
COMPUTER SUBJECT:	SIMPLE VIRTUALISATION
TYPE:	INDIVIDUAL WORK EXERCISE
IDENTIFICATION:	Simple Use of Containers in Docker/Pele
COPYRIGHT:	<i>Peter Levinsky</i>
LEVEL:	EASY
DURATION:	1½-2½ hours
SIZE:	NA
OBJECTIVE:	Using Simple containers in Docker as virtualisation
REQUIREMENTS:	Installation of Docker note of virtualisation
COMMANDS:	Docker pull, Docker run, Docker inspect, Docker images, Docker ps, Docker rm/rmi



Simple Use of Containers in Docker

The Mission

We shall download, start and stop different containers / images and we shall investigate the virtualisation, the independency between different instances of running images (containers).

When we talk of **containers** then we mean the concept, but when we talk of **images** then we mean an actual implementation of a container – so the Docker commands work with images.

We will work with a simple image (container) of a Linux system named ‘alpine’.

For additional background information, you can see / read these sources:

- Docker command reference manual
<https://docs.docker.com/engine/reference/commandline/cli/>
- 3 videos
 - General commands <https://www.youtube.com/watch?v=v-sVpk8nxbA&list=PLtWgqZUXAsNhMnuVgkP-nIuuKrRHuVF4Q&index=4>
 - Two connected videos of pulling and starting images
 - <https://www.youtube.com/watch?v=VHZd7CJBixc&list=PLtWgqZUXAsNhMnuVgkP-nIuuKrRHuVF4Q&index=5>
 - https://www.youtube.com/watch?v=s0z_OazJNjU&list=PLtWgqZUXAsNhMnuVgkP-nIuuKrRHuVF4Q&index=6

Assignment 1: Download an images

You should open a terminal window (either a Command Prompt or a Windows PowerShell).

Type the command

docker images – what do you see? (Try also **docker images --help**)

Now you should download the image of alpine – type the command

docker pull alpine

Try the command again

docker images – what do you see now?

Assignment 2: Start and stop images

You stay in the terminal window.

Type the command

docker ps – what does you see? (Try also ‘**docker ps -a**’ or ‘**docker ps -help**’)

Then start the images

docker run -it alpine (it=interactive terminal)

Open a new terminal window and type

docker ps – what does you see now?

docker stop <<container-name :: Last column in docker ps command>>

(You can use the container ID – the first column)

Then try

docker ps -a – what does you see now?

To remove a previous running image from the process-list (**ps -a**), then you should type:

docker rm <<container-name :: Last column in docker ps command>>

(You can use the container ID – the first column)

Assignment 3: Independencies between running images

This assignment is to prove that different running images are independent of each other.

You are to start two instances of the alpine image

Open one terminal window (command prompt / Windows PowerShell)

```
docker run -it --name image1 alpine (you can pick another name than image1)
```

Open another terminal window (command prompt / Windows PowerShell)

```
docker run -it --name image2 alpine (you can pick another name than image2)
```

You can check your running process

```
docker ps -a -- note that your name of the images are now image1 + image2
```

Check the two running images, what are the network IP-address for image1 respectively image2. In a new terminal window type

```
docker inspect image1          and  
docker inspect image2
```

Do they have the same IP-address?

Go to your first terminal ('image1') and create a new folder

```
/ # mkdir VirtualOS
```

```
/ # ls                                to list the folders Note that VirtualOS exist.
```

Go to your Second terminal ('image2') and check the folders

```
/ # ls                                Can you see the VirtualOS? Explain.
```

If you will stop and clean up your downloaded images:

In the first terminal window (image1)

```
/ # exit          - Do the same for the second terminal window (image2)
```

You can now remove them from the process-list using **docker rm image1** respectively **image2**

If you no longer need the alpine image, you can remove the image from your laptop

```
Docker rmi alpine
```

Note you cannot remove the image if it is showing in the process-list (do the **rm**-command)

Then try

```
Docker images - are all images removed?
```

Assignment Extra A: Additional images

You can try other images from the hub.docker.com (login to the site or use 'Kitematic')

It could be MySQL, MongoDB, docker-mailserver or something else.