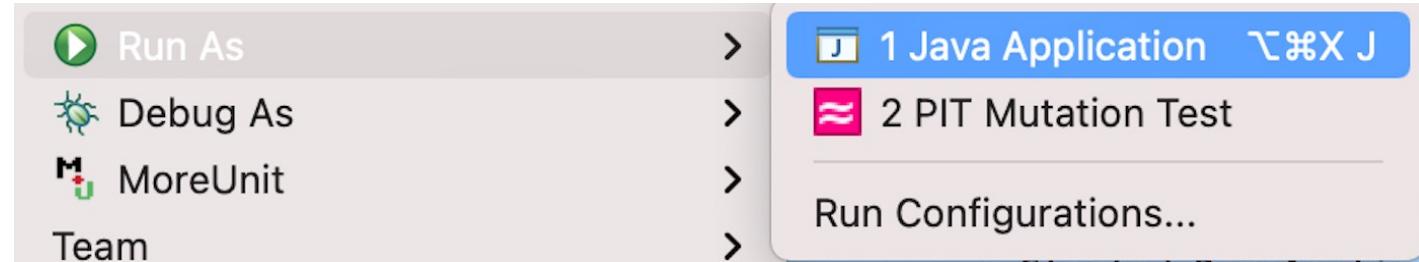


## Maven

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

```
2021-09-28 09:40:15.254 INFO 89058 --- [        main] com.example.demo.DemoApplication
```

```
2021-09-28 09:40:16.138 INFO 89058 --- [        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>2.5.5</version>
</dependency>

<dependency>
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-starter-test</artifactId>
<version>2.5.5</version>
<scope>test</scope>
</dependency>

<dependency>
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-starter-web</artifactId>
<version>2.5.5</version>
</dependency>
```

---



---

**Erstelle ein Demo Project mit 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 – einfache Filterung

```
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 mit CommandLineRunner // Alle Beans auflisten

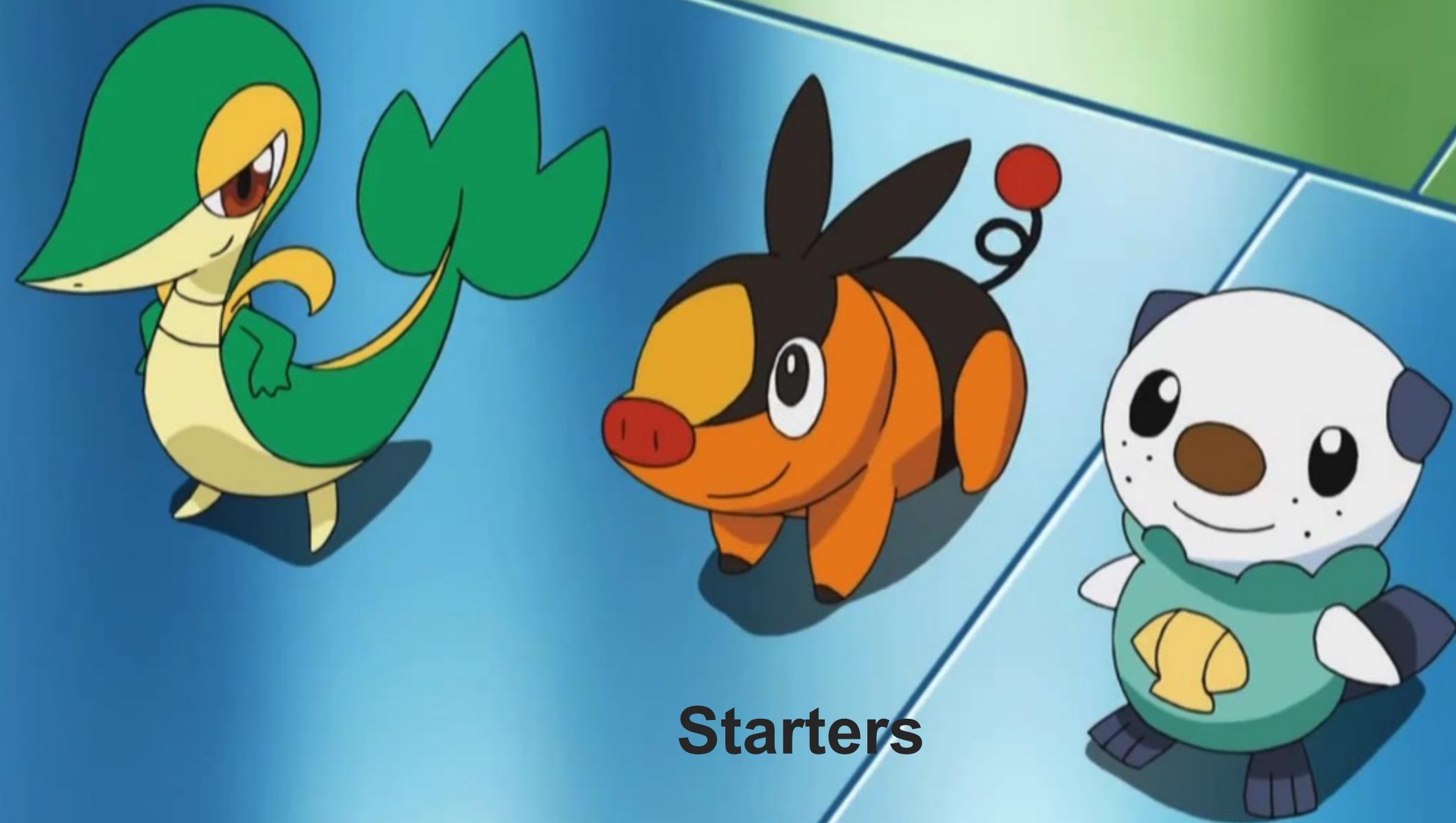


```
@SpringBootApplication
public class ExampleSpringBootApp {

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

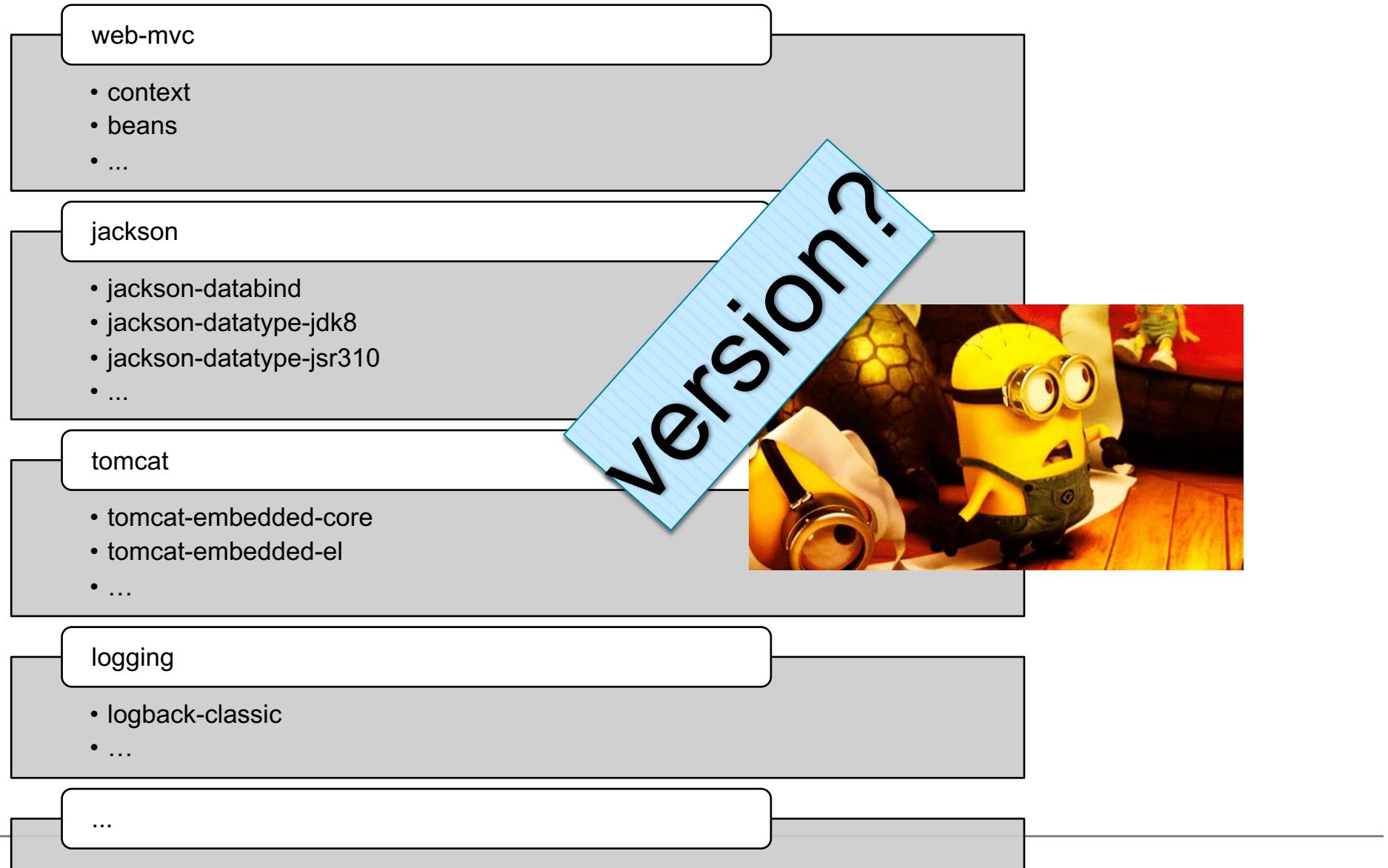
    @Bean
    public CommandLineRunner commandLineRunner(ApplicationContext ctx) {
        return args -> { inspectSpring(ctx); };
    }

    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

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

X

▼ Core

DevTools

X Web

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



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# Exercises 16 – 19

[https://github.com/Michaeli71/Spring\\_ Intro \\_3d](https://github.com/Michaeli71/Spring_ Intro _3d)





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# Persistenz und Spring Data



COMING  
*Soon*



# Questions?

## Weitere Infos / Quellen

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- **Spring Tutorials**

- [https://www.tutorialspoint.com/spring\\_boot/index.htm](https://www.tutorialspoint.com/spring_boot/index.htm)
- <https://www.javatpoint.com/spring-boot-tutorial>



# Thank You