Angular  Spring Boot

Let them get married

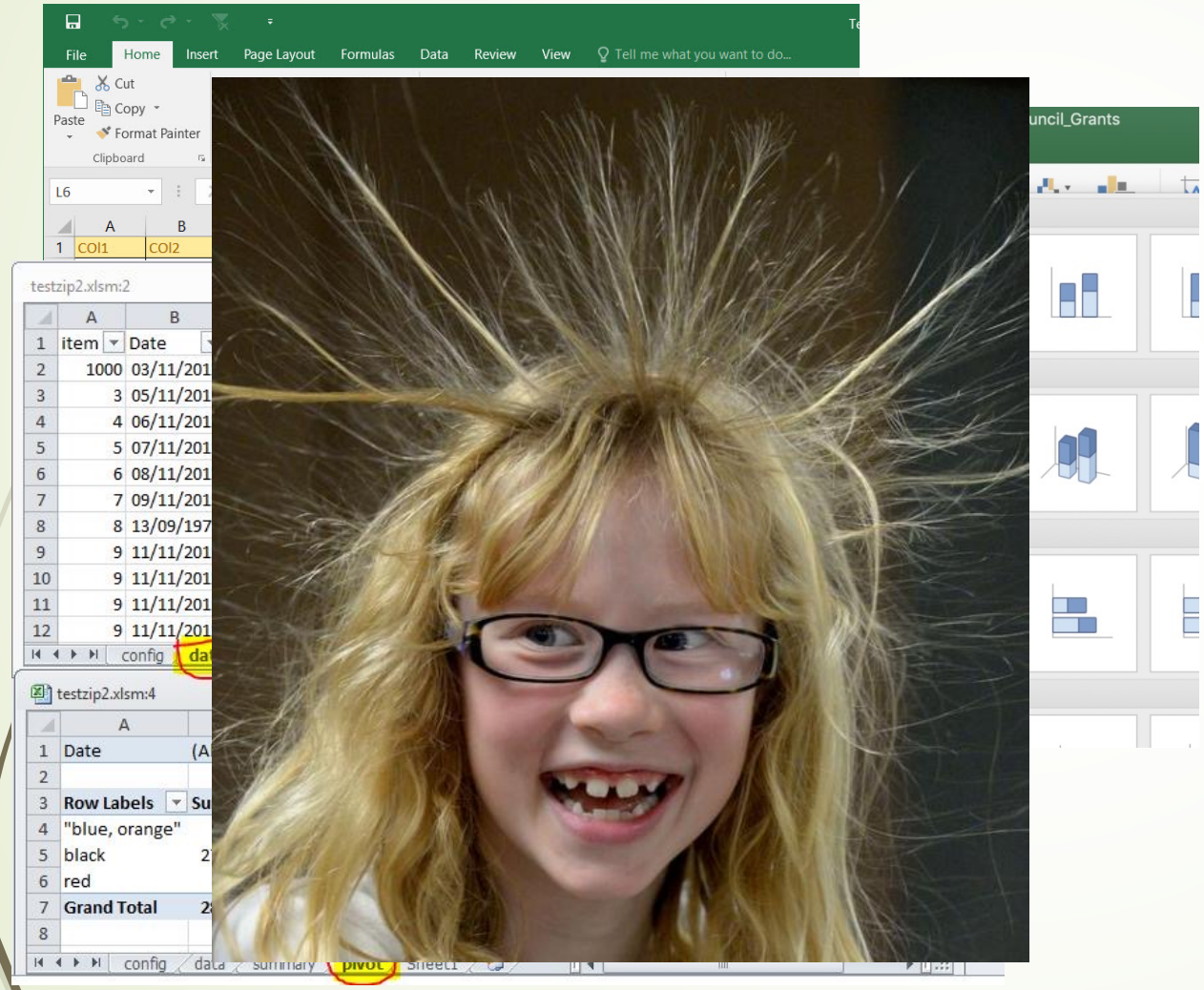
Agenda

- Need of coupled Deployments
- Angular Deployment
- Behaviour of `<base>`
- Thymeleaf
- Webjars
- Angular + Maven
- Configuration of WebMvcConfigurer
- Configuration of WebFluxConfigurer
- Spring Boot 3 changes
- Reverse Proxy Configuration

About me

- Age: 47
- with adesso Austria since February 2023
- married, 2 Children
- passionate Nerd
- Cooking, playing Computer Games, Backgammon
- Clean-Code, Open Source, Java, Spring Boot, Angular, DevOp

Need of coupled Deployments



- many small Excel Files
- shared across different Departments
- different Versions of Excel Files
- different Data within Excel Files
- different Functionalities of shared Excel Files

- common Solution:
  - many small Web-Applications
  - in the beginning small Requirements
  - Requirements tend to raise across Time and Budget

Prerequisites

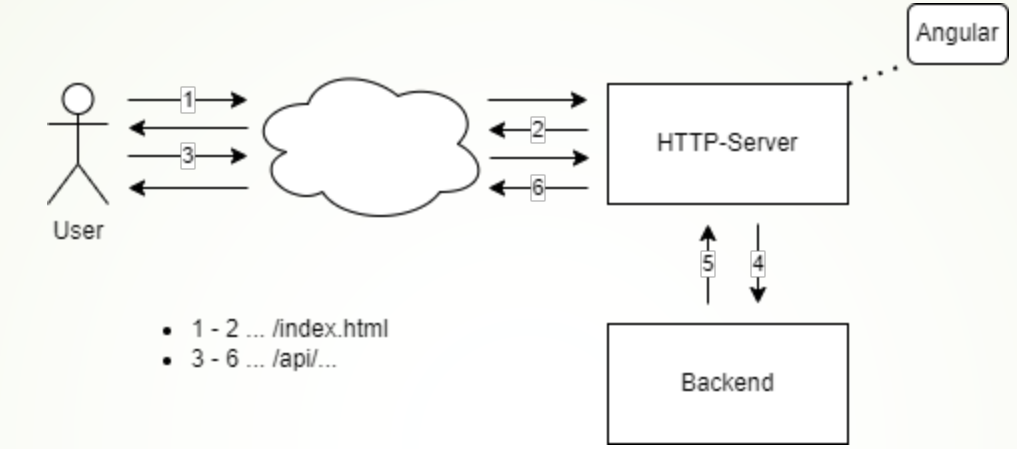
- Spring Boot 2.5+ (Example tested with Spring Boot 2.7)
- Java 8

  or
- Spring Boot 3.0.2+
- Java 17

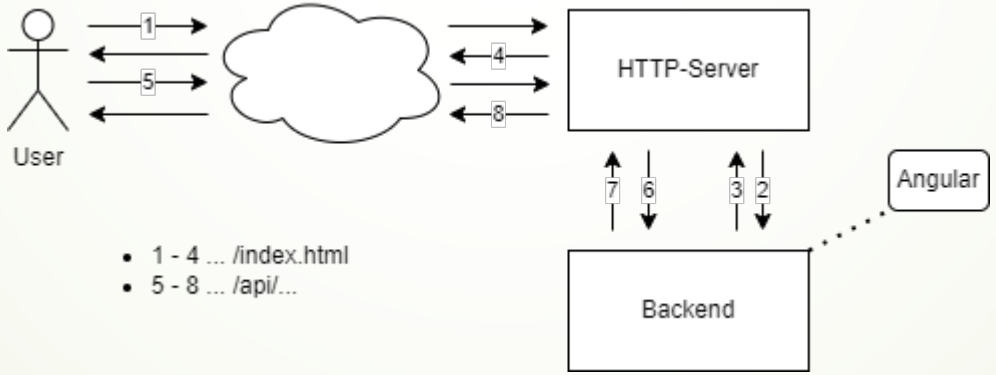
- Angular
  - any Version since Version 2
  - depends on the dist File Pattern
- nodeJS and npm for local Development

- Apache Maven 3.5+

Angular Deployment



- 1 - 2 ... /index.html
- 3 - 6 ... /api/...



- 1 - 4 ... /index.html
- 5 - 8 ... /api/...

Angular Deployment

- nginx

```
server {
  server_name some.example.com;

  root /path/to/angular/files;
  location / {
    try_files $uri $uri/ /index.html;
  }
}
```

- Apache

```
<VirtualHost *:80>
  ServerName some.example.com

  DocumentRoot "path/to/angular/files"
  <Directory "path/to/angular/files">
    RewriteEngine On
    RewriteCond %{REQUEST_FILENAME} !-f
    RewriteCond %{REQUEST_FILENAME} !-d
    RewriteRule ^ /index.html [L]
  </Directory>
</VirtualHost>
```

Routed apps must fall back to index.html

Behaviour of **<base>**

- without **<base>**
- https://example.com/path/to/application/route/subroute
  - + api/v1/some-path
  - https://example.com/path/to/application/route/subroute/api/v1/some-path

- with **<base href="/path/to/application/">**
- Caution of the trailing Slash – this is necessary !!!
- https://example.com/path/to/application/route/subroute
  - + api/v1/some-path
  - https://example.com/path/to/application/api/v1/some-path

Thymeleaf

- https://thymeleaf.org
- „Thymeleaf is a modern server-side Java template engine for both web and standalone environments“.

- **Idea: index.html of the Angular App as a Thymeleaf-Template**
- Advantages:
  - dynamic Resolution of **<base href="…">**
  - Include Fonts, Icons, … as a Webjar
- Spring Boot Configuration

```
# Caution: the trailing / is needed by Thymeleaf
spring.thymeleaf.prefix=classpath:/META-INF/resources/frontend/
```

Webjars

- https://webjars.org
- „WebJars are client-side libraries (e.g. jQuery & Bootstrap) packaged into JAR (Java Archive) files.
- Prefix: /META-INF/resources/webjars

- **Idea: include the Angular-App as a Webjar**
- Prefix: /META-INF/resources/frontend

Angular + Maven

- change the Output-Path in angular.json

```
"architect": {
  "build": {
    "builder": "@angular-devkit/build-angular:browser",
    "options": {
      "outputPath": "target/classes/META-INF/resources/frontend"
    }
  }
}
```

- use frontend-maven-plugin
  - https://github.com/eirslett/frontend-maven-plugin

```
<properties>
  <maven.deploy.skip>true</maven.deploy.skip>
  <node.version>v18.12.1</node.version>
  <npm.version>9.1.2</npm.version>
</properties>

<plugin>
  <groupId>com.github.eirslett</groupId>
  <artifactId>frontend-maven-plugin</target>
  …
</plugin>
```

Configuration of WebMvcConfigurer

- Demo Time

Configuration of WebFluxConfigurer

- Demo Time

Spring Boot 3 changes

- native Images
  - include Files is possible but needs extra Work (index.html, favicon.ico, …)
- changed Package Names
  - javax.validation → jakarta.validation
  - javax.annotation → jakarta.annotation
  - javax.* → jakarta.* ?
- Bugs within WebMvcConfigurer / WebFluxConfigurer
  - Ticket #29712: ResourceHandlers cannot resolve static resources with .* wildcard pattern
    - solved with Spring Boot 3.0.2 → confirmed
  - Ticket #29739: ResourceHandlers cannot resolve static resources without wildcard patterns
    - solved by changed Implementation as described in Ticket
    - will be eventually fixed in Spring Framework 6.0.5

Reverse Proxy Configuration

- Spring Boot Configuration

```
server.forwarded-header-strategy=framework
```

- nginx.conf

```
location /path/to/angular/ {
  proxy_pass http://application:8080/;
  proxy_set_header Host $host;
  proxy_set_header X-Real-IP $remote_addr;
  proxy_set_header X-Forwarded-For $host;
  proxy_set_header X-Forwarded-Proto $scheme;
  proxy_set_header X-Forwarded-Port 8080;
  proxy_set_header X-Forwarded-Prefix /path/to/angular;
}
```

Summary

- Angular Deployment
- Behaviour of **<base>**
- Thymeleaf
- Webjars
- build Angular with Maven
- WebMvcConfiguration
- WebFluxConfiguration
- Spring Boot 3 changes
- Reverse Proxy Configuration

Example Code & Contact

- Example Code:
  - https://github.com/mufasa1976/calcmaster
- Runnable Example:
  - https://calcmaster.coolstuff.software
- Contact
  - https://github.com/mufasa1976
  - https://www.linkedin.com/in/erich-stadler-6a6518199

Questions & Answers

And they lived happily ever after

Thank you for your Attention