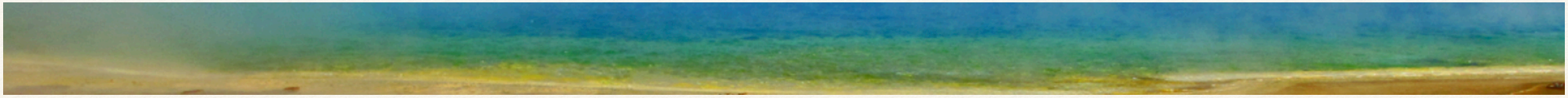

Computational Linguistics Seminar
Docker

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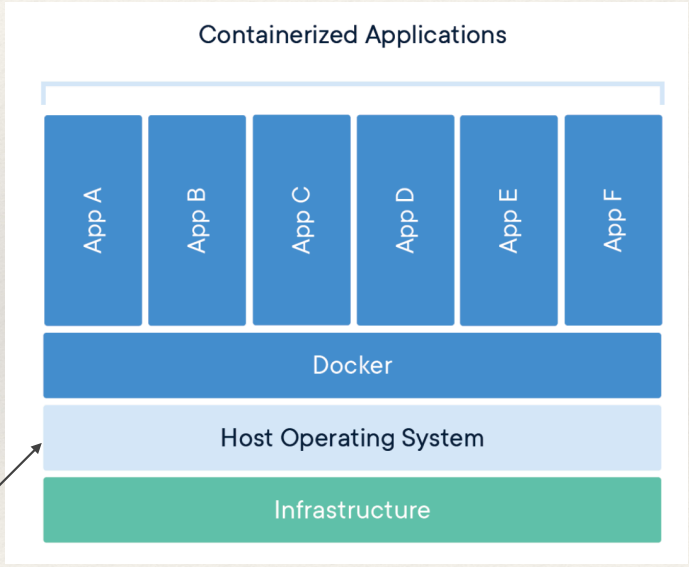
The banner image is a fragment of Primordial Soup at `https://regenaxe.com/2017/01/17/primordial-soup/`

Docker

- docker run --rm hello-world
- docker run --rm -it ubuntu bash
- docker run --rm --detach --publish=80:80 --name=webserver nginx
- curl localhost
- docker container stop webserver
- docker build -t ole .
- docker run --rm ole

Docker

- One sentence description
  - Docker containers are lightweight virtual machines (this is wrong)
- Docker images are isolated file systems from which you can run code which will be isolated from processes on the host machine



Virtual Machine versus Containers

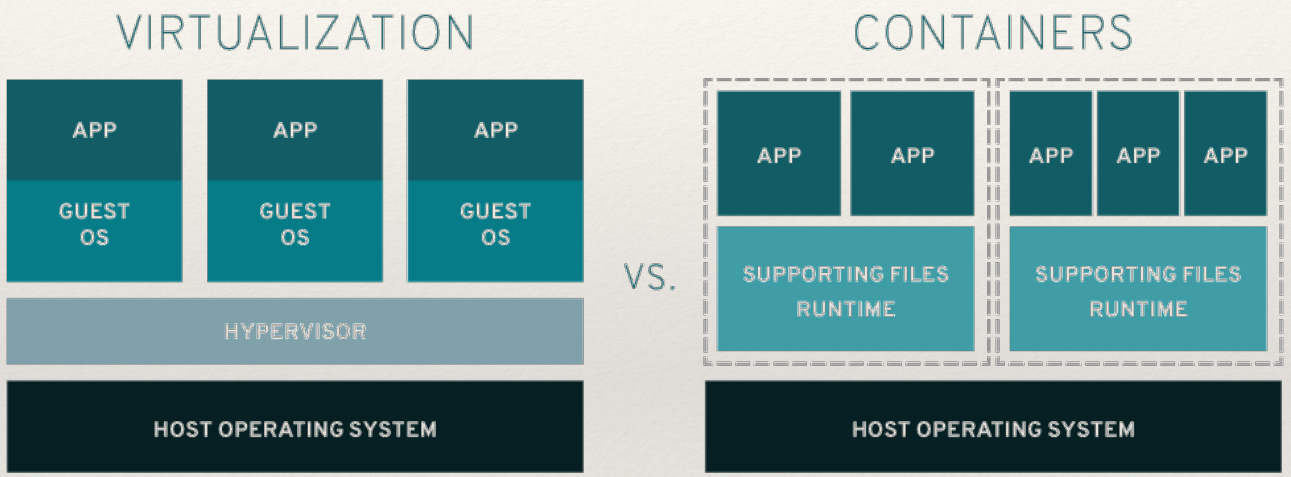
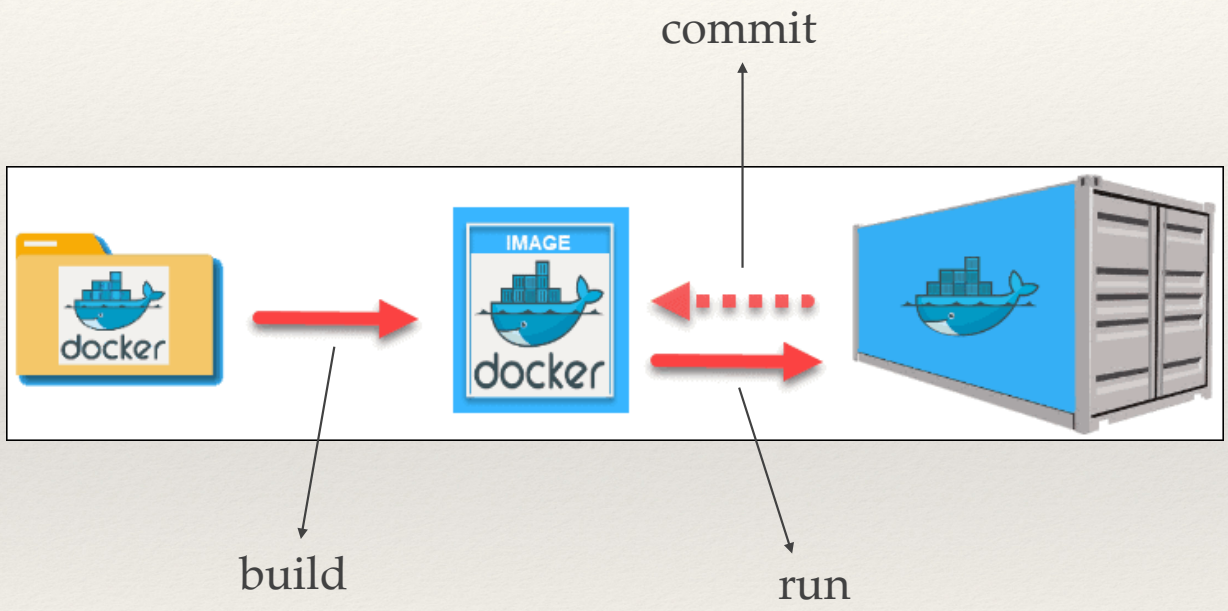


Image and Container



Docker Images

- An immutable file that contains
  - source code, libraries, dependencies, tools, …
  - … and other files needed for an application to run
- A bit like a snapshot
- Should do one thing well
- Created with “docker build”

Dockerfile

```
FROM jjanzic/docker-python3-opencv

COPY ./requirements.txt /app/requirements.txt
WORKDIR /app

RUN pip install --upgrade pip
RUN pip install -r requirements.txt

CMD ["python", "app.py"]
```

Start from a base image

Copy all data into the app directory and make that directory the working directory

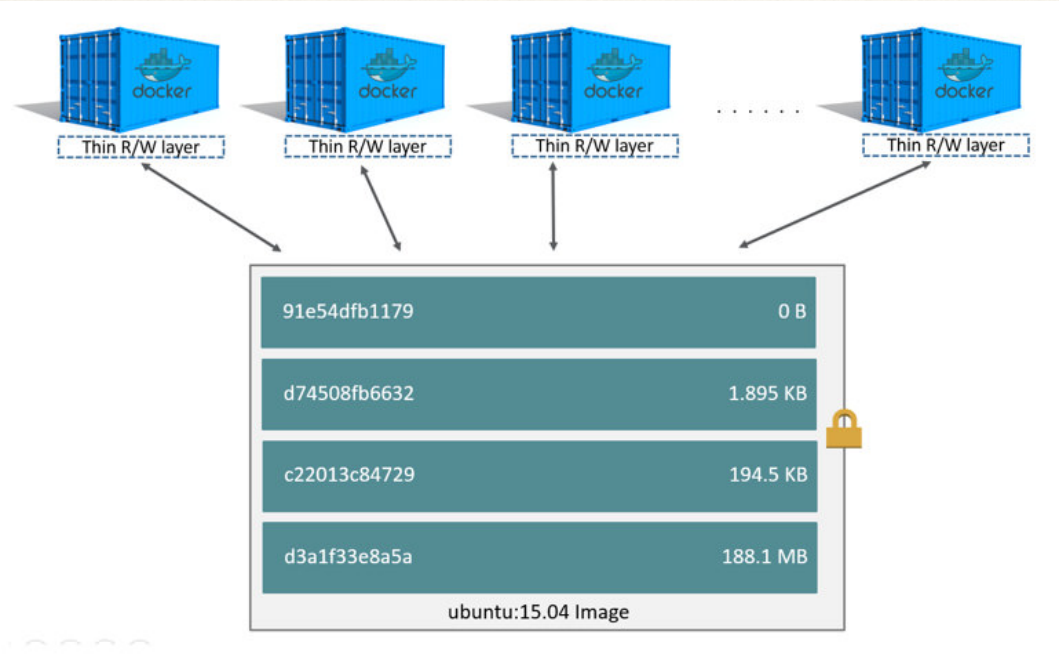
Install some Python packages

Command to run when you fire up a container

Docker Container

- A run-time environment where users can isolate applications from the underlying system.
  - Uses standard Linux kernel features like change root and control groups
- Compact, portable units in which you can start up an application quickly and easily
- Created from an image with “docker run”

Layers



https://docs.docker.com/storage/storagedriver/

Multiple containers per image and each container has its own writable layer, which stores all modifications. The writable layer dies with the container.

The containers can share the same image because each container has its own state.

Images are built in layers, where lower layers can be shared.

Docker

- Runs a Linux Kernel
  - RedHat, Ubuntu and others are NOT kernels
  - On OSX and Windows you run a lightweight virtual machine to get the kernel (LinuxKit)
- Windows Docker also has windows containers
- Allows delivery of code exactly in the environment it needs
- Containers can be networked.

To Do

- https://docs.docker.com/get-started/
  - docker run -d -p 80:80 docker/getting-started
  - http://0.0.0.0/tutorial/