DEPARTMENT OF OPERATING SYSTEMS

Intro to DevOps

Project Task

REV 1. 2

Zagreb 2023.

Introduction

This project aims to help you understand both how containers and microservices work and how to create modern websites that can be scaled out.

Scenario

As a new employee in the DevOps d.o.o. company, you got your first task. To containerize and deploy tempconverter application. Its source code is available at https://github.com/jstanesic/tempconverter. The application needs mysql 8 database to function. Environment variables DB_USER, DB_PASS, DB_HOST and DB_NAME are used to configure the connection to the database. Environment variables STUDENT and COLLEGE can be used to set name and college application displays.

Requirements

- Images created in all steps should be working.
- Application should successfully connect to the database as a non-root user.
- Upon opening the web application your name and the college you attend should be displayed.

Tasks

1. Create container image for web application located at https://github.com/jstanesic/tempconverter
    a. Update all packages as part of the image build process
    b. Expose port 5000 TCP
    c. Install all required requirements
    d. Configure the correct command to start the flask application
2. Push created image to a container registry of your choice and tag it tempconverter:latest.
3. Update title configured for HTML page by editing templates/index.html file to have HTML title TempConverter. Create a new container image, tag it tempconverter:dev and push it to the registry.
4. Deploy the application locally by using podman. You should also deploy the database container and ensure the app container connects to it.
5. Pick a container orchestration system and elaborate on your choice.
6. Create a template or a that will allow you to deploy the application to the container orchestration system you choose (e.g. template, bash script, yaml file, helm chart…). Your application should be exposed to the “outside” world with help of some kind of

load balancing or proxying solution over port 80. There should be one instance of the database container and two instances of tempconverter app containers.

Guidelines

- This is an individual project.
- Document everything using the standard template.
- Enclose all the scripts and configuration files as appendices to the project document by using the published project document template.

Turning in the project

The project should be submitted by **10.06.2023 at 23:59:59** at the latest. Each delay means the loss of one point per outcome per week of delay. The template for the project is located in the course folder on InfoEduka. In the project document, describe in detail everything you have done — program code, screenshots, procedures — to complete the tasks.
Consultations on the project are possible by e-mail or live during the exercises.
The project needs to be delivered to us by using the InfoEduka seminar module.

Additional documentation

- https://docs.docker.com/engine/reference/builder/
- https://docs.openshift.com/container-platform/4.10/welcome/index.html#developer-activities
- https://docs.openshift.com/container-platform/4.10/openshift_images/using-templates.html
- https://phoenixnap.com/kb/podman-compose
- https://kubernetes.io/docs/tutorials/kubernetes-basics/
- https://docs.aws.amazon.com/eks/latest/userguide/fargate.html
- https://helm.sh/docs/intro/quickstart/