

# **OVERVIEW**

- Tutorial 7 & 8 are posted
- Only 7 tutorials are required
  - Additional tutorials beyond 7 provide extra credit
- Term project paper template to be posted over Thanksgiving

November 25, 2019

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## PRESENTATION TIPS

- Include slide numbers on slides
  - Helps with pacing, and when audience asks questions
- Do not read slides
- Use short phrases, not complete sentences on slides
  - Consider differences from presenting vs. writing a paper
- Goal is to inform the audience regarding the paper/system
  - Define acronyms on first use
  - Define and describe new systems (don't assume prior knowledge)
- Don't make audience perform your analysis/critique
  - Don't just copy and paste large tables and text from paper to slides
  - For tables, can use popup to focus attention to a certain part
- Best presentations synthesize key points of papers/systems
  - Goal is to maximize accessibility of content

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# **GROUP PRESENTATION SCHEDULE**

### **Monday November 25**

- 1. Group 6 Amazon Dynamo DB
- 2. Group 8 Paper: Serverless computation with Open Lambda
- 3. Group 2 Paper: A Programming Model and Middleware for High Throughput Serverless Computing Applications

### Monday December 2

- 1. Group 9 Paper: Performance comparison of container-based technologies for the Cloud
- 2. Group 10 Paper: An Investigation of the Impact of Language Runtime on the Performance and Cost of Serverless Functions
- 3. Group 4 Paper: Exploring Serverless Computing for Neural Network Training

### Wednesday December 4

- 1. Group 1 Paper: Performance evaluation of heterogeneous cloud functions
- 2. Group 7 Amazon Cognito
- 3. Group 3 Paper: Serverless computing economics and architecture impact

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# TERM PROJECT DELIVERABLES

- Nine project teams
- Term project lightning presentations
  - Monday December 9<sup>th</sup> (5:50-7:50pm)
  - Takes place of final exam
  - Presentation length: 5 minutes + questions, total 8 minutes
  - Format and rubric coming soon
- Term project final paper and source code repository
  - Friday December 13 @ 11:59pm
  - Paper template to be provided

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# FEEDBACK FROM 11/20

- Cloud terminology: what does "persist" mean?
- Persist means to preserve
- Typically persistent is used in relation to storage (e.g. disks)
- EBS volumes are considered <u>persistent</u> storage
- Local NVME SSD disks on c5d instances are called ephemeral
  - Ephemeral means temporary

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# FEEDBACK - 2

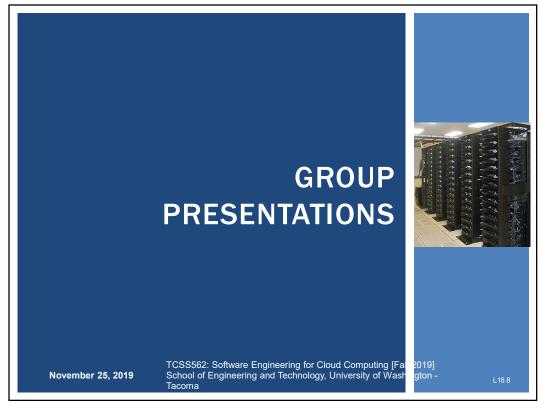
- http API -> gRPC ?
- Docker can be used to host Google RPC APIs in a container
- Docker exposes http interface to a GO microservice
- This enables containerized microservices without a web application server/container
  - Less overhead...
- This is a nice blog on GO, gRPC, and Docker:
  - https://medium.com/@matzhouse/go-grpc-and-dockerc1fb2ec8e9f0
- Java microservices w/ Springboot can similarly be hosted by Docker containers w/o a server
  - https://spring.io/guides/gs/spring-boot-docker/

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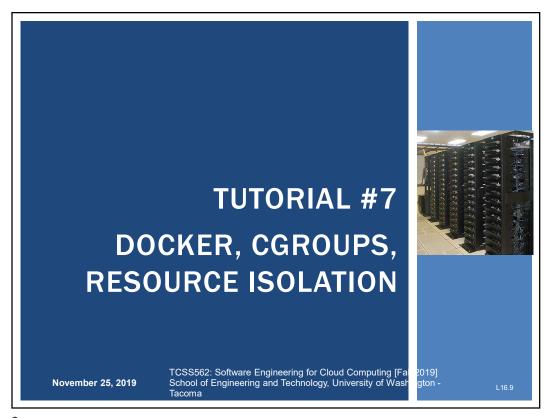
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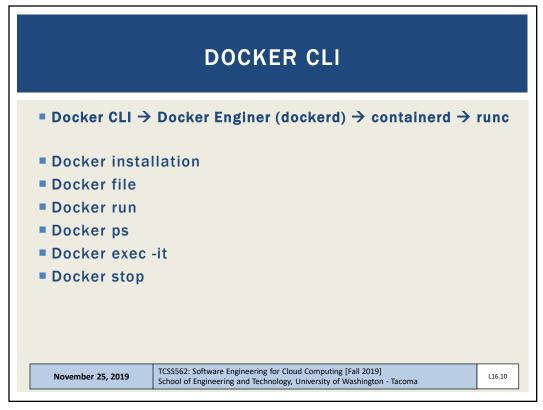
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8





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```
Attach local standard input, output, and error streams to a running container Build an image from a Dockerfile
Create a new image from a container's changes
Copy files/folders between a container and the local filesystem
Create a new container
Deploy a new stack or update an existing stack
Inspect changes to files or directories on a container's filesystem
Get real time events from the server
Run a command in a running container
Export a container's filesystem as a tar archive
Show the history of an image
List images
Import the contents from a tarball to create a filesystem image
build
commit
create
deploy
diff
events
exec
export
history
 images
                                                     List images
Import the contents from a tarball to create a filesystem image
Display system-wide information
Return low-level information on Docker objects
Kill one or more running containers
Load an image from a tar archive or STDIN
Log in to a Docker registry
Log out from a Docker registry
Fetch the logs of a container
Pause all processes within one or more containers
List port mappings or a specific mapping for the container
List containers
Pull an image or a repository from a registry
import
info
inspect
kill
load
 login
logout
logs
pause
port
                                                     List containers

Pull an image or a repository from a registry

Push an image or a repository to a registry

Rename a container

Restart one or more containers

Remove one or more containers

Remove one or more images

Run a command in a new container

Save one or more images to a tar archive (streamed to STDOUT by default)

Search the Docker Hub for images

Start one or more stopped containers

Display a live stream of container(s) resource usage statistics

Stop one or more running containers

Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE

Display the running processes of a container

Unpause all processes within one or more containers

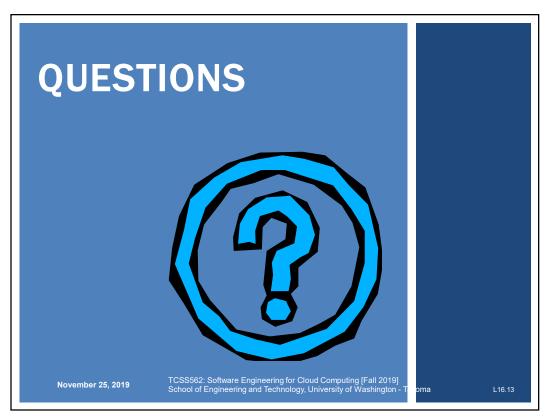
Update configuration of one or more containers

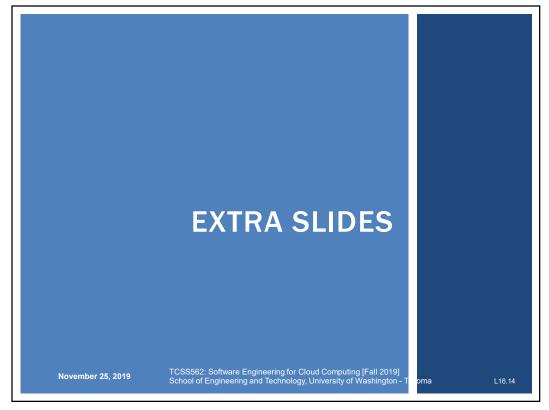
Show the Docker version information

Block until one or more containers stop, then print their exit codes
ps
pull
push
rename
restart
run
save
search
start
stats
stop
tag
top
unpause
update
version
wait
                                                        Block until one or more containers stop, then print their exit codes
```

# TUTORIAL 7 Linux performance benchmarks stress-ng 100s of CPU, memory, disk, network stress tests Sysbench Used in tutorial for memory stress test November 25, 2019 TCSSS62: Software Engineering for Cloud Computing [Fall 2019] School of Engineering and Technology, University of Washington - Tacoma

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