# Solution M2: Introduction to Docker

This is one possible solution of the tasks included in the homework

All steps that follow assume that we decided to base our solution on Ubuntu Server 20.04 box we created in M1

## The Environment

Prepare the environment by creating a **Vagrantfile** with the following content

# -\*- mode: ruby -\*-

# vi: set ft=ruby :

Vagrant.configure("2") do |config|

  config.ssh.insert\_key = false

  config.vm.define "docker" do |docker|

    docker.vm.box="shekeriev/ubuntu-20-04-server"

    docker.vm.hostname = "docker.dob.lab"

    docker.vm.network "private\_network", ip: "192.168.89.100"

    docker.vm.synced\_folder "vagrant/", "/vagrant"

    docker.vm.provision "shell", path: "docker.sh"

  end

end

\* the **docker.vm.synced\_folder** can be skipped (removed) or you can put there the **Dockerfile** and **index.html** files

Create a **docker.sh** file to install and configure the necessary packages

#!/bin/bash

echo "\* Disable auto-update timers and service if present ..."

systemctl disable --now apt-daily-upgrade.timer &> /dev/null || true

systemctl disable --now apt-daily.timer &> /dev/null || true

systemctl disable --now unattended-upgrades.service &> /dev/null || true

echo "\* Update packages ..."

apt-get update -y && apt-get upgrade -y

echo "\* Install additional software ..."

apt-get install -y apt-transport-https ca-certificates curl \

gnupg-agent software-properties-common

echo "\* Install the repository key ..."

curl -fsSL https://download.docker.com/linux/ubuntu/gpg | apt-key add -

echo "\* Add the repository ..."

add-apt-repository \

   "deb [arch=amd64] https://download.docker.com/linux/ubuntu \

   $(lsb\_release -cs) \

   stable"

echo "\* Install the software ..."

apt-get update -y

apt-get install -y docker-ce docker-ce-cli containerd.io

echo "\* Add the vagrant user to the docker group ..."

usermod -aG docker vagrant

Start the environment with

**vagrant up**

## The Image

Enter the **docker** machine with

**vagrant ssh**

Create **index.html** file with the following content

<h1>Hello from my first container!</h1>

Create a **Dockerfile** with the following content

FROM ubuntu:20.04

RUN apt-get update -y

RUN env DEBIAN\_FRONTEND=noninteractive apt-get install -y apache2

ADD index.html /var/www/html/

RUN chown -R www-data:www-data /var/www

ENV APACHE\_RUN\_USER  www-data

ENV APACHE\_RUN\_GROUP www-data

ENV APACHE\_PID\_FILE  /var/run/apache2/apache2.pid

ENV APACHE\_RUN\_DIR   /var/run/apache2

ENV APACHE\_LOCK\_DIR  /var/lock/apache2

ENV APACHE\_LOG\_DIR   /var/log/apache2

RUN mkdir -p $APACHE\_RUN\_DIR $APACHE\_LOCK\_DIR $APACHE\_LOG\_DIR

EXPOSE 80

CMD ["/usr/sbin/apache2", "-D", "FOREGROUND"]

Build the image with

**docker build -t hw2 .**

### The Container

Run the container with

**docker container run -d -p 80:80 hw2**

Open browser on the host and navigate to [**http://192.168.89.100**](http://192.168.89.100)

There should a working web application

### The Cleaning

Destroy the machine

**vagrant destroy --force**