

SWE304 PROJECT STUDY 4 (2025)

Due date: 22 May 2025, class time.

In this project, you are expected to the following tasks:

- 1) Install “Minikube” to your computer and have it ready to run application with “\$ minikube start”.
- 2) Install Jenkins and required plugins on your local computer. Have it ready to create CI-CD pipeline.
- 3) Create a simple Spring Boot web application with only one endpoint (no DB expected).
- 4) Write K8s “deployment” and “service” scripts for your application.
- 4) Create a CI-CD pipeline on Jenkins that does the following actions:
PS1: The pipeline must be triggered by Github update: push or merge.
PS2: In the following items the “local computer” is a host where the Jenkins server runs.
 - a) Stage 1: Clone the project to the local computer.
 - b) Stage 2: Build the project and create a jar file in the local computer.
 - c) Stage 3: Create a docker image in the local computer.
 - d) Stage 4: Login to the Dockerhub.
 - e) Stage 5: Push the image to the hub.
 - f) Stage 6: Run the K8s deployment configuration file on the local computer.
 - g) Stage 7: Run the K8s service configuration file on the local computer.
- 5) Show that K8s build stages run successfully.
- 6) Show that your application runs on K8s cluster as expected.
- 7) Scale your application up to 2 pods, and show that it still works.

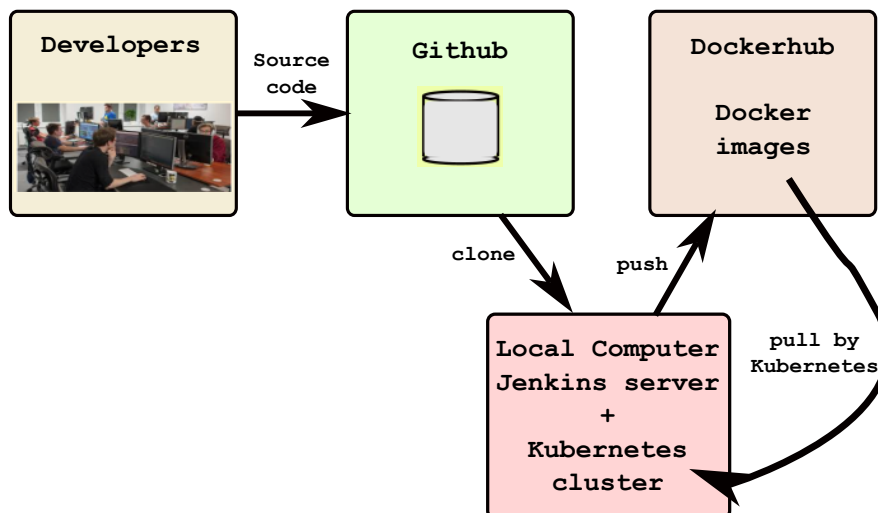


Figure 1. Project 4 block diagram.

PS: You do not have to show that your application is working on the cloud. There is no need to have a database connectivity in your application.

Grading:

No Tasks (Jenkins labeled tasks must be done by Jenkins server)

Grade

1 Jenkins pipeline working.

50

2 Kubernetes part is working.

50

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