Name => Shubham Ganesh Sukum
Class => TE-11 Roll No => 33371
Subject => WADL

Assignment No.2-B

Create Docker Container Environment (NVIDEIA Docker or any other).

```
blab-04@blab04-OptiPlex-5060:~$ sudo apt-get update
[sudo] password for blab-04:
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:2 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:4 https://packages.microsoft.com/repos/vscode stable InRelease
Get:5 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2,386 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [788 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1,031 kB]
Get:10 http://in.archive.ubuntu.com/ubuntu focal-updates/universe i386 Packages [713 kB]
Fetched 5,254 kB in 5s (1,148 kB/s)
Reading package lists... Done
```

```
blab-04@blab04-OptiPlex-5060:~$ sudo apt-get install \
>     ca-certificates \
>     curl \
>     gnupg \
>     lsb-release
Reading package lists... Done
Building dependency tree
Reading state information... Done
lsb-release is already the newest version (11.1.0ubuntu2).
lsb-release set to manually installed.
ca-certificates is already the newest version (20211016ubuntu0.20.04.1).
ca-certificates set to manually installed.
gnupg is already the newest version (2.2.19-3ubuntu2.2).
gnupg set to manually installed.
The following packages were automatically installed and are no longer required:
  gir1.2-goa-1.0 libfwupdplugin1 libxmlb1
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  curl
0 upgraded, 1 newly installed, 0 to remove and 14 not upgraded.
Need to get 161 kB of archives.
After this operation, 413 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 curl amd64 7.68.0-1ubuntu2.16 [161 kB]
Fetched 161 kB in 1s (257 kB/s)
Selecting previously unselected package curl.
(Reading database ... 201019 files and directories currently installed.)
```

Preparing to unpack .../curl_7.68.0-1ubuntu2.16_amd64.deb ...
Unpacking curl (7.68.0-1ubuntu2.16) ...
Setting up curl (7.68.0-1ubuntu2.16) ...
Processing triggers for man-db (2.9.1-1) …

blab-04@blab04-OptiPlex-5060:~$ sudo mkdir -m 0755 -p /etc/apt/keyrings

blab-04@blab04-OptiPlex-5060:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /etc/apt/keyrings/docker.gpg

**blab-04@blab04-OptiPlex-5060:~$ echo **
**> "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.gpg] https://download.docker.com/linux/ubuntu **
> $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

blab-04@blab04-OptiPlex-5060:~$ sudo apt-get update
Get:1 https://download.docker.com/linux/ubuntu focal InRelease [57.7 kB]
Get:2 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages [24.7 kB]
Hit:3 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:4 https://packages.microsoft.com/repos/vscode stable InRelease
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:6 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Get:7 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Fetched 305 kB in 2s (163 kB/s)

blab-04@blab04-OptiPlex-5060:~$ sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  gir1.2-goa-1.0 libfwupdplugin1 libxmlb1
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  docker-ce-rootless-extras docker-scan-plugin pigz slirp4netns
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite
The following NEW packages will be installed:
  containerd.io docker-buildx-plugin docker-ce docker-ce-cli
  docker-ce-rootless-extras docker-compose-plugin docker-scan-plugin pigz
  slirp4netns
0 upgraded, 9 newly installed, 0 to remove and 14 not upgraded.
Need to get 112 MB of archives.
After this operation, 401 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 https://download.docker.com/linux/ubuntu focal/stable amd64 containerd.io amd64 1.6.18-1 [28.2 MB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 pigz amd64 2.4-1 [57.4 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 slirp4netns amd64 0.4.3-1 [74.3 kB]
Get:4 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-buildx-plugin amd64 0.10.2-1~ubuntu.20.04~focal [25.9 MB]
Get:5 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce-cli amd64 5:23.0.1-1~ubuntu.20.04~focal [13.2 MB]

```
Get:6 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce amd64 5:23.0.1-1~ubuntu.20.04~focal [22.0 MB]
Get:7 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce-rootless-extras amd64 5:23.0.1-1~ubuntu.20.04~focal [8,765 kB]
Get:8 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-compose-plugin amd64 2.16.0-1~ubuntu.20.04~focal [10.2 MB]
Get:9 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-scan-plugin amd64 0.23.0~ubuntu-focal [3,622 kB]
Fetched 112 MB in 1min 5s (1,712 kB/s)
Selecting previously unselected package pigz.
(Reading database ... 201026 files and directories currently installed.)
Preparing to unpack .../0-pigz_2.4-1_amd64.deb ...
Unpacking pigz (2.4-1) ...
Selecting previously unselected package containerd.io.
Preparing to unpack .../1-containerd.io_1.6.18-1_amd64.deb ...
Unpacking containerd.io (1.6.18-1) ...
Selecting previously unselected package docker-buildx-plugin.
Preparing to unpack .../2-docker-buildx-plugin_0.10.2-1~ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-buildx-plugin (0.10.2-1~ubuntu.20.04~focal) ...
Selecting previously unselected package docker-ce-cli.
Preparing to unpack .../3-docker-ce-cli_5%3a23.0.1-1~ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-ce-cli (5:23.0.1-1~ubuntu.20.04~focal) ...
Selecting previously unselected package docker-ce.
Preparing to unpack .../4-docker-ce_5%3a23.0.1-1~ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-ce (5:23.0.1-1~ubuntu.20.04~focal) ...
Selecting previously unselected package docker-ce-rootless-extras.
Preparing to unpack .../5-docker-ce-rootless-extras_5%3a23.0.1-1~ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-ce-rootless-extras (5:23.0.1-1~ubuntu.20.04~focal) ...
Selecting previously unselected package docker-compose-plugin.
Preparing to unpack .../6-docker-compose-plugin_2.16.0-1~ubuntu.20.04~focal_amd64.deb ...
Unpacking docker-compose-plugin (2.16.0-1~ubuntu.20.04~focal) ...
Selecting previously unselected package docker-scan-plugin.
Preparing to unpack .../7-docker-scan-plugin_0.23.0~ubuntu-focal_amd64.deb ...
Unpacking docker-scan-plugin (0.23.0~ubuntu-focal) ...
Selecting previously unselected package slirp4netns.
Preparing to unpack .../8-slirp4netns_0.4.3-1_amd64.deb ...
Unpacking slirp4netns (0.4.3-1) ...
Setting up slirp4netns (0.4.3-1) ...
Setting up docker-scan-plugin (0.23.0~ubuntu-focal) ...
Setting up docker-buildx-plugin (0.10.2-1~ubuntu.20.04~focal) ...
Setting up containerd.io (1.6.18-1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.service.
Setting up docker-compose-plugin (2.16.0-1~ubuntu.20.04~focal) ...
Setting up docker-ce-cli (5:23.0.1-1~ubuntu.20.04~focal) ...
Setting up pigz (2.4-1) ...
Setting up docker-ce-rootless-extras (5:23.0.1-1~ubuntu.20.04~focal) ...
Setting up docker-ce (5:23.0.1-1~ubuntu.20.04~focal) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /lib/systemd/system/docker.socket.
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for systemd (245.4-4ubuntu3.19) ...
```

blab-04@blab04-OptiPlex-5060:~$ sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:6e8b6f026e0b9c419ea0fd02d3905dd0952ad1feea67543f525c73a0a790fefb
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

blab-04@blab04-OptiPlex-5060:~$ git clone https://github.com/docker/getting-started.git
Cloning into 'getting-started'...
remote: Enumerating objects: 952, done.
remote: Total 952 (delta 0), reused 0 (delta 0), pack-reused 952
Receiving objects: 100% (952/952), 5.18 MiB | 1.52 MiB/s, done.
Resolving deltas: 100% (541/541), done.

blab-04@blab04-OptiPlex-5060:~$ sudo usermod -aG docker $USER

blab-04@blab04-OptiPlex-5060:~$ newgrp docker

blab-04@blab04-OptiPlex-5060:~$ docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
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To try something more ambitious, you can run an Ubuntu container with:
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blab-04@blab04-OptiPlex-5060:~$ ls
33123 Desktop installation.txt Templates
33158 Documents Music Videos
33181 Downloads Pictures 'VirtualBox VMs'
33208 getting-started Public
33342 ideaIC-2022.2.1 sample.html
33379 ideaIC-2022.2.1.tar.gz snap

blab-04@blab04-OptiPlex-5060:~$ cd getting-started/

blab-04@blab04-OptiPlex-5060:~/getting-started$ ls
app docker-compose.yml docs mkdocs.yml requirements.txt
build.sh Dockerfile LICENSE README.md

blab-04@blab04-OptiPlex-5060:~/getting-started$ cd app

blab-04@blab04-OptiPlex-5060:~/getting-started/app$ ls
package.json spec src yarn.lock

blab-04@blab04-OptiPlex-5060:~/getting-started/app$ touch Dockerfile

blab-04@blab04-OptiPlex-5060:~/getting-started/app$ gedit Dockerfile

blab-04@blab04-OptiPlex-5060:~/getting-started/app$ docker build -t getting-started .
[+] Building 77.4s (11/11) FINISHED
=> [internal] load build definition from Dockerfile 0.4s
=> => transferring dockerfile: 185B 0.0s
=> [internal] load .dockerignore 0.6s
=> => transferring context: 2B 0.0s
=> resolve image config for docker.io/docker/dockerfile:1 4.1s
=> docker-image://docker.io/docker/dockerfile:1@sha256:39b85bbfa7536a5f 9.0s
=> => resolve docker.io/docker/dockerfile:1@sha256:39b85bbfa7536a5feceb 0.7s
=> => sha256:966d40f9ba8366e74c2fa353fc0bc7bbc167d2a0f3ad24 482B / 482B 0.0s
=> => sha256:39b85bbfa7536a5feceb7372a0817649ecb2724562 8.40kB / 8.40kB 0.0s
=> => sha256:dbdd11720762ad504260c66161c964e59eba06b95a 2.90kB / 2.90kB 0.0s
=> => sha256:a47ff7046597eea0123ea02817165350e3680f75 11.55MB / 11.55MB 7.1s
=> => extracting sha256:a47ff7046597eea0123ea02817165350e3680f75000dc5d 0.1s
=> [internal] load metadata for docker.io/library/node:18-alpine 3.5s
=> [internal] load build context 0.8s
=> => transferring context: 4.59MB 0.0s
=> [1/4] FROM docker.io/library/node:18-alpine@sha256:f8a51c36b0be7434 35.2s

=> => resolve docker.io/library/node:18-alpine@sha256:f8a51c36b0be7434b 0.4s
=> => sha256:f8a51c36b0be7434bbf867d4a08decf0100e656203 1.43kB / 1.43kB 0.0s
=> => sha256:fdbd2737cb94e25cae3db9fc5d7dc073c9675dad34 1.16kB / 1.16kB 0.0s
=> => sha256:9423415aa47ab401c3f202dd56fdf379f6161a620c 6.44kB / 6.44kB 0.0s
=> => sha256:63b65145d645c1250c391b2d16ebe53b3747c295ca 3.37MB / 3.37MB 5.5s
=> => sha256:061765f30124ad9dd30397cf60c64741d3fb3b3 47.51MB / 47.51MB 30.8s
=> => sha256:478140d591162fa9113c5ba76c16afafe2aa04bccd 2.35MB / 2.35MB 5.3s
=> => sha256:00ca3aba45c3a9811387d943d26291284ca6f938036760 450B / 450B 5.8s
=> => extracting sha256:63b65145d645c1250c391b2d16ebe53b3747c295ca8ba2f 0.2s
=> => extracting sha256:061765f30124ad9dd30397cf60c64741d3fb3b34c36f956 0.7s
=> => extracting sha256:478140d591162fa9113c5ba76c16afafe2aa04bccd8ec45 0.1s
=> => extracting sha256:00ca3aba45c3a9811387d943d26291284ca6f938036760f 0.0s
=> [2/4] WORKDIR /app   2.7s
=> [3/4] COPY . .   1.5s
=> [4/4] RUN yarn install --production   15.5s
=> exporting to image   3.2s
=> => exporting layers   3.1s
=> => writing image sha256:807c655fa416f3f8a2560c5cd446420f041cdfa13f5c 0.1s
=> => naming to docker.io/library/getting-started   0.0s

blab-04@blab04-OptiPlex-5060:~/getting-started/app$ docker run -dp 3000:3000 getting-started
Cf75f5f2b512ed2c23b80e1507897ac0584818e773055cc423ee03ea4700adc9

On Chrome open => localhost:3000/