SWE645 – Assignment 2

This homework assignment can be done individually or in a group of maximum 4 students. If you are working in a group, please identify the contribution(s) you made to complete the work. The requirements are as follows:

- Containerize the Web application you developed in Homework 1 – Part 2, using Docker container technology.
- Deploy the containerized application on the open source container orchestration platform Kubernetes to enable scalability and resiliency of the application. Your baseline configuration includes at least three pods running all the time. You can use Rancher (https://rancher.com/docs) to setup Kubernetes cluster. You also have an option to use managed Kubernetes services, such as EKS on Amazon Web Services (AWS) or GKE on Google Cloud Platform (GCP).
- **Optional Extra Credit** - Establish a CI/CD pipeline that includes a git source code repository at GitHub, Jenkins for automated build, and Argo CD for the automated deployment of your application on Kubernetes.

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, Jenkinsfile, YAMLs, war file, and any additional packages, scripts, or files that you used. I also require a readme file which contains AWS URL of your homepage as well as of the application deployed on Kubernetes, installation and setup instructions, including references of the tools you used as well as a video recording demonstrating the setup and working of your code and make it a part of your submission. The documentation and recorded video should be detailed enough that the TA and myself to grade your work and replicate your steps if needed. This can also serve as a reference resource for you to be able to refer to for upcoming homework assignments.

In addition, **if you worked on the optional extra-credit assignments**, please further enhance your documentation and the recorded video and please schedule a meeting with the professor to demo your work. The extra credit work should be part of the submitted document and recorded video. The extra credit work must be turned in and demoed to the professor two weeks no later than two weeks prior to the exam week start date.

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 to grade the homework:

- Does system meet the functional requirements: **60** points
- Does the assignment run without errors: **15** points
- Does the submission package, ReadMe file, and recorded video contain necessary source code, executables, installation/setup instructions, including references, lessons learned, etc. to replicate your steps: **25** 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 can't figure out how to use the assignment, and instructions are left out.