**Linux and Docker Exercise**

The architecture:

Key terms:

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| Linux | Open source operating system used frequently on servers |
| Server | Computer hardware that you connect to from your computer. Typically more powerful than personal laptops, more stable, and always running. |
| Visual Studio Code |  |
| Docker |  |
| Docker image |  |
| Docker container |  |
|  |  |
|  |  |

Linux

Slides Outline:

* What is the linux server?
  + Remote hardware that we connect to for running code
* Why do we use it?
  + Faster, more stable, flexible, always on
* Dependency hell
* Docker and docker containers
* The full picture diagram
* Reasons why you should or shouldn’t use the server

Exercise

* Open github and start codespace
* Install extensions
* Git pull repo with instructions
* Basic linux commands
  + Cd and ls around the folders
  + Git status in the repo
* Docker commands
  + Docker run hello world
  + Docker pull and run rstudio container
  + Docker pull and run python container

Exercise

Basic linux commands:

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| --- | --- |
| **Command** | **What it’s doing** |
| pwd | Print working directory you’re in |
| cd / | Change directory to the root (top level) directory |
| ls | List contents of current directory |
| cd workspaces | Change directory to ‘workspaces’ |
| ls -lath | List contents with details |
| cd codespaces-blank | Change to /workspaces/codespaces-blank directory |
| cd .. | Change directory to one level up |
| cd - | Change directory to where you were last |

Docker commands

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| --- | --- |
| **Command** | **What it’s doing** |
| docker ps | Check status of running containers |
| docker images | Check what images are downloaded |
| docker run hello-world | Run a test container to make sure docker is working |
| docker ps -a | Check status of all containers (running and stopped) |
| docker rm (name) | Remove container by name |
| docker pull rocker/tidyverse:4.3.1 | Pull image rocker/tidyverse:4.3.1 from docker hub |
| docker run -p 8787:8787 rocker/tidyverse:4.3.1 | Run tidyverse container on port 8787 |
| docker run -dit -p 9000:8787 -v /workspaces/codespaces-blank:/home/rstudio --name rstudio1 -e PASSWORD=password rocker/tidyverse:4.3.1 | Run tidyverse container with lots of options: port 9000, connect files to container, name it rstudio1, set a password |
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