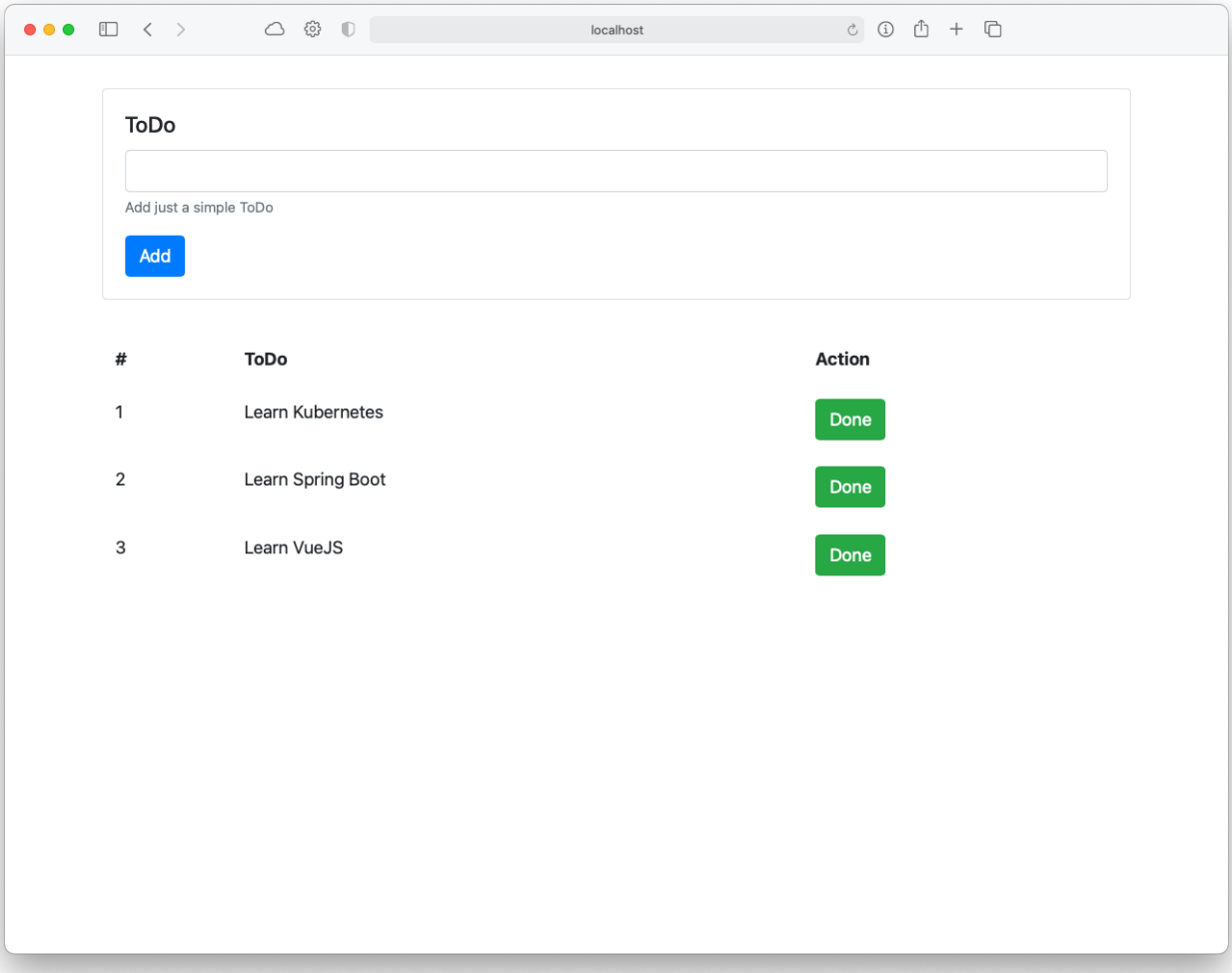
Simple ToDo App with VueJS and Spring Boot

VueJS UI

We are going to create a UI for the ToDo Service



1. Create the Project and Insatll Axios

```
vue init webpack todo-ui
cd todo-ui
npm install axios
```

2. Add the Bootstrap CSS to the `index.html` file.

index.html

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width,initial-scale=1.0">
    <title>ToDo UI</title>


    <link rel="stylesheet" href=
"https://cdn.jsdelivr.net/npm/bootstrap@4.6.0/dist/css/bootstrap.min.css"
    integrity="sha384-
B0vP5xmATw1+K9KRQjQERJvTumQW0nPEzvF6L/Z6nronJ3oUOFUFpCjEUQouq2+l"
    crossorigin="anonymous">


  </head>
  <body>
    <div id="app"></div>
  </body>
</html>
```

3. Create the `ToDo.vue` file with the following content:

src/components/ToDo.vue

```
<template>
  <div class="row">
    <div class="col-12">
      <div class="card">
      <div class="card-body">
        <h5 class="card-title">ToDo</h5>
        <form @submit="checkForm">
            <div class="form-group">
                <input type="text" class="form-control" @keyup.enter.prevent=
"checkForm" v-model="todo">
                <small class="form-text text-muted">Add just a simple ToDo</small>
            </div>
            <button class="btn btn-primary" type="submit">Add</button>
        </form>
      </div>
  </div>
</div>

  </div>
</template>

<script>

import { EventBus } from "../utils/event-bus.js";

export default {
  name: 'ToDo',
  data () {
    return {
      todo: ''
    }
  },
  methods: {
    checkForm: function(e){
      EventBus.$emit("new-todo", { description: this.todo });
    }
  }
}
</script>


<style>

</style>
```

4. Create the `ToDoList.vue` file with the following content:

src/components/ToDo.vue

```
<template>
  <div class="row todo-list">
    <div class="col-12">
      <table class="table table-borderless table-hover">
        <thead>
          <tr>
            <th scope="col">#</th>
            <th scope="col">ToDo</th>
            <th scope="col">Action</th>
          </tr>
        </thead>
        <tbody>

              <tr v-for="(todo, index) in todos" :key="index">
                  <td>{{ index + 1}}</td>
                  <td>{{ todo.description }}</td>
                  <td>
                    <button class="btn btn-success" @click="doneToDo(todo.id,
$event)">Done</button>
                  </td>
              </tr>

        </tbody>
      </table>
    </div>
  </div>
</template>

<script>

import axios from "axios"
import { EventBus } from "../utils/event-bus.js";


export default {
  name: "ToDoList",
  data: function() {
    return {
      todos: []
    }
  },
  mounted() {
    EventBus.$on("new-todo", todo => { this.newToDo(todo)});
  },
  created() {
    this.getToDos();
  },
  methods: {
    getToDos: function() {
        axios.get(process.env.ROOT_API)
          .then(response => this.todos = response.data);
```

```
    },

    newToDo: function(todo){
      axios.post(process.env.ROOT_API, todo)
          .then(response => this.todos.push(response.data));
    },

    doneToDo: function(id, event){
       axios.delete(process.env.ROOT_API + "/" + id)
          .then(response => console.log(response.data));
      event.preventDefault();
      this.todos = this.remove(id);
    },

    remove: function(value){
      return this.todos.filter(function(ele){
            return ele.id != value;
        });
    }

  }
}
</script>

<style>

.todo-list {
  margin-top: 30px;
}

</style>
```

5. Create the `event-bus.js` file with the following content:

   src/utils/event-bus.js

```
import Vue from 'vue';
export const EventBus = new Vue();
```

6. Add the `ROOT_API` variable to the `dev.env.js` and `prod.env.js`.

config/dev.env.js

```
'use strict'
const merge = require('webpack-merge')
const prodEnv = require('./prod.env')

module.exports = merge(prodEnv, {
  NODE_ENV: '"development"',
  ROOT_API: '"http://localhost:8081/todos"'
})
```

config/dev.env.js

```
'use strict'
module.exports = {
  NODE_ENV: '"production"',
  ROOT_API: '"http://todo/todos"'
}
```

7. Test you app with:

```
npm run dev
```

8. Create a `Dockerfile` witht eh following content

```
# build stage
FROM node:lts-alpine as build-stage
WORKDIR /app
COPY package*.json ./
RUN npm install
COPY . .
RUN npm run build

# production stage
FROM nginx:stable-alpine as production-stage
COPY --from=build-stage /app/dist /usr/share/nginx/html
EXPOSE 80
CMD ["nginx", "-g", "daemon off;"]
```

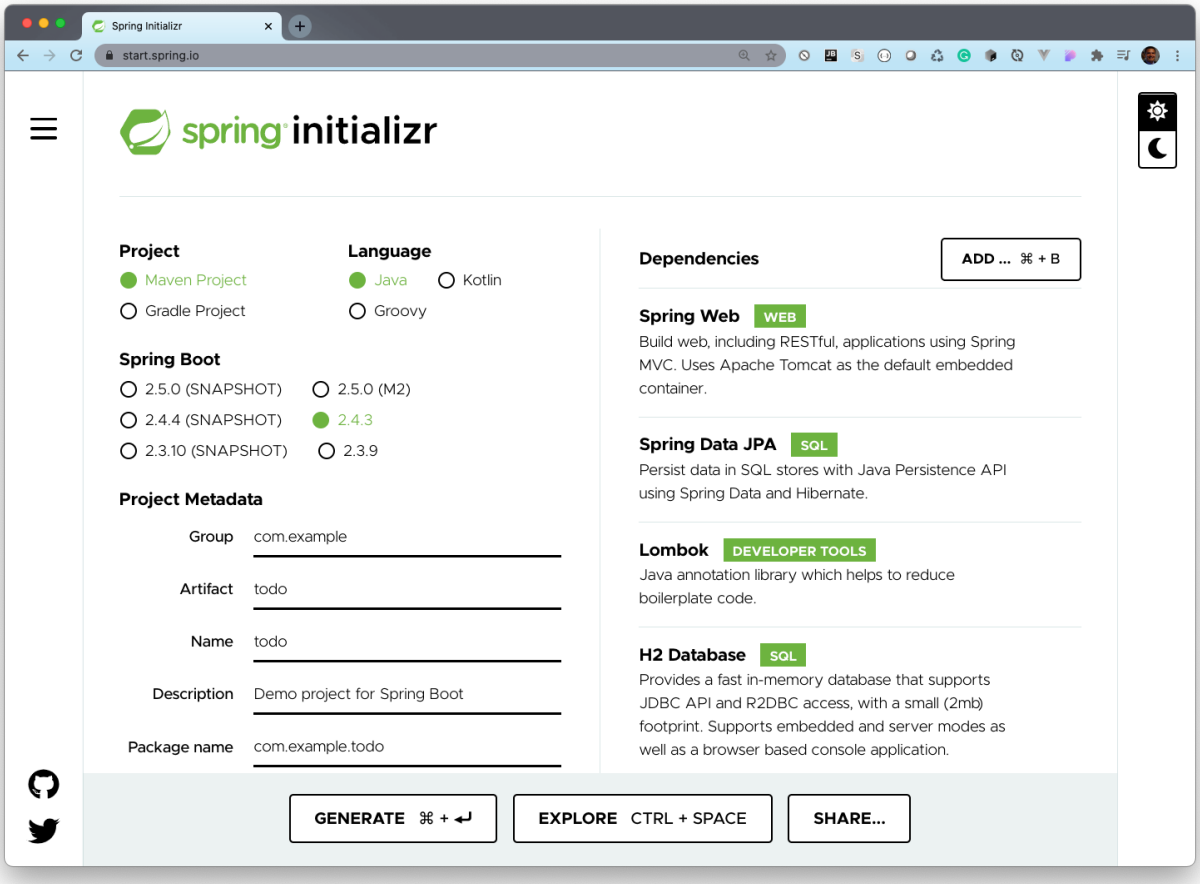
9. Build you image, test it and push it to your Registry.

```
docker build -t <your-id>>/todo-ui:v1 .
docker run -it -p 8080:80 --rm --name todo-ui <your-id>/todo-ui:v1
docker push <your-id>>/todo-ui:v1
docker tag <image-id> <your-id>>/todo-ui:latest
docker push <your-id>>/todo-ui:latest
```

Spring Boot

1. Go to https://start.spring.io/

   Add the following Dependencies: *Web*, *Data JPA*, *H2*, *Lombok*, *MySQL Driver*



2. Add the following classes/interface:

src/main/java/com/example/todo/ToDo.java

```
package com.example.todo;


import lombok.AllArgsConstructor;
import lombok.Data;
import lombok.NoArgsConstructor;
import org.hibernate.annotations.GenericGenerator;

import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.Id;
import javax.persistence.Table;

@NoArgsConstructor
@AllArgsConstructor
@Data
@Entity
@Table(name = "todo")
public class ToDo {

    @Id
    @GeneratedValue(generator = "uuid")
    @GenericGenerator(name = "uuid", strategy = "org.hibernate.id.UUIDGenerator")
    private String id;
    private String description;

}
```

src/main/java/com/example/todo/ToDoRepository.java

```
package com.example.todo;

import org.springframework.data.repository.CrudRepository;

public interface ToDoRepository extends CrudRepository<ToDo,String> {
}
```

src/main/java/com/example/todo/ToDoNotFoundException.java

```
package com.example.todo;

public class ToDoNotFoundException extends RuntimeException{

    public ToDoNotFoundException(){
        super("ToDo provided was not found");
    }

    public ToDoNotFoundException(String id){
        super(String.format("Todo with id: %s was not found",id));
    }
}
```

src/main/java/com/example/todo/ToDoController.java

```
package com.example.todo;

import lombok.RequiredArgsConstructor;
import org.springframework.web.HttpRequestMethodNotSupportedException;
import org.springframework.web.bind.annotation.*;
import org.springframework.web.servlet.mvc.support.DefaultHandlerExceptionResolver;

import javax.servlet.http.HttpServletRequest;
import java.util.HashMap;
import java.util.Map;
import java.util.stream.Collectors;
import java.util.stream.StreamSupport;

@CrossOrigin("*")
@RequiredArgsConstructor
@RequestMapping("/todos")
@RestController
public class ToDoController {

    private final ToDoRepository toDoRepository;

    @GetMapping
    public Iterable<ToDo> getAll(){
        return this.toDoRepository.findAll();
    }

    @GetMapping("/{id}")
    public ToDo getById(@PathVariable String id){
        return this.toDoRepository.findById(id).orElseThrow(() ->new
ToDoNotFoundException(id));
    }

    @PostMapping
```

```
    public ToDo newToDo(@RequestBody ToDo toDo){
        return this.toDoRepository.save(toDo);
    }

    @DeleteMapping("/{id}")
    public ToDo deleteById(@PathVariable String id){
        ToDo toDo = this.toDoRepository.findById(id).orElseThrow(() ->new
ToDoNotFoundException(id));
        this.toDoRepository.deleteById(toDo.getId());
        return toDo;
    }

    @ExceptionHandler({ToDoNotFoundException.class})
    public Map<String, String> handleError(HttpServletRequest req, Exception ex){
        Map<String,String> result = new HashMap<>();
        result.put("message",ex.getMessage());
        return result;
    }

}
```

3. Add the `data.sql` for initial data.

   src/main/resources/data.sql

```
insert into TODO (id,description)
values ('1f31285e-2a4d-4d2c-ba09-9718fc1f3e4c', 'Learn Kubernetes');
insert into TODO (id,description)
values ('aa6d0450-fc8e-4d57-a47c-a7317dac60fc', 'Learn Spring Boot');
insert into TODO (id,description)
values ('bd18b3b8-a803-4d5f-8b97-d1a2298fb563', 'Learn VueJS');
```

4. Add the following content to the `application.properties`

src/main/resources/application.properties

```
# Spring
spring.application.name=todo

# MVC
server.error.whitelabel.enabled=false

# Server
server.port=${PORT:8081}

# H2
spring.h2.console.enabled=true

# Info
info.app.name=${spring.application.name}
info.app.developer.name=Felipe Gutierrez
info.app.developer.email=felipeg@email.com

# Data
spring.jpa.generate-ddl=true
spring.jpa.hibernate.ddl-auto=update
spring.jpa.show-sql=true
```

5. Add the `index.html` and `404.html pages`

src/main/resources/static/index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>ToDo Service</title>
    <link rel="stylesheet" href=
"https://cdn.jsdelivr.net/npm/bootstrap@4.6.0/dist/css/bootstrap.min.css"
integrity="sha384-B0vP5xmATw1+K9KRQjQERJvTumQW0nPEzvF6L/Z6nronJ3oUOFUFpCjEUQouq2+l"
crossorigin="anonymous">
    <style>
        body {
            font-family: Avenir SansSerif Verdana;
        }
    </style>
</head>
<body>
<div class="container">
    <div class=""row>
        <div class="col-12">
            <div class="card" style="top: 10px;">
                <div class="card-header">
                    <h1>Welcome</h1>
                </div>
                <div class="card-body">
                    <h5 class="card-title">ToDo Service</h5>
                    <p class="card-text">Everything about ToDos.</p>
                    <a class="btn btn-primary" href="/todos">API</a>
                </div>
            </div>
        </div>
    </div>
</div>
</body>
</html>
```

src/main/resources/static/error/404.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>ToDo Service</title>
    <link rel="stylesheet" href=
"https://cdn.jsdelivr.net/npm/bootstrap@4.6.0/dist/css/bootstrap.min.css"
integrity="sha384-B0vP5xmATw1+K9KRQjQERJvTumQW0nPEzvF6L/Z6nronJ3oUOFUFpCjEUQouq2+l"
crossorigin="anonymous">
    <style>
        body {
            font-family: Avenir SansSerif Verdana;
        }
    </style>
</head>
<body>
<div class="container">
    <div class=""row>
        <div class="col-12">
            <div class="card" style="top: 10px;">
                <div class="card-body">
                    <div class="alert alert-danger" role="alert">
                        There was an Error!
                    </div>
                    <h5 class="card-title">ToDo Service</h5>
                    <p class="card-text">Everything about ToDos.</p>
                    <a class="btn btn-primary" href="/todos">API</a>
                </div>
            </div>
        </div>
    </div>
</div>
</body>
</html>
```

6. Test you app with:

```
./mvnw spring-boot:run
```

7. Create a Docker image, test and push it to the registry.

```
./mvnw spring-boot:build-image -Dspring-boot.build-image.imageName=<your
-id>/todo:v1
docker run -it -p 8081:8081 --rm --name todo <your-id>/todo:v1
docker push <your-id>>/todo:v1
docker tag <image-id> <your-id>>/todo:latest
docker push <your-id>>/todo:latest
```

Deploy to OpenShift

1. Open you account en IBM Cloud: https://ibm.biz/BdfsdZ
2. Go to your cluster.
3. Deploy the `ToDo` app (the backend) with the following: