**Some initial Docker knowledge**

Installation

* Docker installation. We need Docker Engine and Docker Compose, not Docker Desktop as such.
  + Linux or Linux VM in Windows: [https://docs.docker.com/**engine**/install/**ubuntu**/](https://docs.docker.com/engine/install/ubuntu/)

and also: <https://docs.docker.com/compose/install/other/#on-linux>

* + Windows: [https://docs.docker.com/**desktop**/install/**windows**-install/](https://docs.docker.com/desktop/install/windows-install/)
  + Mac: [https://docs.docker.com/**desktop**/install/**mac**-install/](https://docs.docker.com/desktop/install/mac-install/) (Note: Intel chip or Apple silicon?)
* The main thing is the Docker Engine (Which in Win/Mac is installed with Docker Desktop)
  + March 2023: v. 20.10.23, Oct 2022: v. 20.10.17,
* 1. Build images, 2. Share images via registry like DockerHub (hub.docker.com), 3. Run **images** as **containers**.
* Lighter than virtual machine. Containers share the same OS resources, but are sandboxed = **isolated** from each other and the host computer **by Docker Engine** for e.g.:
  + folders and files - (though if you need to share **volume**, it's possible)
  + internal network ports - (though if you need to open/publish a port outside the container, it's possible)
  + networks - (by default each container is alone, but can be put to one 'network' if needed)

What would the VM hypervisor be then? A hypervisor, also known as a virtual machine monitor or VMM, is software that creates and runs virtual machines (VMs). A hypervisor allows one host computer to support multiple guest VMs by virtually sharing its resources, such as memory and processing. …. Source: <https://www.vmware.com/topics/glossary/content/hypervisor.html>

* Docker images and container make it possible to e.g. run / have
  + two different versions of Node on the same computer,
  + with different even 'globally' (=still only in that container) installed npm modules,
  + both thinking they are running 'at port 3000' (local port inside the container)
  + but those ports offered outside of the two containers as e.g. 8333 and 8444
  + containers can see each other if needed with so called **network**(s)
* With Docker we can tackle e.g these challenges (These are some of the Docker benefits):
  + Some files missing from the deployment => Image contains all needed
  + Software versions don't match => Image can contain all needed individual software packages, exactly the version wanted
  + Environment etc. settings vary => Image always starts from its own wanted settings
  + Building the dev or runtime environment takes time => After image built, it can be taken into use very fast.
  + Building the environment is sometimes impossible to roll back to previous state => Docker allows all to be scripted, and we can improve those scripts iteratively, and even take a copy of some old script as basis for a different kind of project.

YAML/YML format: Indentation to show nesting. Dash to show list items.  
  
<https://docs.docker.com.xy2401.com/engine/docker-overview/> Docker Overview

<https://www.docker.com/blog/understanding-docker-networking-drivers-use-cases/>