Assignment 2

Content up until now

At this stage in the class, students will have learned Docker containers (week three). They will have an awareness of the difference between Docker containers and images, and shipping images. They will know how to start containers from images they have built. An array of commands around the docker container toolset will be familiar, accessing running containers, stopping/starting containers, and more.

Week four introduced Docker volumes. Volumes in Docker are a bridge of filesystems between the host and the container. Familiarity of what volumes are, permission levels of mounted volumes, and leveraging the CLI toolset will have been covered.

On top of this, students will have completed one homework assignment and the first two weeks of lecture on containerization and Docker images.

Assignment description

Options:

* Write a paper exploring the differences between images and containers. Describe what is happening at the filesystem layer what the difference between
  + A `COPY` command in and Dockerfile `COPY /tmp /tmp`
  + Mounting a volume at this location in a container `docker run -v /tmp:/tmp`

What happens if you do both of these? COPY a directory to the image, then mount a directory over that directory.

* Write a Dockerfile that runs a script (in any language/framework you wish). This script should read/manipulate a file at /tmp/file.txt. It takes a command line argument `--increment` or `--print` which will either increment the number found in this file. On your host machine, create this file.txt file, and initialize it to one character: 0. Mount this file to a container and run the script within this container. Now run this script on a timer so it writes to this file every 5 seconds. At the same time, run another container that prints this (same file) every 5 seconds. Run these scripts for 30 seconds. One container should be manipulating this file and the second should be printing it. Output should look like (without the parenthesis):
  + 0 (initially)

1 (@ 5 seconds)

2 (@ 10 seconds)

3 (@ 15 seconds)

4 (@ 20 seconds)

…

Submission instructions

Compress all of the files for this assignment (zip/tar) into one file. For a coding assignment, this only includes the source code written by you. Do not include dependencies like binaries or source code install via a package manager (npm/pip/etc.). Name this file LASTNAME\_FIRSTNAME\_ASSIGNMENT1.{extension}.

Grading Information

For coding assignments, these should be testable using only docker (more dependencies may be wrapped in the docker container). Assignments will be graded on an 11 point scale (0-10).

Peer review

Refer to the [peer review guide]() on how to give proper feedback. You will be required to submit four peer reviews after each homework assignment. Each peer review is worth 12.5% of your participation grade.