DOCKER FOR DEVELOPERS
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WHAT IS DOCKER?
LET'S START WITH CONTAINERS
WHAT IS A CONTAINER

• A packaged program or service
  • Similar to a VM a container can include an OS.
    • Virtualization abstracts the hardware
    • Containers abstract the OS kernel
    • Containers are *lighter* than VMs
  • A *container* is a running instance of an *image.*
IMAGES HAVE LAYERS

And this is good
IMAGE LAYERS

• Images are created by inheriting from a BASE image
• This docker to cache similar layers
• Saves file system space between similar containers
• Also saves downloading
LETS START A CONTAINER

• First download and install docker
• Open Terminal or Command Prompt
• Execute docker run:
  • docker run imageName
RUN SQL SERVER

docker run microsoft/mssql-server-linux:latest
WHERE DO YOU FIND IMAGES?
DOCKER RUN

COMMAND ARG'S

• -p local:container  map a local port to the container port
  
  • eg -p 8084:80 maps local port 8084 to port 80 on the container.
  
• -e 'VAR_NAME=value' set an environment variable

• More options: https://docs.docker.com/engine/reference/run/
RUN SQL SERVER

docker run
  -e 'ACCEPT_EULA=Y'
  -e 'SA_PASSWORD=sqlserver123'
  -p 8433:1433
  -d microsoft/mssql-server-linux:latest
HOW TO GET INSIDE A CONTAINER
OPEN A SHELL

docker exec -it container-id /bin/bash

how do you know the container-id?
docker ps
HAVE I LOST YOU?
DON'T WORRY THERE ARE
EASIER WAYS TO RUN CONTAINERS
EASIER WAYS TO START CONTAINERS

KITEMATIC GUI
MAKING YOUR OWN IMAGES
ITS NOT TOO HARD

1. Create a Dockerfile
   
   A. Use FROM to specify what image your image will inherit from, some examples (eg: FROM centos:7)
   
   B. Use RUN to execute commands
   
   C. Use COPY to put files into the image
   
   D. Use EXPOSE to expose a network port.
   
   E. Use CMD to tell it what executable to run.
ANOTHER WAY TO RUN CONTAINERS

DOCKER COMPOSE

• Create a docker-compose.yml file
  • This allows you to define all the containers used by a project.
    • You can also define relationships between the containers.

• Start all the containers by running: docker-compose up

• This file is all that is needed to replicate the infrastructure on any number of developer machines or servers.
THINGS TO KEEP IN MIND

• A container typically consists of a single process.
• The process should log output to standard output.
CONCLUSIONS

WRAPPING IT UP

• Docker is a fast paced technology with lots of bells and whistles, we have hardly scratched the surface.

• Docker in production could be the topic of many further presentations. Lots of deployment options with even more bells and whistles.