GIS – Tutorial 3 – Frontend Development

University of Konstanz

1 **Submission Instructions**

Please provide **one** well-formatted **PDF** file with all your submissions on schedule (i.e. before the dead-line). Otherwise your submission will not be graded!

2 Background



TypeScript is an open-source language which builds on JavaScript, one of the world's most used tools, by adding static type definitions.

Due Date: 25.11.2022 08:00

For more information visit: https://www.typescriptlang.org/ For a tutorial visit: https://www.typescriptlang.org/docs/ handbook/typescript-from-scratch.html



Angular is an application design framework and development platform for creating efficient and sophisticated single-page apps.

For more information visit: https://angular.io/docs For a tutorial visit: https://angular.io/tutorial

2.1 Installation

This tutorial assumes that Angular will be run inside a Docker container. If you want to manually install it please visit the following URLs:

• Typescript: https://www.typescriptlang.org/download

• Angular: https://angular.io/guide/setup-local

Assignment № 2 Page 1 / 4

2.2 Useful commands for this assignment

During this tutorial we will often start & stop Docker containers, the following commands will be often used or might be helpful:

• docker run [OPTIONS] IMAGE

```
https://docs.docker.com/engine/reference/run/
Runs the IMAGE Docker container with the specified [OPTIONS]
```

docker ps

```
https://docs.docker.com/engine/reference/commandline/ps/
Shows a list of currently running Docker containers
```

• docker stop [OPTIONS] CONTAINER

```
https://docs.docker.com/engine/reference/run/
Stops the [CONTAINER]. You can identify the container id or name using docker ps.
```

• docker system prune -a

```
https://docs.docker.com/engine/reference/commandline/system_prune/ Remove all unused containers, networks, images, etc.
```

Later in the tutorial we will also use docker-compose, here the following commands are the most used:

• docker-compose up

```
https://docs.docker.com/compose/reference/up/
Builds, (re)creates, starts, and attaches to containers for a service.
```

• docker-compose down

```
https://docs.docker.com/compose/reference/down/
```

Stops containers and removes containers, networks, volumes, and images created by up.

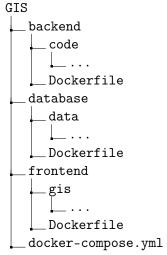
Assignment № 2 Page 2 / 4

3 Homework

Task 1: Setup 0 Points

This tutorial you will be provided with a full stack containing a database, backend as well as the frontend.

1. Download the GIS.zip file from assignment 3 in ILIAS and unzip it. The directory structure should look like this:



- 2. Run the project using the command docker-compose up
- 3. Visit the webpage localhost: 4200 to check if the project is running correctly.

Submission: State the tag, image id and size of your modified Angular container. You can check this information with the command *docker images*.

Assignment № 2 Page 3 / 4

Task 2: Bringing it all together

15 Points

Your task is to extend the given framework to load amenities of a user-specified type dynamically and show the location, as well as additional information, as markers in the frontend. For that, please work on the following tasks:

Database

1. Write a SQL query that, given an amenity type, returns the name, latitude, and longitude of all amenities of the given type in the city of Konstanz.

Backend

1. Create a new endpoint in the backend, that takes an amenity type as a POST request in JSON format (see: https://flask.palletsprojects.com/en/1.1.x/api/#flask.Request.json on how to get this information) and uses the query from 1.) to return all amenities of that type in the city of Konstanz.

Frontend

- 1. Add a text input field and a button to the Settings component, in which the user can enter an amenity type and submit the query.
- 2. Propagate the button click and the entered amenity type to the App component
- 3. Write a new method in the DataService to request the information about the specified amenities from the backend.
- 4. Push the retrieved data into the Map component and add a marker for each requested amenity.

Submission: Screenshot of your website after you added a marker for a specific amenity with at least 5 entries (e.g. *pharmacy, bank, drinking_water*).

Assignment № 2 Page 4 / 4