SWE304 PROJECT STUDY 3 (2025)

Due date: 08 May 2025, class time.

In this project, you are expected to create a Jenkins declarative pipeline to deploy a web application to AWS or AZURE cloud. You can use the web application developed in previous projects. You are expected to create a full pipeline, when a developer pushes an update (or merging occurs) on GitHub, the followings has to happen consecutively without manual interventions:

- A new jar file must be created,
- Docker image must be created,
- The docker image must be pushed to the DockerHub,
- The newly created image must be pulled to the cloud,
- The updated application has to start automatically on the cloud.

You are expected to do the following tasks:
1) Use the web application that you developed for project 2. Use the Dockerfile that you did before for containerization.
2) Install Jenkins server on the cloud.
3) Install Docker server on cloud.
4) Install Nginx as web server and configure it properly.
5) Write a Jenkinsfile that does following stages:
   - Creating the jar file (upon update or merge) → You must show this in class.
   - Building Docker image - Pushes the "webapp" to the DockerHub
   - Pull the update on DockerHub to the cloud → You must show this in class.
   - Run your containerized applications (webapp and db) on the cloud.
6) 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	Tasks (Jenkins labeled tasks must be done by Jenkins server)	Grade
1	Have your local webapp ready for update (push to app) to GitHub repository	**10**
2	Make workflow action scripts ready to build your app on GitHub	**10**
3	Create a cloud instance + S3 services	**10**
4	Install and start up: Docker, Jenkins and Nginx servers	**10**
5	Create a Jenkinsfile for the pipeline with the following stages: a - Building the jar and creating a Docker image b - Pushing the webapp image to Docker-Hub properly c - Pulling the docker images of app and the DB into the cloud from Docker-Hub. d – Run your pulled images with docker-compose.	**20**
6	Show that you DB file persists on the disk file.	**10**
7	Show that S3 (or blob) integration works properly.	**10**
8	Show that when you updated the source file and push to the GitHub, pipeline works as defined.	**10**
9	Show that the updated web application is seen from any web browsers properly.	**10**

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