SWE 645: Assignment 3
Containerizing Microservices

Your next assignment is to develop Microservices-based applications using Spring Boot, RESTful Web Services, and JPA/Hibernate along with Amazon Relational Database Service (Amazon RDS)/MySQL to implement CRUD operation to manage student survey data in the database. The application allows prospective students to provide survey feedback about their campus visit. It also allows users to view all surveys recorded to date. The application also provides capabilities to update and delete a specific survey.

You may want to start with https://start.spring.io/ to create and download a maven project. Extract the downloaded zip file and then import it into Eclipse EE IDE/IntelliJ IDEA, and then implement the rest of the logic.

Please containerize your application using Docker technology and deploy it on the container orchestration platform Kubernetes platform using the CI/CD pipeline you established for the last homework.

You can use Amazon RDS to provision and use a MySQL database for this homework. Please make sure that you set up the database in Development mode to avoid any unexpected charges. https://aws.amazon.com/getting-started/hands-on/create-mysql-db/

Please use Postman https://www.postman.com/ to test the working of your containerized microservice(s). You do not need to implement user interface for this homework, but please use the following for the student survey form data.

- First name, last name, street address, city, state, zip, telephone number, email, and date of survey, which are required fields.
- What they liked most about the campus. Options include: students, location, campus, atmosphere, dorm rooms, and sports.
- How they became interested in the university. Options include friends, television, Internet, and other.
- The likelihood of him/her recommending this school to other prospective students. The options include: Very Likely, Likely, Unlikely.

This homework can be done individually or in a group of maximum 4 students.

Optional Extra Credit:

In lieu of Postman, develop a front-end application using Vue.js that allow access to all CRUD operations provided by above microservices. More about the extra credit in separate document.

Submission

The submission for this assignment should be through the blackboard website. I expect a zipped package containing the source files, configuration files, such as Dockerfile, YAML manifests, Jenkinsfile, war file, and any additional packages, scripts, or files that you used. I also require a a detailed documentation which contains installation and setup instructions, demonstration of the working code, including references of the tools you used so that the TA and myself can replicate your steps and deploy and run the assignment if needed. Please provide a video recording demonstrating the working of every part of your application and make it a part of your submission. Also, provide the URL of your application deployed on Kubernetes in readme file as part of your HW submission on the class blackboard.

NOTE: A late assignment carries a 10% late penalty for each week it is late. Assignments are NOT accepted after being 2 weeks late. Make sure your or your group's name is on every programming artifacts so we know who it belongs to. For every source file, please include comments at the top of the program describing what the program does. This only needs to be 1 or 2 sentences. Be sure to test access and functionality to your submission before the due date.

Grading:

The following areas will be used in the basic grading of these projects:

- Does system meet the functional requirements along with proper documentation and video recording: 85 points
- Does the assignment run without errors: 13 points
- Comments: 2 points

Instant Point Deductions:

I reserve the right to deduct points instantly for the following reasons:

- The source, or binary, files are not included in the package.
- The readme file is not included in the package.
- The program doesn't run due to errors in the code.
- I spend more than 5 minutes trying to debug the assignment.
- I can't figure out how to use the assignment, and instructions are left out.