SWE523 PROJECT STUDY 4 (2025)

Micro-service Architecture with Docker-Compose

Due date: 12 Dec 2025, class time.

(**PS:** Cloud publication is optional this year. Students may skip related steps described below.)

In this study you will develop a micro-service architecture for your project. At least 3 Rest-API services will be provided in your implementation, you can name your services properly (see Figure 1).

You are supposed to implement the following steps:

- Create Dockerfile and docker-compose.yaml files in your local computer along with your project. These will generate containerized app and organize the containers' interactions.
- After completing coding and testing of your project in local computer, obtain a jar file and containerized services using proper dockerfiles.
- Push your dockerized app (docker image) to the DockerHub.
- Create an EC2 instance on the AWS with minimum settings and Linux OS.
- Install Docker tools on EC2.
- Ftp (or copy) the docker-compose.yaml file to the EC2 instance.
- Start up first the separated databases using a compose file by fetching from docker-hub as shown in the class.
- Run docker-compose command with your "docker-compose.yaml" file to start your micro-services up.
- Observe that required service images are pulled form the hub and starts up correctly.
- Install Nginx and configure it so the external port 80 will be forwarded to proper services.
- Show that your application is accessible from remote browser or postman, and everything works properly.

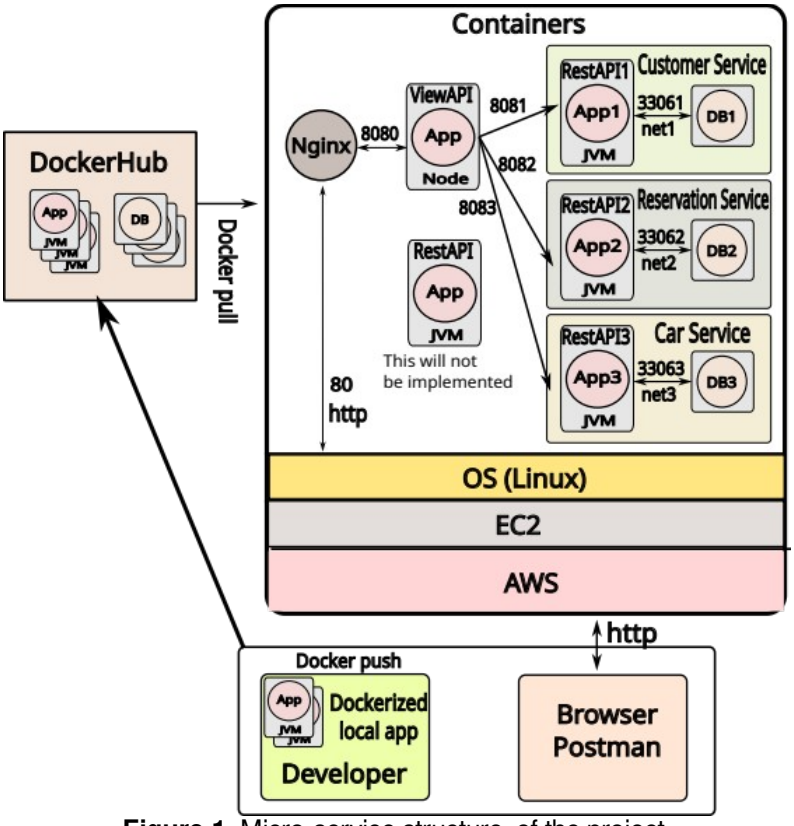

Figure 1. Micro-service structure of the project.

Grading:

No	Task	Grade
1	Micro-services designed correctly.	20
2	Project services build as expected.	20
3	Databases are containerized locally.	10
4	Project services are containerized locally.	20
-	Local image is pushed to the DockerHub.	-
-	Project and the other required images pulled from DockerHub to EC2.	-
-	Required software is installed and configured properly on the EC2.	-
5	Services run correctly.	20
6	Everything works as described with no error, exceptions handled properly.	10

PS: Student must show up for presentation to collect points.