

Hospital Management System (Mini - Project)

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Hospital-management-system

The Project uses:

1. Springboot
2. Maven
3. MongoDB
4. Swagger
5. Junit
6. Docker
7. GitHub
8. Postman

Dependencies

Dependencies used are:

1. spring-boot-starter-web
2. springdoc-openapi-ui
3. Junit
4. spring-boot-starter-test
5. spring-boot-starter-security
6. spring-security-test
7. spring-boot-starter-data-mongodb
8. commons-io

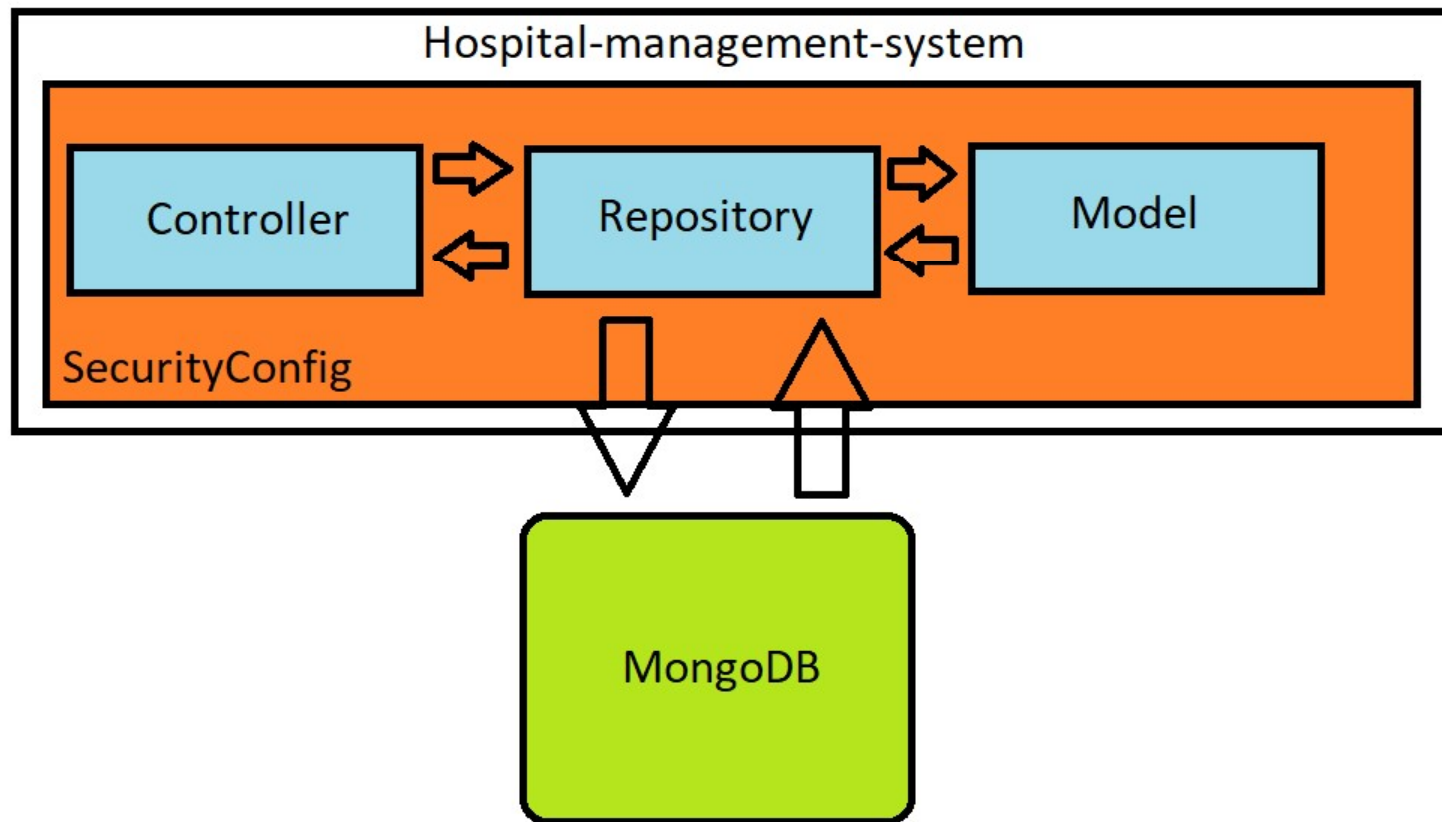
Architecture

The microservice has 3 controllers , DoctorController, PatientController and PrescriptionController.

These controllers communicate with 2 repositories namely AppointmentRepository and PrescriptionRepository.

The repositories further use Models - Appointment and Prescription to store data in MongoDB Database.

Architecture



Data Model / Classes used

Two classes were used , which are:

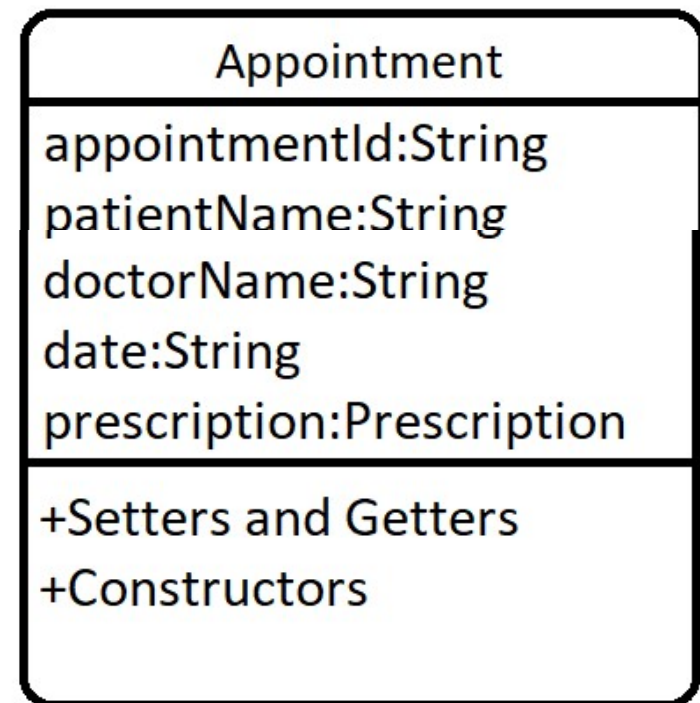
Appointment

Prescription

Appointment - Class

Attributes:

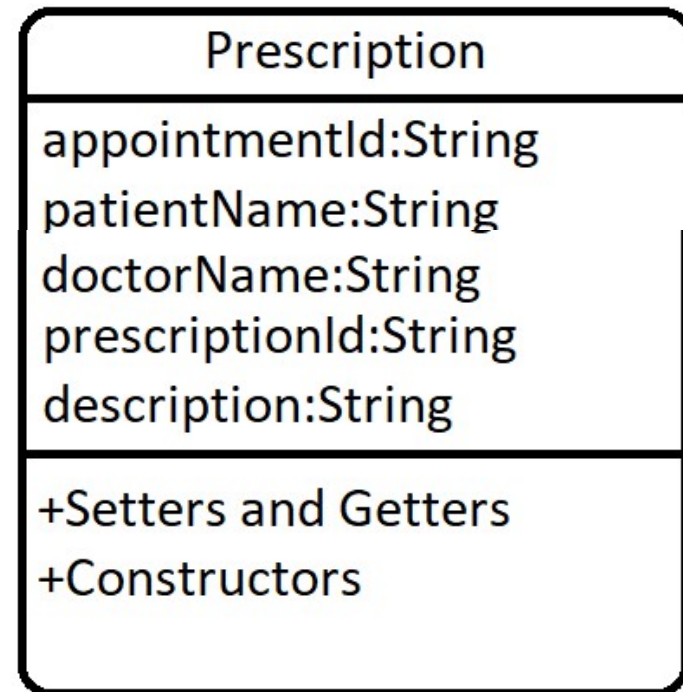
appointmentId
patientName
doctorName
date
prescription



Prescription - Class

Attributes:

prescriptionId
appointmentId
description
patientName
doctorName



Repository

This project uses 2 repositories, AppointmentRepository and PrescriptionRepository.

Each repository extends MongoRepository which provides all the necessary methods which help to create CRUD application.

Controllers

In total 3 controllers were used, namely:

- DoctorController
- PatientController
- PrescriptionController

Each controller has role-based access restriction, based on the SecurityConfig.java file.

DoctorController can be accessed by doctors only, similarly PatientController can be accessed by patients only and PrescriptionController can be accessed by users of both roles.

DoctorController

DoctorController is mapped with “/doctor” and has the following end points:

- “/doctorappointment” - which will receive GET requests along with request parameters. For ex-“
`http://localhost:8081/doctor/doctorappointment?doctorName=doctor1`”.
- “/save” – which will receive POST requests along with Appointment object in JSON format as body. For ex –
“`http://localhost:8081/doctor/save`” .

PatientController

PatientController is mapped with “/patient” and has the following end points:

- “/myappointment” - which will receive GET requests along with request parameters. For ex-“
`http://localhost:8081/patient/patientappointment?patientName=patient1`”.
- “/save” – which will receive POST requests along with Appointment object in JSON format as body. For ex –
`“http://localhost:8081/patient/save”` .

PrescriptionController

PrescriptionController has the following end points:

- "/viewprescription" - which will receive GET requests along with request parameters. For ex-"
`http://localhost:8081/saveprescription?patientName=patient1`".
- "/saveprescription" – which will receive POST requests along with Prescription object in JSON format as body. For ex – "`http://localhost:8081/saveprescription`".

Security

Configuration for security was added allowing only authorized users with appropriate roles to have access.

WebSecurityConfigurerAdapter is extended and roles to endpoints and users were created.

The Roles are as follows:

- | | |
|--------------------------|---------------------|
| • DOCTOR - doctor1 | PASSWORD - password |
| • PATIENT - patient1 | PASSWORD - password |
| • DOCTOR,PATIENT - user1 | PASSWORD - password |

Testing and Code Coverage

Test Cases were made for each mapping using Mockito and Junit and with code coverage:

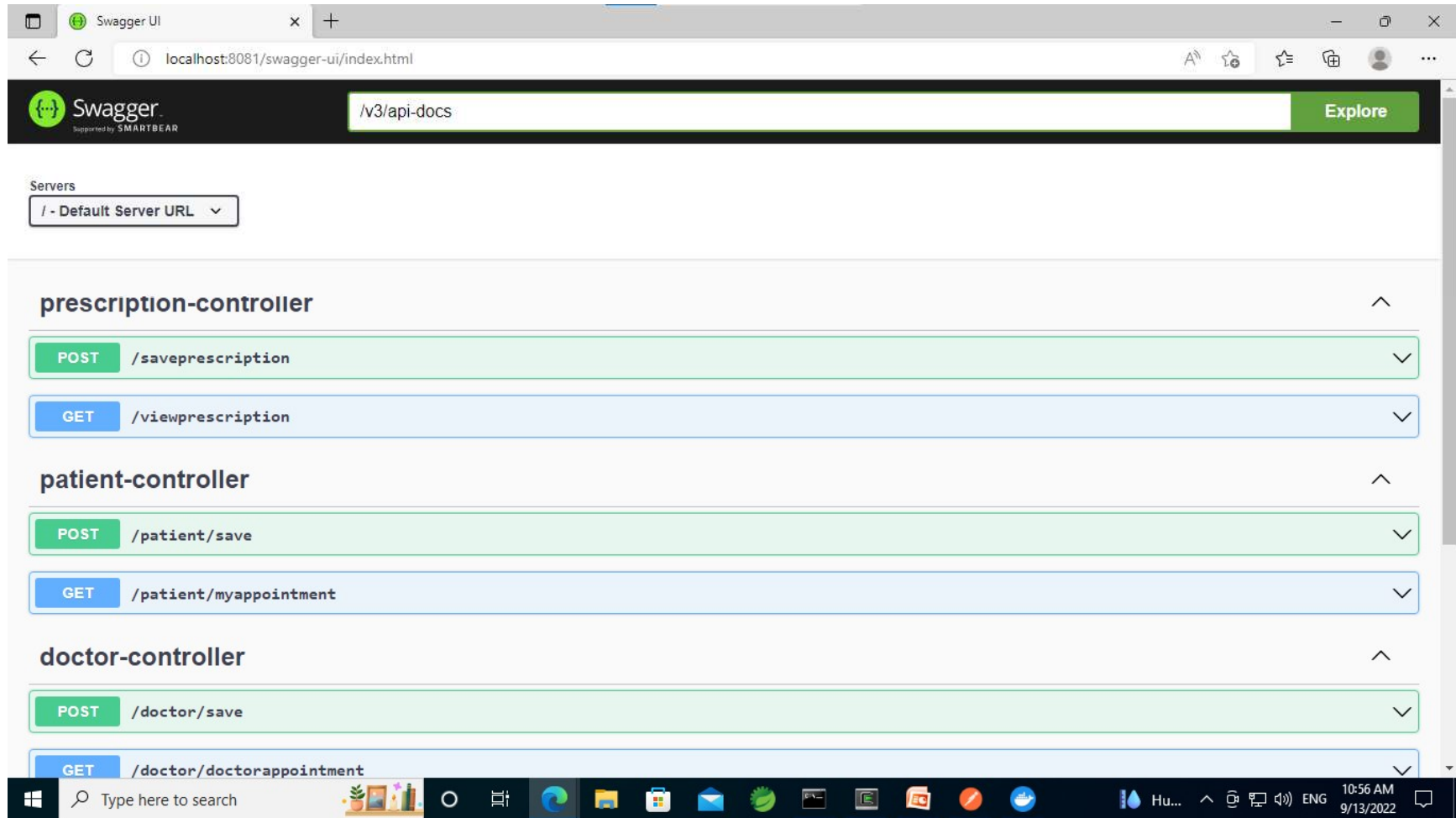
| | | |
|---------|---|------|
| Classes | - | 100% |
| Methods | - | 93% |
| Lines | - | 88% |

Documentation

Swagger is used for interactive API documentation of the microservice and its architecture.

It involves description of the classes and mappings used in the controllers along with execution and response monitoring of the mappings.

Swagger Screenshot



Swagger Screenshot

The screenshot displays the Swagger UI interface in a web browser. The address bar shows the URL `localhost:8081/swagger-ui/index.html#/patient-controller/getMyAppointments`. The page title is "Swagger UI".

Responses

Curl

```
curl -X 'GET' \
  'http://localhost:8081/patient/myappointment?patientName=darsh' \
  -H 'accept: */*'
```

Request URL

```
http://localhost:8081/patient/myappointment?patientName=darsh
```

Server response

Code **Details**

200

Response body

```
[
  {
    "appointmentId": "appointap4",
    "patientName": "darsh",
    "doctorName": "doctor2",
    "date": "05/09/2022",
    "prescription": {
      "prescriptionId": "presap3",
      "appointmentId": "appointap4",
      "description": "presc test",
      "patientName": "patient3",
      "doctorName": "doctor2"
    }
  },
  {
    "appointmentId": "appointap4",
    "patientName": "darsh",
    "doctorName": "doctor2",
    "date": "13/09/2022",
    "prescription": {
      "prescriptionId": "presap3",
      "appointmentId": "appointap4",
      "description": "presc test",
      "patientName": "patient3",
      "doctorName": "doctor2"
    }
  }
]
```

The bottom of the image shows the Windows taskbar with the search bar, task view button, and several application icons. The system tray on the right indicates a temperature of 24°C, system icons, and the date/time: 11:02 AM, 9/13/2022.

Dockerization

Dockerization is the process of packing, deploying and running applications using Docker containers. Docker is a tool that ships the application with all the necessary functionalities as one package.

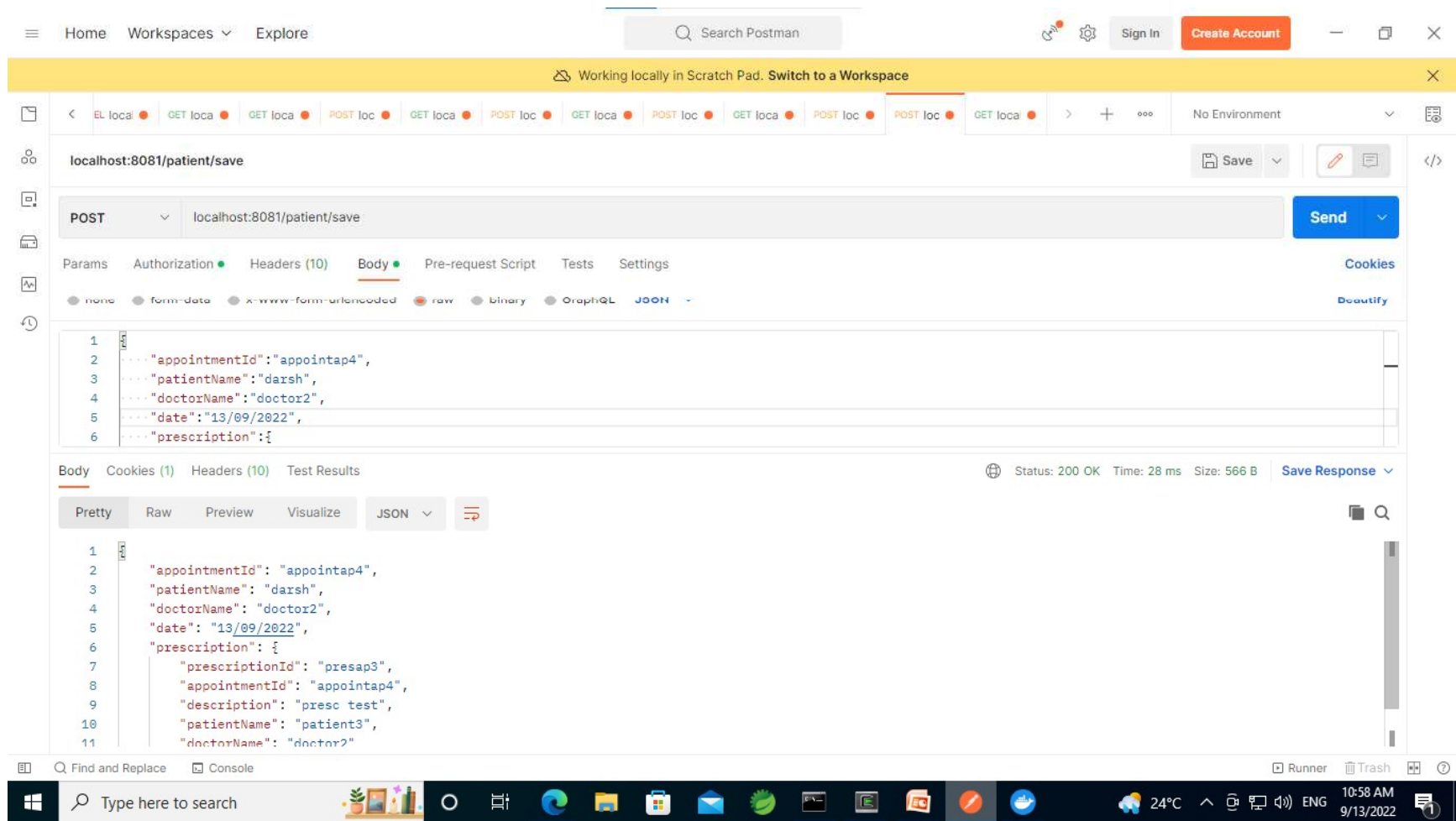
This is achieved by making a docker image of our springboot application and then by the help of docker compose, we run our containers(i.e. Application container and MongoDB container) on the same network.

Postman

Postman makes it easier to create, share, test and document APIs. With this we can create and save simple and complex HTTP/s requests and their responses.

We have also used the curl commands generated from Postman to test the functionality of the project through command line tools such as Cygwin and Command Prompt.

Postman Screenshot - POST



Postman Screenshot - GET

The screenshot displays the Postman interface for a GET request. The URL bar shows `localhost:8081/patient/myappointment?patientName=darsh`. The request is configured with the following parameters:

| KEY | VALUE | DESCRIPTION |
|---|-------|-------------|
| <input checked="" type="checkbox"/> patientName | darsh | |
| Key | Value | Description |

The response is shown in the 'Body' tab, displaying a JSON object in 'Pretty' format:

```
13  {
14    },
15    {
16      "appointmentId": "appointap4",
17      "patientName": "darsh",
18      "doctorName": "doctor2",
19      "date": "13/09/2022",
20      "prescription": {
21        "prescriptionId": "presap3",
22        "appointmentId": "appointap4",
23        "doctorName": "doctor2"
24      }
25    }
26  }
```

The status bar at the bottom indicates a successful response: Status: 200 OK, Time: 216 ms, Size: 812 B.

Thank You