Getting Started with Docker (Windows)

November 16, 2021

1 Prerequisites

1. Windows 10 version 1903 or higher. You can check your version number by going to `Settings -> System -> About`.
2. At least 10 GB of free hard drive space (for help with this see here).

2 Setup

1. (Video) Open Power Shell as administrator. Then enable WSL2 (Windows Subsystem for Linux 2) by typing

   ```
   wsl --install -d Ubuntu-20.04
   ```

   Follow the prompt to restart your computer.
2. (Video) Install Ubuntu 20.04 and Windows Terminal. (Optional (Video): Due to a bug in Windows, the above operation also installs the Debian OS, which you do not need. Remove the Debian OS if you want to save 500MB of disk space.)
3. (Video) Install and run Docker Desktop. Go to `Settings -> General` and make sure that `Use the WSL 2 based engine` option is checked (Figure 1). Go to `Settings -> Resources -> WSL Integration` and make sure `Enable integration with my default DSL distro` is checked and turn on integration with `Ubuntu-20.04` (Figure 2).
4. (Video) Open an Ubuntu 20.04 tab in the Windows Terminal. Enter your WSL 2 home directory and clone the `stat-471-fall-2021` Github repository by typing

   ```
   cd ~
   git clone https://github.com/Katsevich-Teaching/stat-471-fall-2021.git
   ```

5. (Video) Pull the `stat-471` Docker image onto your computer via

   ```
   docker pull ekatsevi/stat-471
   ```

   This will start a download that may take a few minutes. You'll only need to carry out this step once.
6. (Video) Navigate into `stat-471-fall-2021` by typing

   ```
   cd stat-471-fall-2021
   ```

   Initialize your Docker container by typing

```
docker-compose up --no-start
```

If this step succeeded, you should see a container labeled `stat-471-fall-2021` under `Containers/Apps` within Docker Desktop (Figure 3).

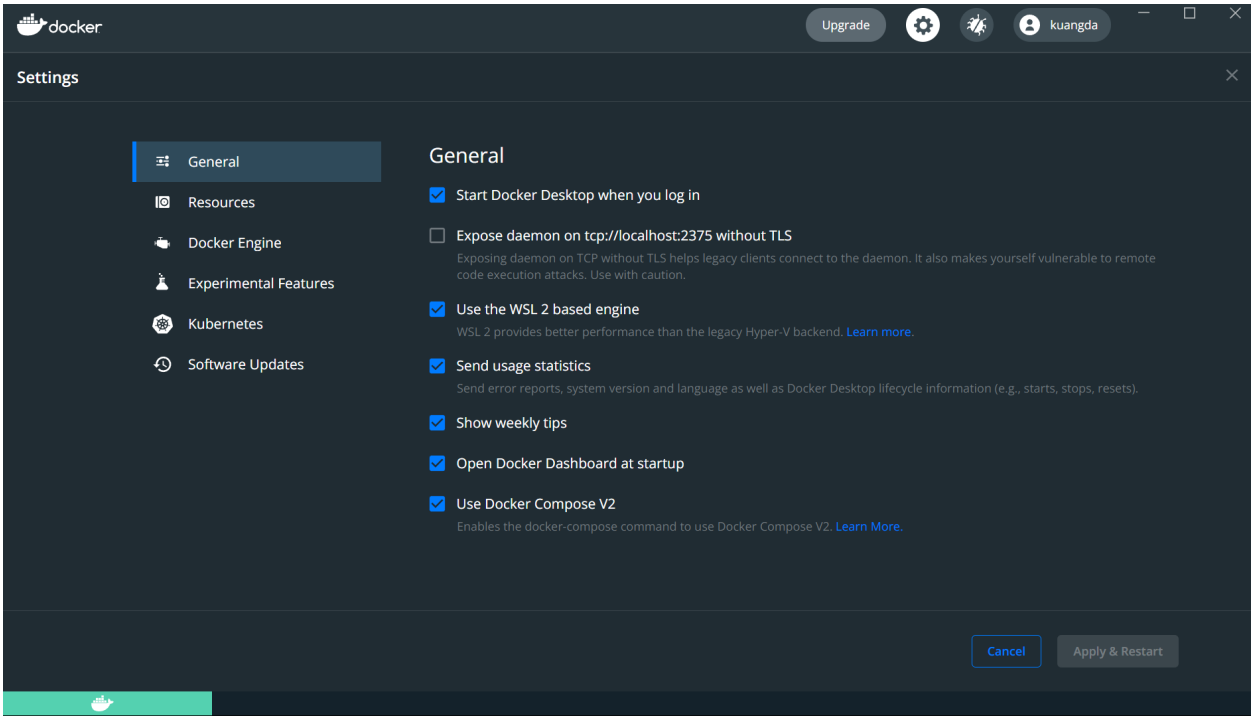

Figure 1: The General tab in Docker graphical user interface.

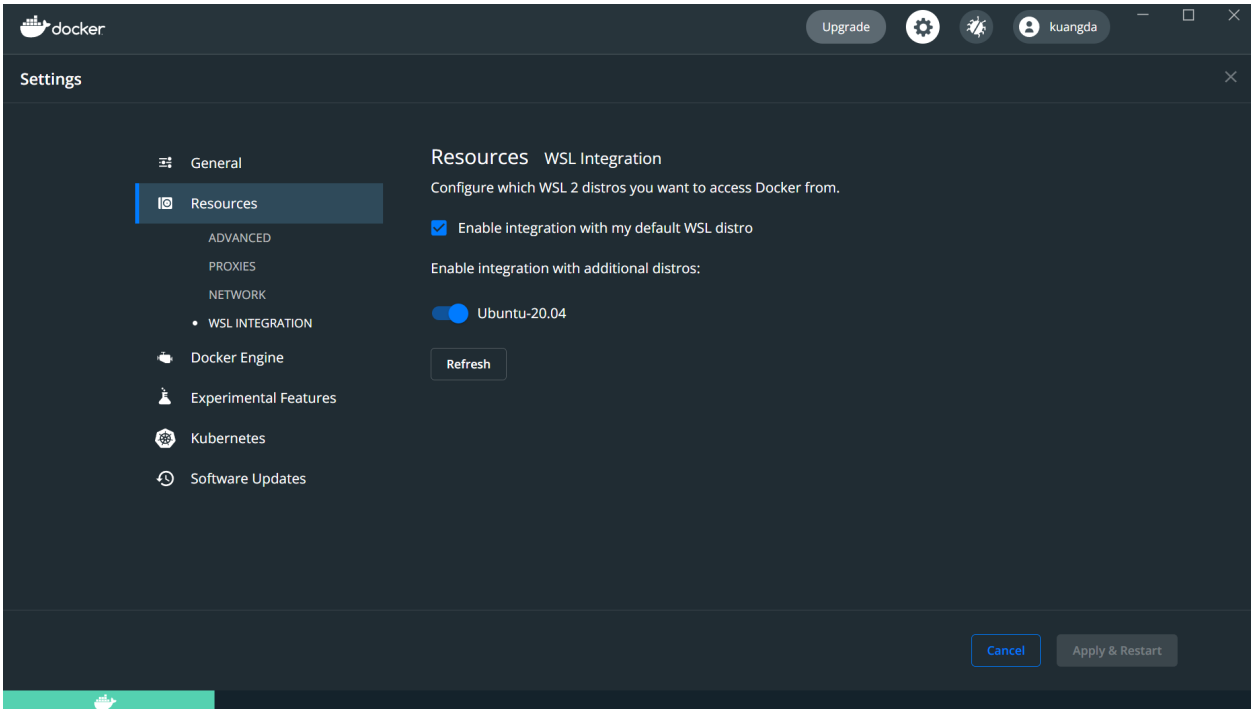

Figure 2: The Resources tab in Docker graphical user interface.

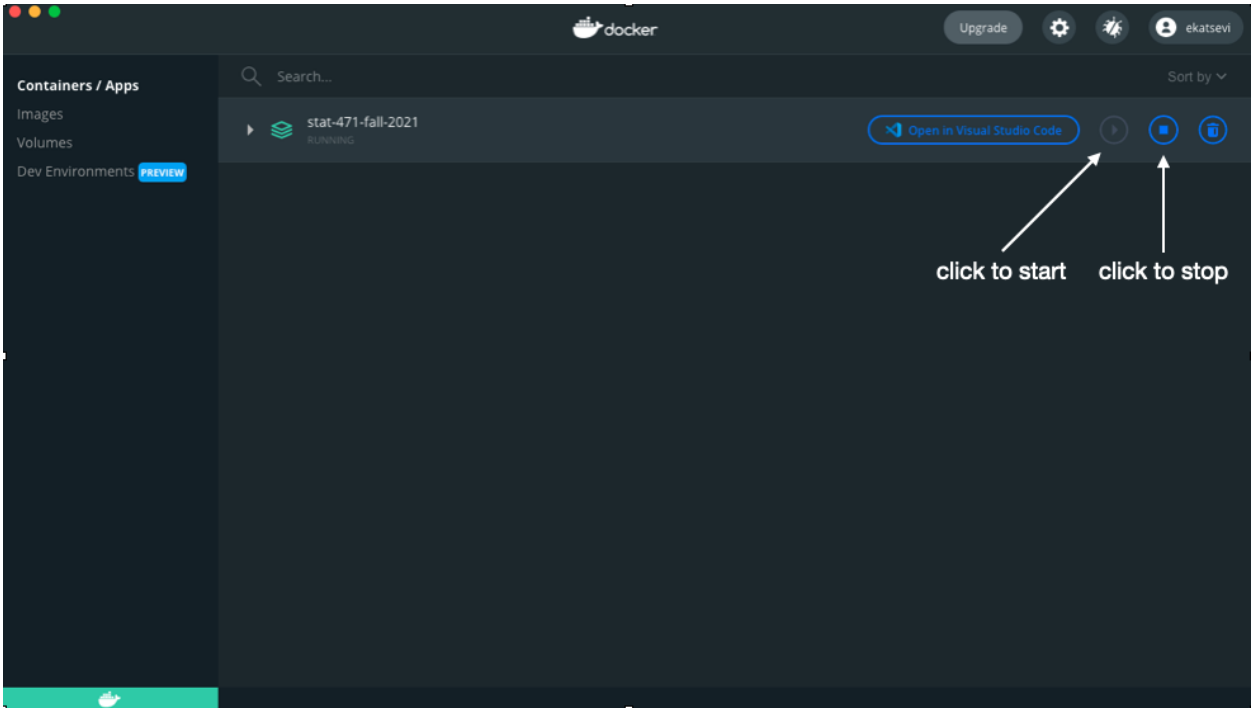

Figure 3: The Docker graphical user interface.

3 Usage (Video)

1. Open Docker Desktop. Start your Docker container by navigating to `Containers/Apps` within Docker Desktop, locate `stat-471-fall-2021`, and click the "Play" icon (see Figure 3). Open a web browser and navigate to `localhost:8787`. You should see an RStudio window in the browser. Note that there may be some red text displayed in the console; you can safely ignore it.
2. (Do this step only the first time you ever start the container.) To test the container, open `test-docker.Rmd` under `getting-started`, and compile this document to PDF as you would normally. If this works, you should see the compiled PDF pop up.
3. To use the container, use RStudio in the browser as you normally would.
4. For Git and GitHub, please pull, commit, and push using the Terminal that is not in your Docker container. I recommend using the regular Terminal, but for those who have been using the Terminal inside of RStudio, you can continue doing so in the *regular* RStudio as opposed to the *Docker* RStudio.
5. When you are done, close the RStudio browser window(s). Then, navigate to `Containers/Apps` within Docker Desktop, locate `stat-471-fall-2021`, and click the "Stop" icon (see Figure 3).

4 Exporting your PDF (Video)

Unfortunately, the files in your WSL2 subsystem are somewhat annoying to access via File Explorer. Therefore, when you would like to submit your compiled PDF, first download it by clicking the button in the top right-hand corner. The PDF will then appear in your `Downloads` folder, which you can then submit to Gradescope.

5 Acknowledgment

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