Exercise 2

1) Build a simple network experiment using **Network Namespaces**:
   Two 'hosts' are to be isolated from each other and from the rest of the computer (or your VM 'DT5_WS2223_docker') with regard to the network. Then they are connected with a virtual Ethernet cable and the mutual reachability is checked. The IPv4 addresses in the network 10.1.1.0/24 should be 10.1.1.1 and 10.1.1.2 .

   - Creating a Network NS ...
     ```
     sudo ip netns add netns1
     ```
   - ... and start the loopback device in it
     ```
     sudo ip netns exec netns1 ip link set dev lo up
     ```
   - Creating a virtual Ethernet cable
     ```
     sudo ip link add veth1 type veth peer name veth2
     ```
   - Moving a virtual NIC into an NS
     ```
     sudo ip link set veth1 netns netns1
     ```

Exercise 2

- Setting an IPv4 address and starting the NIC

```
sudo ip netns exec netns1 ip addr add 10.1.1.1/24 dev veth1
sudo ip netns exec netns1 ip link set dev veth1 up
```

- Starting a bash in the context of a Network NS

```
sudo ip netns exec netns1 bash
```

Here commands are shown only for one of the two 'hosts', the rest you complete yourself.

Check the mutual reachability e.g. with `ping`.

Use wireshark to observe and document network traffic on the virtual Ethernet connection.

For reproducibility, summarize your commands in a script and submit that as well.

Exercise 2

2) Experiment with **mount namespaces** to isolate file systems.
To do this, go through the slides on the mount namespace

- playing around: isolated fs
- playing around: isolated root fs
- playing around: isolated overlay fs

Submit some meaningful shell screenshots.

Exercise 2

3) Go through the **Docker Hands On** Tutorial (Part-1).

- Create an image 'simple' and from it a container
- ... by installing 'procps' and then creating a new image 'simple:v1' from the container thus modified.
- Go through the previous two steps again and create another image 'simple:v2', using the one-line notation from the tutorial when installing procps. What are the sizes of each of the two image variants?

Submit some meaningful shell screenshots.