

Getting Familiar with Docker docker

Objectives

- Getting familiar with docker shell
- Finding help, basic operations
- Running Ephemeral Container
- Running Interactive Container

\$ docker

Commands:

attach	Attach to a running container
build	Build an image from a Dockerfile
commit	Create a new image from a container's changes
cp	Copy files/folders from a container's filesystem to the host
path	
create	Create a new container
diff	Inspect changes on a container's filesystem
events	Get real time events from the server
exec	Run a command in an existing container
export	Stream the contents of a container as a tar archive
history	Show the history of an image
images	List images
import	Create a new filesystem image from the contents of a tarball
info	Display system-wide information
inspect	Return low-level information on a container
kill	Kill a running container
load	Load an image from a tar archive
login	Register or log in to a Docker registry server
logout	Log out from a Docker registry server
logs	Fetch the logs of a container
port	Lookup the public-facing port that is NAT-ed to PRIVATE_PORT
pause	Pause all processes within a container
ps	List containers
pull	Pull an image or a repository from a Docker registry server
push	Push an image or a repository to a Docker registry server
restart	Restart a running container
rm	Remove one or more containers
rmi	Remove one or more images
run	Run a command in a new container
save	Save an image to a tar archive
search	Search for an image on the Docker Hub
start	Start a stopped container
stop	Stop a running container
tag	Tag an image into a repository
top	Lookup the running processes of a container

Finding Help

Syntax => `docker <command> --help`

e.g.

```
$ docker login --help
```

```
bash-3.2$ docker login --help
```

```
Usage: docker login [OPTIONS] [SERVER]
```

```
Register or log in to a Docker registry server, if no server is specified  
"https://index.docker.io/v1/" is the default.
```

<code>-e, --email=""</code>	Email
<code>-p, --password=""</code>	Password
<code>-u, --username=""</code>	Username

Finding Information

```
$ docker info
```

```
bash-3.2$ docker info
Containers: 32
Images: 46
Storage Driver: aufs
  Root Dir: /mnt/sda1/var/lib/docker/aufs
  Dirs: 111
Execution Driver: native-0.2
Kernel Version: 3.16.7-tinycore64
Operating System: Boot2Docker 1.3.2 (TCL
24 20:40:58 UTC 2014
Debug mode (server): true
Debug mode (client): false
Fds: 11
Goroutines: 13
EventsListeners: 0
Init Path: /usr/local/bin/docker
Username: initcron
Registry: [https://index.docker.io/v1/]
```


Find Docker Version

```
$ docker version
```

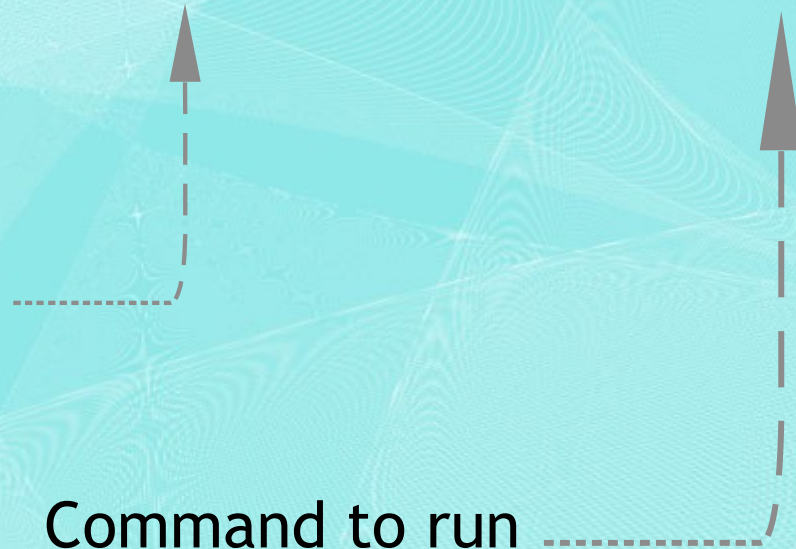
```
bash-3.2$ docker version
Client version: 1.3.2
Client API version: 1.15
Go version (client): go1.3.3
Git commit (client): 39fa2fa
OS/Arch (client): darwin/amd64
Server version: 1.3.2
Server API version: 1.15
Go version (server): go1.3.3
Git commit (server): 39fa2fa
```


Running Ephemeral Container

```
$ docker run ubuntu /bin/echo "Hello World"
```

Image

Command to run
(inside container)

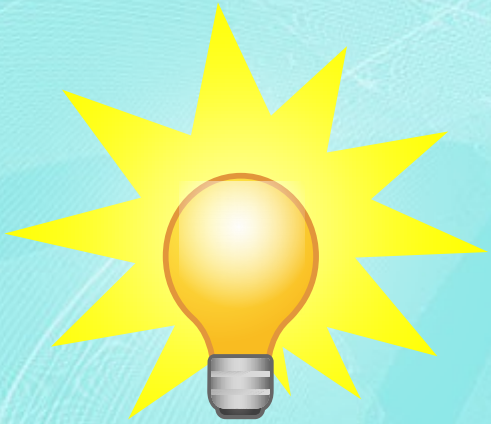


What just happened?

- Docker checks if image “ubuntu” is present locally.
- If not, it connects to the docker hub and pulls the image
- Launches container with the image
- Runs the command inside the container.



All that is fine. But where on earth did my container go ? If I run “docker ps” I don't see a trace of it



Docker Containers last only till the program you started with it lasts. It will terminate immediately after it exits.

Checking Status of last run Container

```
$ docker ps -l
```

```
bash-3.2$ docker ps -l
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
956b80e3716c	ubuntu:14.04	"/bin/echo 'Hello Wo	12 hours ago	Exited (0) 18 minutes ago		drunk_torvalds



```
bash-3.2$ docker ps -l
```

CONTAINER ID	IMAGE	COMMAND	CREATED
956b80e3716c	ubuntu:14.04	"/bin/echo 'Hello Wo	12 hours ago

STATUS	PORTS	NAMES
Exited (0) 18 minutes ago		drunk_torvalds

Running Interactive Container

```
$ docker run -i -t ubuntu /bin/bash
```



terminal

interactive

```
root@ee75c3b486db:/# cat /etc/issue
Ubuntu 14.04.1 LTS \n \l
```


\$ cat /proc/cpuinfo

```
processor      : 2
vendor_id     : GenuineIntel
cpu family    : 6
model         : 58
model name    : Intel(R) Core(TM)
stepping      : 9
microcode     : 0x19
cpu MHz       : 2510.989
cache size    : 6144 KB
physical id   : 0
siblings      : 4
core id       : 2
cpu cores     : 4
apicid        : 2
initial apicid : 2
fpu           : yes
fpu_exception : yes
cpuid level   : 5
wp            : yes
flags         : fpu vme de pse t
l pni ssse3 hypervisor lah_f_lm
bogomips      : 5021.97
clflush size  : 64
cache_alignm_ : 64
address sizes : 36 bits physical
power managem
```

```
processor      : 3
vendor_id     : GenuineIntel
cpu family    : 6
model         : 58
model name    : Intel(R) Core(TM)
stepping      : 9
microcode     : 0x19
cpu MHz       : 2510.989
cache size    : 6144 KB
physical id   : 0
siblings      : 4
core id       : 3
cpu cores     : 4
apicid        : 3
initial apicid : 3
fpu           : yes
fpu_exception : yes
cpuid level   : 5
wp            : yes
flags         : fpu vme de pse t
l pni ssse3 hypervisor lah_f_lm
bogomips      : 5021.97
clflush size  : 64
cache_alignm_ : 64
address sizes : 36 bits physical
power managem
```

Number of CPUs
inside a container
matches CPUs on
the system. No
virtual CPUs

Exercise

Try running linux commands inside the container.

After exiting from the shell, container is terminated. Try running following commands

```
$ docker ps  
$ docker ps -l
```


Its not fun to have containers which run some
ad hoc command and exit. Lets make it
persist a little longer.

Running “Hello World” daemon

```
$ docker run -d ubuntu /bin/sh -c  
"while true; do echo hello world;  
sleep 1; done"
```


Check Status

```
$ docker ps
```

```
bash-3.2$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
fa97bb0bb19e	ubuntu:14.04	"/bin/sh -c 'while t	12 hours ago	Up 4 minutes		cranky_feynman

Check Logs

Syntax: `docker logs <container>`

e.g.

```
$ docker logs cranky_feynman
```

```
$ docker logs -f cranky_feynman
```


What is `cranky_feynman` ?

Ans: If you do not assign a name to the container, it sets some random but entertaining string to it.

That's what it is



When you run commands, replace `cranky_feynman` with the name on your system

What if I want to connect to the container and run some ad hoc shell commands?

Docker Exec

```
$ docker exec cranky_feynman ps aux
```


Stop Container

```
$ docker stop cranky_feynman  
$ docker ps
```


Finding Previously Run Containers

```
$ docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
fa97bb0bb19e	ubuntu:14.04	"/bin/sh -c 'while t	12 hours ago	Exited (-1) About a minute ago		cranky_feynman
ee75c3b486db t	ubuntu:14.04	"/bin/bash"	12 hours ago	Exited (127) 15 minutes ago		compassionate_engelbar
956b80e3716c	ubuntu:14.04	"/bin/echo 'Hello Wo	13 hours ago	Exited (0) About an hour ago		drunk_torvalds
81f206c4c142 l	ubuntu:14.04	"/bin/echo 'Hello Wo	13 hours ago	Exited (0) About an hour ago		condescending_blackwel
073f68f26d25	ubuntu:14.04	"/bin/bash"	24 hours ago	Exited (0) About an hour ago		boring_poincare
1b15ac6ae185	ubuntu:14.04	"-it /bin/bash"	24 hours ago			naughty_shockley

Starting Previously Run Container

```
$ docker start cranky_feynman
```

```
$ docker start fa97bb0bb19e
```


Removing Container

```
$ docker stop cranky_feynman
```

Its important to stop a container before removing it.

```
$ docker rm cranky_feynman
```