SWE 304 PROJECT STUDY 2 (2024)

Due date: 18 April 2024, in class.

In this project, you are expected to publish a web application using container technologies at AWS or AZURE cloud. You can use web application developed in the previous project. However, this time you must use PostgreSQL as database server, and build tool must be Gradle. In local development a "jar" file must be created using Gradle in your local computer.

Web application (name: my-app)

JVM: openJDK version 17-alpine
Dependencies:
Lombok
Spring Web
Thymeleaf
Spring Data JPA
PostgreSQL Driver

Database Server (name: my-db)

PostgreSQL
DB-name swe304
Table: person
id int
name varchar(16)
address varchar(32)
img_url varchar(1024)

The web application will have the following views:

- Show all people recorded in the DB in a table format,
  - There will be operation buttons (add, update and delete) in the table (last column) and these buttons will show the following pages:
    - Add person,
    - Update person,
    - Delete person.
- Provide image file upload for the person table.
  - File storage location should be "/resources/static/images" in local (development), and S3-object storage in AWS (Blob-storage in Azure) for production. Max. file size must be set 5 M.

You are expected to do the following tasks:

1) Develop the web application locally using Spring-Boot (use parameters in application-properties).
2) Create a Dockerfile for containerization of your application.
3) Create a Docker-compose.yml file that includes rules for my-app, my-db and my-net.
4) Push your containerized web app to Docker hub.
5) Create a Linux instance on AWS or Azure with proper security configurations.
6) Install Docker server on cloud.
7) Pull latest image of you application to cloud.
8) Install Nginx as web server and configure it properly.
9) Start your application using docker-compose.
10) Show that your application works as expected.

Your web application and DB server must accept external parameters (DB and http port etc.) while creating containers, so testing locally and testing on cloud should not need re-compilation. The web application and the pages must be accessible from public IP of the cloud instance in the presentation.

Grading:

No	Task	Grade
1	Developing the web application on local computer and creating a Docker image	20
2	Pushing the image to Docker-Hub properly (observe the name convention)	10
3	Creating a cloud instance for web project and installing a docker server	10
4	Pulling the docker images of app and the DB into the cloud from Docker-Hub.	10
5	Start the app and analyze logs if it works correctly.	10
6	Use of "docker exec" to inspect DB container or create DBs if it is not mounted.	10
7	Show that S3 (or blob) integration works properly.	10
8	Installing Nginx to the cloud instance and configure it properly.	10
9	Accessing the web application properly from web browsers.	10

PS: Group presentation is required, group members must show up to in presentation to collect points.