

Driving Deeper with Dockerfile



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Module Outline



The Big Picture

Dockerfile Basics

Creating a Dockerfile

Building from a Dockerfile

Dockerfile

Plain-text

Simple format

Instructions to
build image



Module Recap

Dockerfile



Dockerfile Basics

Dockerfile

```
#This is a comment line  
  
FROM Ubuntu:15.04  
MAINTAINER Nigel Poulton  
  
RUN apt-get update  
CMD ["echo","Hello World"]
```

Building Our Own
Dockerfile

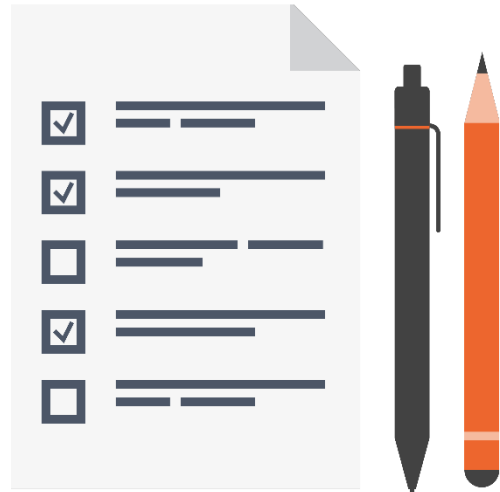
```
docker build -t <image---tag> .
```

docker build

```
docker build -t helloworld:0.1 .  
Sending build context to Docker daemon 3.584 kB  
Sending build context to Docker daemon  
Step 0 : FROM ubuntu:15.04  
----> b12dbb6f7084  
     1 : MAINTAINER nigelpoulton@hotmail.com  
----> Running in cd680211299a  
----> b5c24083e450  
Removing intermediate container cd680211299a  
Step 2 : RUN apt-get update
```

Viewing the Build

Module Outline



The Build Cache

Dockerfile and Layers

Dockerfile Instructions

- `CMD`, `ENTRYPOINT`, `ENV`,
`VOLUME`

Dockerfile

Plain-text

Simple format

Instructions to
build image



Docerkfile

Docerkfile

FROM

123

INSTRUCTION

abc

INSTRUCTION

def

INSTRUCTION

ghi

INSTRUCTION

jkl

Docerkfile

FROM 123

INSTRUCTION

abc

INSTRUCTION def

INSTRUCTION ghi

INSTRUCTION jkl

```
Docerkfile

FROM 123
INSTRUCTION
abc
INSTRUCTION def
INSTRUCTION ghi
INSTRUCTION jkl
```

```
Build Cache

INSTRUCTION
abc
— Linked to Image 123 —

INSTRUCTION
xyz
— Linked to Image 789 —
```

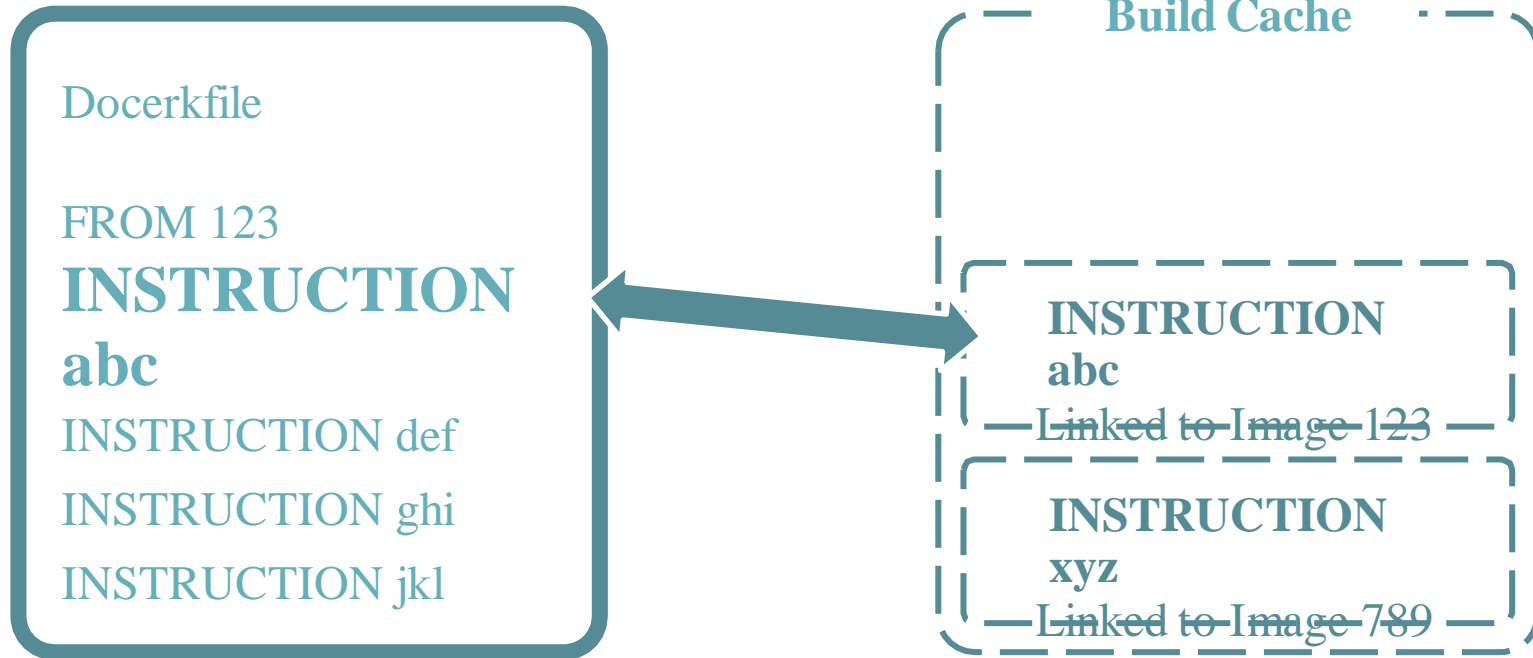
```
Docerkfile

FROM 123
INSTRUCTION
abc
INSTRUCTION def
INSTRUCTION ghi
INSTRUCTION jkl
```

```
Build Cache

INSTRUCTION
abc
— Linked to Image 123 —

INSTRUCTION
xyz
— Linked to Image 789 —
```



CMD

Run-time

Run commands in
containers at launch time

Equivalent of -

```
docker run <args> <  
command>
```

```
docker run <args> /  
bin/bash
```

One per Dockerfile

RUN

Build-time

Add layers to images

Used to install apps

Shell Form

Commands are expressed the same way as shell commands

Commands get prepended by `"/bin/sh -c"`

Variable expansion etc...

Exec Form

JSON array style -
`["command", "arg1"]`

Containers don't need a shell

Avoids string munging by the shell

No shell features –

- No variable expansion

- No special characters

- (`&&`, `||`, `>...`)

ENTRYPOINT

Can't be overridden at run-time with normal commands –

docker run ... <command>

Any command at run-time is used as an argument to
ENTRYPOINT

Variable expansion etc...



Module Recap



Build Cache

INSTRUCTION

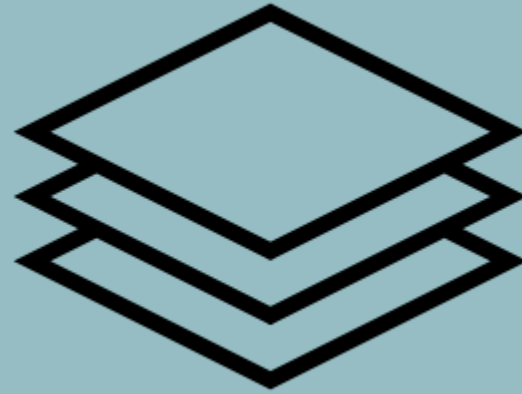
abc

Linked to Image 123

INSTRUCTION

xyz

Linked to Image 789



```
RUN apt-get update  
RUN apt-get install -y abc  
RUN apt-get install -y def
```

```
RUN apt-get update \  
&& apt-get install -y \  
abc \  
def
```

Dockerfile and Layers

Dockerfile

```
CMD /usr/sbin/apache2ctl
```

```
ENTRYPOINT
```

```
    /usr/sbin/apache2ctl
```

```
ENV var=value
```

```
VOLUMES /data
```

Dockerfile Instructions