DOCKERFILES : BUILDING DOCKER IMAGES AUTOMATICALLY IV - CMD

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Continued from Dockerfile - Build Docker images automatically III - RUN (http://www.bogotobogo.com/DevOps/Docker/Docker_Dockerfile_to_build_images_automatically_3.php)

In this chapter, we're going to learn more on how to automate this process via instructions in Dockerfiles. We'll be focused on **CMD**.

Dockerfie - CMD

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Docker & K8s

Docker install on Amazon Linux AMI (/DevOps/Docker/Docker_Install_O

Docker install on EC2 Ubuntu

This section is from http://docs.docker.com/reference/builder/ (http://docs.docker.com/reference/builder/).

`CMD` has 3 forms:

1. CMD ["executable","param1","param2"] (exec form, this is the preferred form)
2. CMD ["param1","param2"] (as default parameters to ENTRYPOINT)
3. CMD command param1 param2 (shell form)

There can only be one CMD instruction in a Dockerfile. If we list more than one CMD then only the last CMD will take effect.

The main purpose of a CMD is to provide defaults for an executing container. These defaults can include an executable, or they can omit the executable, in which case we must specify an ENTRYPOINT instruction as well.

1. **Note**: If CMD is used to provide default arguments for the ENTRYPOINT instruction, both the CMD and ENTRYPOINT instructions should be specified with the JSON array format.
2. **Note**: The exec form is parsed as a JSON array, which means that you must use double-quotes (") around words not single-quotes (').
3. **Note**: Unlike the shell form, the exec form does not invoke a command shell. This means that normal shell processing does not happen. For example, CMD ["echo", "$HOME"] will not do variable substitution on $HOME. If you want shell processing then either use the shell form or execute a shell directly, for example: CMD ["sh", "-c", "echo", "$HOME"].

Dockerfile 'CMD' sample

Here is our Dockerfile that we're going to play with in this chapter. We'll run instructions from this file step by step by uncommenting and commenting each line.

```
FROM debian:latest
MAINTAINER devops@bogotobogo.com

# 1 - RUN
RUN apt-get update && DEBIAN_FRONTEND=noninteractive apt-get install -yq apt-utils
RUN DEBIAN_FRONTEND=noninteractive apt-get install -yq htop
RUN apt-get clean

# 2 - CMD
CMD ["htop"]
```

We have one instruction for `CMD`, and at the completion of the `CMD`, it will become an image.

```
$ docker image build -t bogodevops/demo .
Sending build context to Docker daemon 33.56 MB
Sending build context to Docker daemon
Step 0 : FROM debian:latest
 ---> f6fab3b798be
Step 1 : MAINTAINER k@bogotobogo.com
 ---> Using cache
 ---> 511bcbdd59ba
Step 2 : RUN apt-get update && DEBIAN_FRONTEND=noninteractive apt-get install -yq apt-utils
 ---> Using cache
 ---> e6e2c03b8efc
Step 3 : RUN DEBIAN_FRONTEND=noninteractive apt-get install -yq htop
 ---> Using cache
 ---> fac6e3168cfe
Step 4 : RUN apt-get clean
 ---> Using cache
 ---> 358b5cc4b9fa
Step 5 : CMD htop
 ---> Running in d31a73253846
 ---> b64547129d16
Removing intermediate container d31a73253846
Successfully built b64547129d16
```


But unlike in the previous chapter where we ran `htop` explicitly within the container, this time, it becomes a default environment.

So, even though we issue `docker run` without passing in any command, we have `htop` running automatically when the container is created:

```
$ docker container run -it --rm bogodevops/demo
```

automatically IV - CMD (/DevOps/Docker/Docker_Dockerfi

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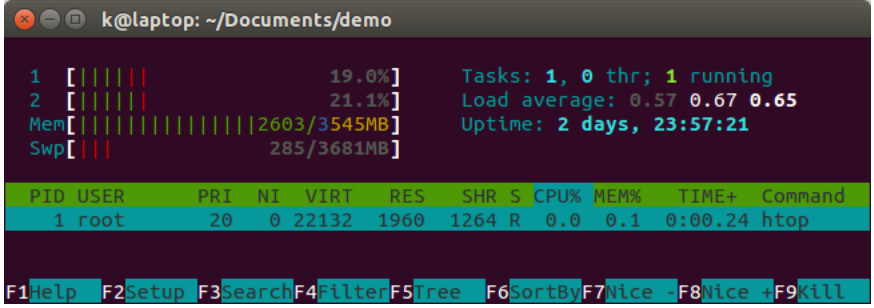
Docker - ELK 7.6 : Filebeat on



We get the `htop` as soon as we're in the container. It's given us as an environment.

If we pass in `/bin/bash`, then we'll have `bash` instead of `htop`:

```
$ docker container run -it --rm bogodevops/demo /bin/bash
root@00e40007ed7d:/# exit
exit
```

Before we start new thing, we need to remove 'testimage' in our directory:

```
$ ls
Dockerfile  testimage
$ rm testimage
```

Then, let's switch our `CMD` instruction to `CMD ["ls", "l"]`. Here is our new `Dockerfile`:

```
FROM debian:latest
MAINTAINER k@bogotobogo.com

# 1 - RUN
RUN apt-get update && DEBIAN_FRONTEND=noninteractive apt-get install -yq apt-utils
RUN DEBIAN_FRONTEND=noninteractive apt-get install -yq htop
RUN apt-get clean


# 2 - CMD
#CMD ["htop"]
CMD ["ls", "l"]
```

Build a new image with the new `CMD ["ls", "l"]`:

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Docker Compose with two

```
$ docker image build -t bogodevops/demo .
Sending build context to Docker daemon  2.56 kB
Sending build context to Docker daemon
Step 0 : FROM debian:latest
 ---> f6fab3b798be
Step 1 : MAINTAINER k@bogotobogo.com
 ---> Using cache
 ---> 511bcbdd59ba

Step 2 : RUN apt-get update && DEBIAN_FRONTEND=noninteractive apt-get install -yq apt-utils
 ---> Using cache
 ---> e6e2c03b8efc
Step 3 : RUN DEBIAN_FRONTEND=noninteractive apt-get install -yq htop
 ---> Using cache
 ---> fac6e3168cfe
Step 4 : RUN apt-get clean
 ---> Using cache
 ---> 358b5cc4b9fa
Step 5 : CMD ls -l
 ---> Running in 717df1a3baa2
 ---> d2f3de97b6ef
Removing intermediate container 717df1a3baa2
Successfully built d2f3de97b6ef
```

If we go in our container, it will automatically gives the output from `ls -a`:

```
$ docker container run -it --rm bogodevops/demo
total 68
drwxr-xr-x   2 root root 4096 Nov  5 21:37 bin
drwxr-xr-x   2 root root 4096 Sep 21 18:17 boot
drwxr-xr-x   4 root root  360 Nov 25 05:25 dev
drwxr-xr-x  32 root root 4096 Nov 25 05:25 etc
drwxr-xr-x   2 root root 4096 Sep 21 18:17 home
drwxr-xr-x   8 root root 4096 Nov 25 02:27 lib
drwxr-xr-x   2 root root 4096 Nov  5 21:33 lib64
drwxr-xr-x   2 root root 4096 Nov  5 21:31 media
drwxr-xr-x   2 root root 4096 Sep 21 18:17 mnt
drwxr-xr-x   2 root root 4096 Nov  5 21:31 opt
dr-xr-xr-x 253 root root    0 Nov 25 05:25 proc
drwx------   2 root root 4096 Nov  5 21:31 root
drwxr-xr-x   5 root root 4096 Nov  5 21:37 run
drwxr-xr-x   2 root root 4096 Nov  5 21:37 sbin
drwxr-xr-x   2 root root 4096 Jun 10  2012 selinux
drwxr-xr-x   2 root root 4096 Nov  5 21:31 srv
dr-xr-xr-x  13 root root    0 Nov 25 05:25 sys
drwxrwxrwt   2 root root 4096 Nov  5 21:37 tmp
drwxr-xr-x  16 root root 4096 Nov 25 02:27 usr
drwxr-xr-x  17 root root 4096 Nov 25 02:27 var
```


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