What is Docker

Docker is an all in one platform that helps developers build, test, and deploy applications. In our case we will be using Docker to build, test, and deploy our Ruby on Rails application. There is a lot more to Docker that cannot be discussed here and can be found [here](#). A simple beginner tutorial on Docker as a whole and developing with Docker can be found [here](#).

How to Build a Docker Image For Ruby on Rails

1. Create a folder/directory on your computer. I recommend creating this folder on your user folder. After creating the folder, download [these](#) documents into that folder.
2. Navigate to the folder you created (the one containing the files you downloaded) using command line
   a. Use cd to go to the specific directory (you might have to do this a few times to get into the directory)
   b. cd and a specific name of your directory will take you to the directory. I use windows command line, but it will be better to use WSL and use linux commands. Here is how I navigate to my directory on windows command line.

```
C:\Users\fitsu>cd CS3710

C:\Users\fitsu\CS3710>dir
 Volume in drive C is OS
 Volume Serial Number is 0A4B-A299

 Directory of C:\Users\fitsu\CS3710

09/19/2024  01:25 PM    <DIR>          .
09/24/2024  07:02 PM    <DIR>          ..
09/05/2024  01:30 PM    <DIR>          docker_build
09/05/2024  02:47 PM    <DIR>          ruby_mapped_docker
09/19/2024  01:27 PM    <DIR>          team_repo
               0 File(s)              0 bytes
               5 Dir(s)  307,668,910,080 bytes free

C:\Users\fitsu\CS3710>cd ruby_mapped_docker

C:\Users\fitsu\CS3710\ruby_mapped_docker>
```

After navigating to your directory run the following command. The **.** at the end of the name is required. The name must be lower case.

- docker buildx build -t [dockerUserName]/[image name] .

Run your Docker Image

To run your Docker image follow these steps.
1. Create a new folder to map the docker container files to your local computer. Remember this is a new folder/directory so don't use the one you created above. You should also create this folder in your user folder.
2. After navigating to your directory in your command setup run the Docker container.

   - For Windows WSL, Mac/Linux Terminal or Git Bash

```
docker run -it -p 3000:3000 -v $(pwd):/workspace [dockerUserName]/[image name]
```

   - Windows PowerShell
```
docker run -it -p 3000:3000 -v ${PWD}:/workspace [dockerUserName]/[image name]
```

   - Windows Command Prompt (cmd) - not recommended unless you are good with commands
```
docker run -it -p 3000:3000 -v %cd%:/workspace [dockerUserName]/[image name]
```

# **Command Summary**

   - **docker run**: Start a new container from an image.
   - **-it**: Interactive terminal for interacting with the container.
   - **-p 3000:3000**: Exposes port 3000 on the host and maps it to port 3000 in the container.
   - **-v $(pwd):/workspace**: Mounts the current directory from your host machine to /workspace in the container, allowing file synchronization.
   - **your_dockerhub_username/cs3170_rails**: The Docker image to use.

   - You only need to run the command once because everytime you run this command it will create a new container.

- I also recommend downloading [Docker Desktop](#) you will be able to see your running containers and images there. I have attached images below of what your Docker desktop will look like.
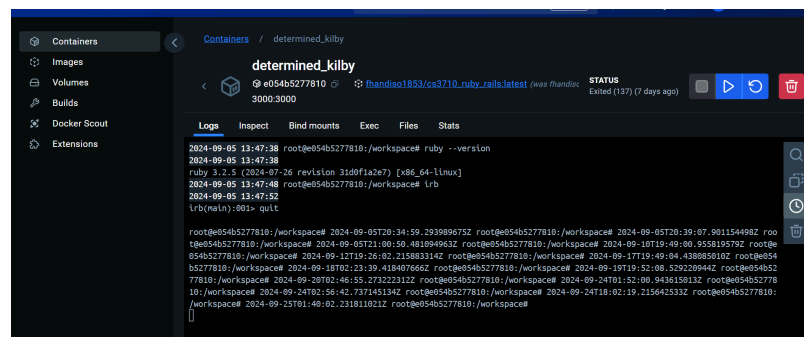
- Image in Docker Desktop
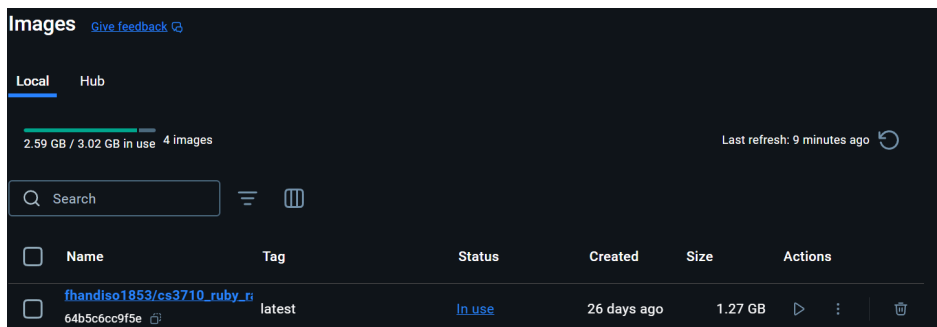


  - Container: Click the container name link
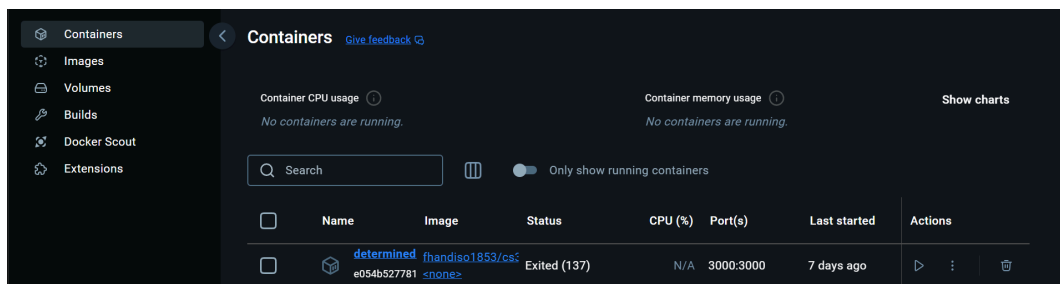


    - Container: Look at the container name. You will need either the container name or id to restart or stop your container later. Remember that any updates you make to the container will only be stored in this container and not the image.



  - Once your container is running, run this command in your docker mapped folder.

    **docker exec -it [container name/id]/bin/sh**

- That command will take you to the docker workspace. You should see a # symbol indicating that you are running the shell commands for the docker container.
- You can run the following command to see your ruby version and go into the irb interactive environment you can type quit to leave.

```
# ruby --version
ruby 3.2.5 (2024-07-26 revision 31d0f1a2e7) [aarch64-linux]
# irb
```

Helpful Commands

Resource: https://dockerlabs.collabnix.com/docker/cheatsheet/

- docker pull: Used to download an image from a remote repository to local.
- docker run: Creates and runs a container from a specified image
- docker ps: Lists all currently running containers
- docker stop: Stops a running container
- docker restart: Stops and then starts a specified container.