

ENGR-E 516 Cloud Computing

Dockers and Containers

Due: 11:59 pm Friday, December 8, 2023

Introduction

During this assignment, you will be familiarized with dockers. You will create a server and a client that will be deployed in a docker container. You can choose to use your personal computer or cloud services for this assignment, Jetstream2 with Ubuntu is recommended.

Task

To install and get started with docker follow this link: [Get Started with Dockers](#)

Docker works with Windows, Mac, and Linux.

You will be building two containers using docker. These containers can be built starting from an official base image. [Official Images](#) has a list of different official base images. Start from the image that is suitable for you.

□ **Server:**

- Create a volume by name "servervol".
- The server container will mount "servervol" in "/serverdata".
- This container runs a server application which will create a file of size 1KB with random text data in "/serverdata" and then transfer the file to the client along with the checksum.
- The server application itself can be built using any language you are comfortable with. But the container should include all the packages that are required to run your application. Choose your base image wisely and install only the necessary packages.
- The port on which the server runs must be specified as a command line argument when we run docker.

□ **Client:**

- Create a volume by name "clientvol".
- The client container will mount "clientvol" in "/clientdata".
- The client container runs an application that connects to the server, receives the file that the server sends and saves it in "/clientdata".
- Verify that the file is received properly at the clientside by verifying the checksum.
- The client application again can be written in any language that you are comfortable with, but the container should include all the necessary packages. Choose your base image wisely and install only necessary packages.

You need to create a user-defined network in docker and run both these containers on the network created. The containers should run these applications by default (i.e., on run command).

NOTE: You should be able to get into the shell of the client container to physically check if the file

has been received.

What to submit

Zip all files, including your report, a README file, and all your codes. You may not get all points if you only submit a proportion of your codes.

Grading

30 pts: build and run your server container.

30 pts: build and run your client container.

20 pts: communication between the two

20 pts: detailed report

Late Policy

Different from previous two assignments, this assignment has a more stringent late submission policy, due to the imminent end of the fall semester. While submissions beyond the due date and before December 12 will be accepted, you will incur grading penalties. **However, after December 12, no further submitting will be considered, and no points will be awarded for this assignment.**