

Getting Started with Docker (Windows)

November 23, 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).

7. 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.
8. 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.
9. To set up your Git credentials in the container, open the Terminal (in RStudio in your browser) and type

```
git config --global user.email "you@example.com"
git config --global user.name "Your Name"
git config --global 'credential.https://github.com.helper' ''
git config --global --add 'credential.https://github.com.helper' '!gh auth git-credential'
cd ~
wget https://github.com/cli/cli/releases/download/v2.2.0/gh_2.2.0_linux_amd64.deb
sudo dpkg -i gh_2.2.0_linux_amd64.deb
gh auth login
```

and then follow the prompts to answer the following questions:

```
? What account do you want to log into? GitHub.com
? What is your preferred protocol for Git operations? HTTPS
? Authenticate Git with your GitHub credentials? Yes
? How would you like to authenticate GitHub CLI? Paste an authentication token
```

Finally, paste your personal access token.

10. Check whether you are able to access Github by typing

```
cd ~/stat-471
git pull
```

in the Terminal. This command should work without you being prompted for authentication.

11. 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).

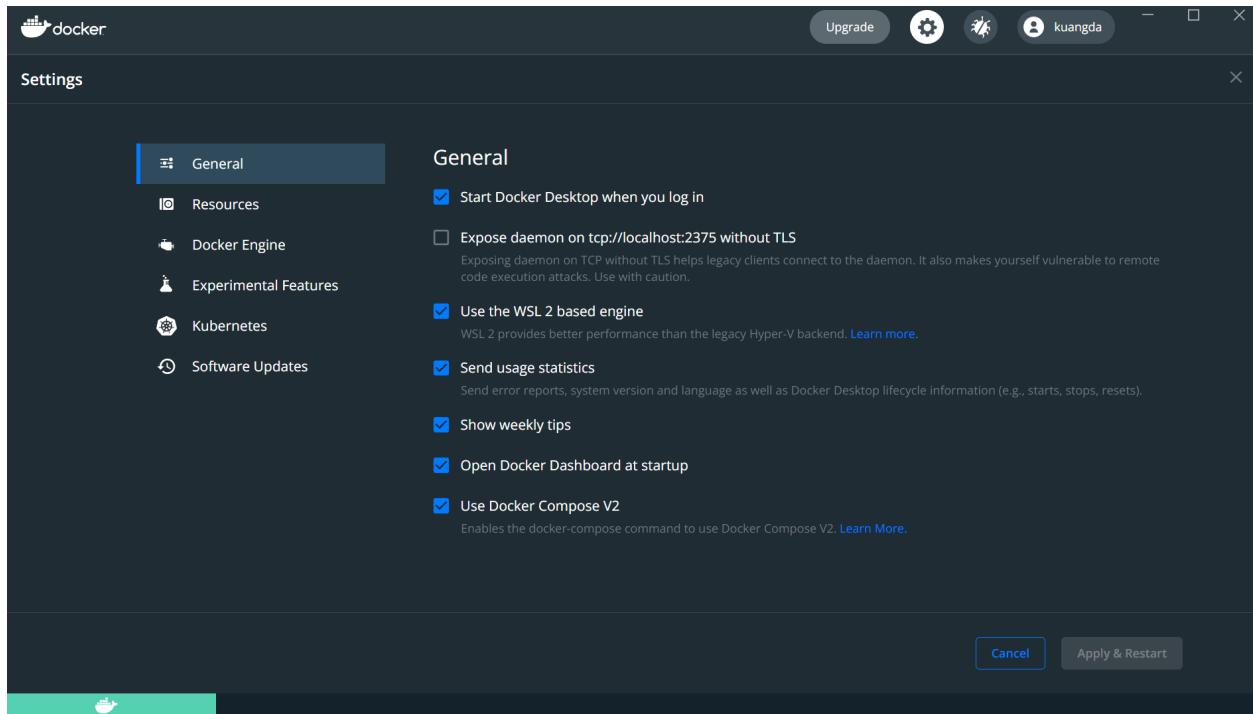


Figure 1: The General tab in Docker graphical user interface.

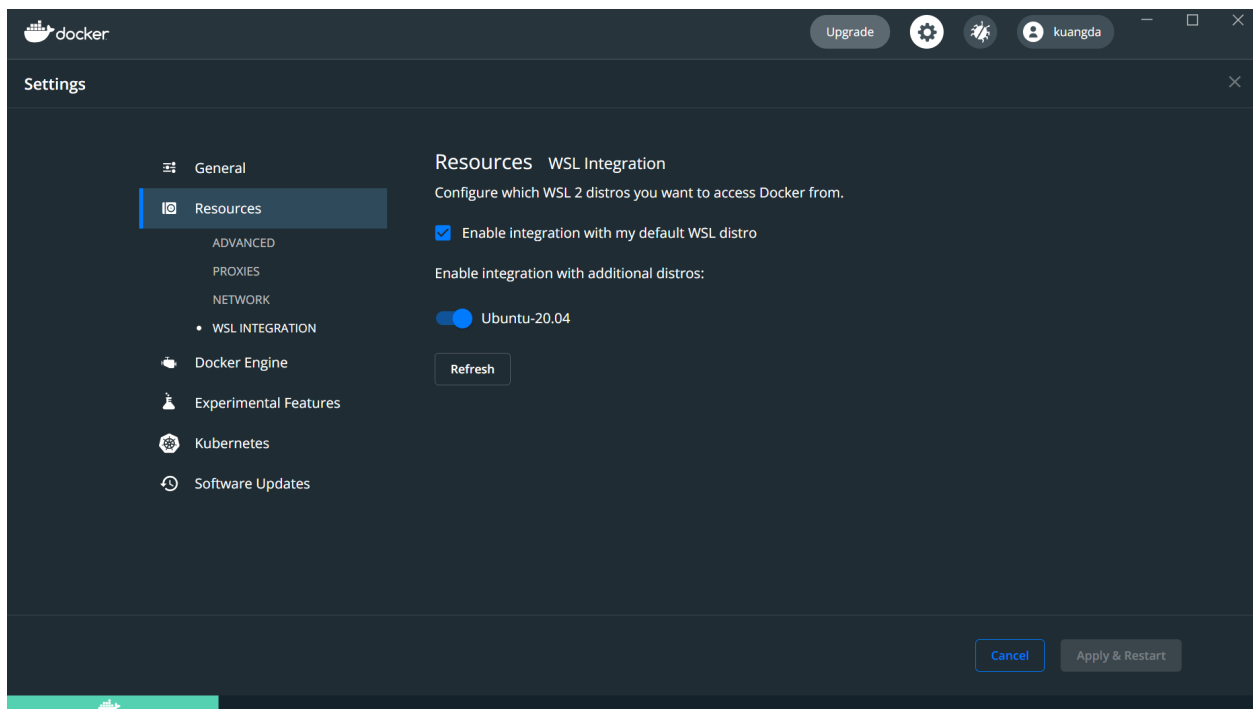


Figure 2: The Resources tab in Docker graphical user interface.

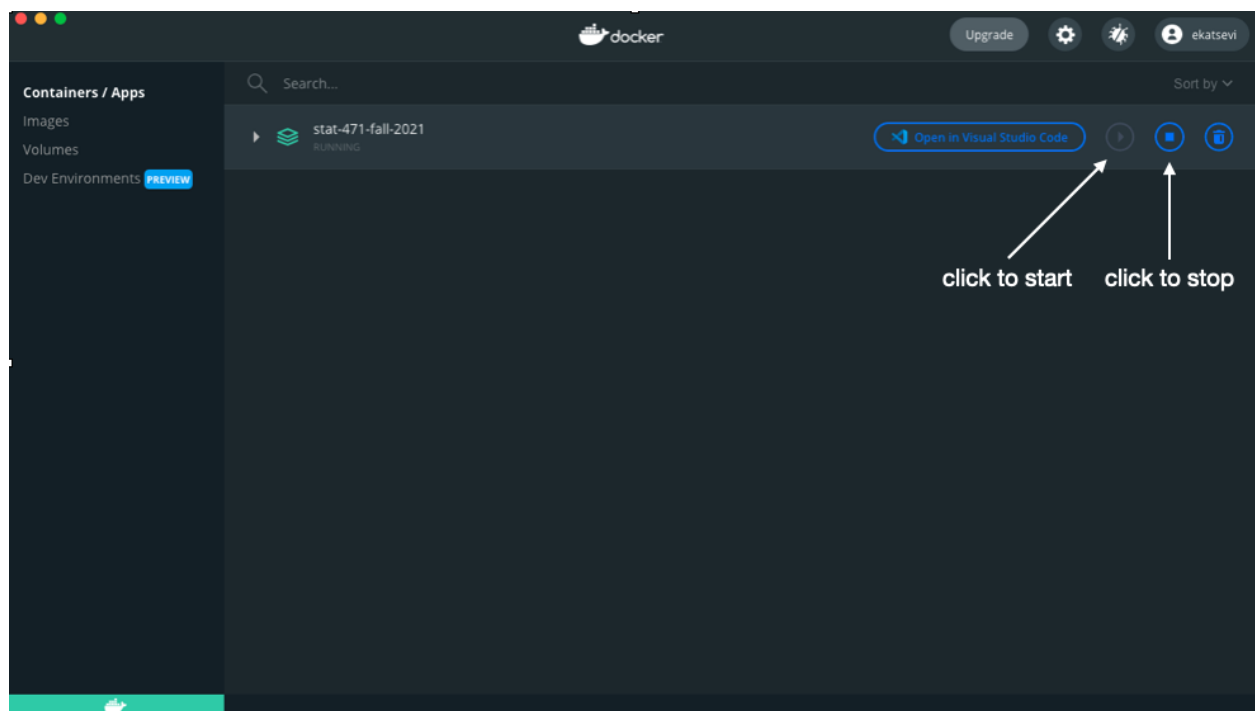


Figure 3: The Docker graphical user interface.

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. To use the container, use RStudio in the browser as you normally would.
3. For Git and GitHub, please pull, commit, and push as usual, using the Terminal that is in RStudio in your browser.
4. 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

Many thanks to [Da Kuang](#) for leading the effort to implement Docker for STAT 471.