

Assignment 2b

Problem Statement: Create Docker Container Environment (NVIDIA Docker or any other)

Steps:

1. Update the linux OS using following command:

```
sudo apt-get update
```

```
onkar@onkar-virtual-machine:~$ sudo apt-get update
[sudo] password for onkar:
Ign:1 cdrom://Ubuntu 22.04 LTS _Jammy Jellyfish_ - Release amd64 (20220419) jammy InRelease
Err:2 cdrom://Ubuntu 22.04 LTS _Jammy Jellyfish_ - Release amd64 (20220419) jammy Release
Please use apt-cdrom to make this CD-ROM recognized by APT. apt-get update cannot be used to add new CD-ROMs
Ign:3 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/6.0 InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/6.0 Release
Hit:7 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:8 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:9 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Reading package lists... Done
E: The repository 'cdrom://Ubuntu 22.04 LTS _Jammy Jellyfish_ - Release amd64 (20220419) jammy Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
W: https://repo.mongodb.org/apt/ubuntu/dists/focal/mongodb-org/6.0/Release.gpg: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8) for details.
```

2. The next step is to install the necessary certificates that will be required to work with the Docker site later on to download the necessary Docker packages. It can be done with the following command:

```
sudo apt-get install \
ca-certificates \
curl \
gnupg \
lsb-release
```

```
onkar@onkar-virtual-machine:~$ sudo apt-get install \
> ca-certificates \
> curl \
> gnupg \
> lsb-release
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
lsb-release is already the newest version (11.1.0ubuntu4).
lsb-release set to manually installed.
ca-certificates is already the newest version (20211016ubuntu0.22.04.1).
ca-certificates set to manually installed.
gnupg is already the newest version (2.2.27-3ubuntu2.1).
The following packages were automatically installed and are no longer required:
  libflashrom1 libfdt1:2
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libcurl4
The following NEW packages will be installed:
  curl
The following packages will be upgraded:
  libcurl4
1 upgraded, 1 newly installed, 0 to remove and 189 not upgraded.
Need to get 484 kB of archives.
After this operation, 455 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libcurl4 amd64 7.81.0-1ubuntu1.8 [290 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 curl amd64 7.81.0-1ubuntu1.8 [194 kB]
Fetched 484 kB in 2s (268 kB/s)
(Reading database ... 207907 files and directories currently installed.)
Preparing to unpack .../libcurl4_7.81.0-1ubuntu1.8_amd64.deb ...
Unpacking libcurl4:amd64 (7.81.0-1ubuntu1.8) over (7.81.0-1ubuntu1.7) ...
Selecting previously unselected package curl.
Preparing to unpack .../curl_7.81.0-1ubuntu1.8_amd64.deb ...
Unpacking curl (7.81.0-1ubuntu1.8) ...
Setting up libcurl4:amd64 (7.81.0-1ubuntu1.8) ...
Setting up curl (7.81.0-1ubuntu1.8) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
onkar@onkar-virtual-machine:~$ sudo mkdir -m 0755 -p /etc/apt/keyrings
curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /etc/apt/keyrings/docker.gpg
```

3. Add dockers official gpg key

```
sudo mkdir -m 0755 -p /etc/apt/keyrings
curl -fsSL https://download.docker.com/linux/ubuntu/gpg |
sudo gpg --dearmor -o /etc/apt/keyrings/docker.gpg
```

```
omkar@omkar-virtual-machine:~$ sudo mkdir -m 0755 -p /etc/apt/keyrings
omkar@omkar-virtual-machine:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /etc/apt/keyrings/docker.gpg
omkar@omkar-virtual-machine:~$ sudo mkdir -m 0755 -p /etc/apt/keyrings
omkar@omkar-virtual-machine:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /etc/apt/keyrings/docker.gpg
File '/etc/apt/keyrings/docker.gpg' exists. Overwrite? (y/N) y
omkar@omkar-virtual-machine:~$ echo \
"deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.gpg] https://download.docker.com/linux/ubuntu \
$(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
omkar@omkar-virtual-machine:~$ sudo apt-get update
Ign:1 cdrom://Ubuntu 22.04 LTS _Jammy Jellyfish_ - Release amd64 (20220419) jammy InRelease
Err:2 cdrom://Ubuntu 22.04 LTS _Jammy Jellyfish_ - Release amd64 (20220419) jammy Release
Please use apt-cdrom to make this CD-ROM recognized by APT. apt-get update cannot be used to add new CD-ROMs
Get:3 https://download.docker.com/linux/ubuntu jammy InRelease [48.9 kB]
Ign:4 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/6.0 InRelease
Get:5 https://download.docker.com/linux/ubuntu jammy/stable amd64 Packages [13.6 kB]
Hit:6 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:7 https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/6.0 Release
Hit:8 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:9 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:11 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
E: The repository 'cdrom://Ubuntu 22.04 LTS _Jammy Jellyfish_ - Release amd64 (20220419) jammy Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
W: https://repo.mongodb.org/apt/ubuntu/dists/focal/mongodb-org/6.0/Release.gpg: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATIO
N section in apt-key(8) for details.
```

4. Use following command to set up the repository

```
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
```

```
omkar@omkar-virtual-machine:~$ sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin
W: https://repo.mongodb.org/apt/ubuntu/dists/focal/mongodb-org/6.0/Release.gpg: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATIO
N section in apt-key(8) for details.
omkar@omkar-virtual-machine:~$ sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libflashrom1 libftdi1-2
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  docker-ce-rootless-extras docker-scan-plugin git git-man liberror-perl
  libslirp0 pigz slirp4netns
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite git-daemon-run | git-daemon-sysvinit
  git-doc git-email git-gui gitk gitweb git-cvs git-mediawiki git-svn
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 git
  git-man liberror-perl libslirp0 pigz slirp4netns
0 upgraded, 13 newly installed, 0 to remove and 189 not upgraded.
Need to get 116 MB of archives.
After this operation, 422 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu jammy/universe amd64 pigz amd64 2.6-1 [63.6 kB]
Get:2 https://download.docker.com/linux/ubuntu jammy/stable amd64 containerd.io amd64 1.6.18-1 [28.2 MB]
Get:3 http://in.archive.ubuntu.com/ubuntu jammy/main amd64 liberror-perl all 0.17029-1 [26.5 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 git-man all 1:2.34.1-1ubuntu1.8 [953 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 git amd64 1:2.34.1-1ubuntu1.8 [3,141 kB]
Get:6 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-buildx-plugin amd64 0.10.2-1-ubuntu.22.04-jammy [25.9 MB]
Get:7 http://in.archive.ubuntu.com/ubuntu jammy/main amd64 libslirp0 amd64 4.6.1-1build1 [61.5 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu jammy/universe amd64 slirp4netns amd64 1.0.1-2 [28.2 kB]
Get:9 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-ce-cli amd64 5:23.0.1-1-ubuntu.22.04-jammy [13.2 MB]
Ign:8 http://in.archive.ubuntu.com/ubuntu jammy/universe amd64 slirp4netns amd64 1.0.1-2
Get:8 http://in.archive.ubuntu.com/ubuntu jammy/universe amd64 slirp4netns amd64 1.0.1-2 [28.2 kB]
Get:10 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-ce amd64 5:23.0.1-1-ubuntu.22.04-jammy [22.0 MB]
Get:11 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-ce-rootless-extras amd64 5:23.0.1-1-ubuntu.22.04-jammy [8,760 MB]
Get:12 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-compose-plugin amd64 2.16.0-1-ubuntu.22.04-jammy [10.2 MB]
Get:13 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-scan-plugin amd64 0.23.0-ubuntu-jammy [3,623 kB]
Fetched 116 MB in 2min 6s (922 kB/s)
Selecting previously unselected package pigz.
(Reading database ... 207914 files and directories currently installed.)
Preparing to unpack .../00-pigz_2.6-1_amd64.deb ...
Unpacking pigz (2.6-1) ...
Selecting previously unselected package containerd.io.
Preparing to unpack .../01-containerd.io_1.6.18-1_amd64.deb ...
```

```
omkar@omkar-virtual-machine: ~
Unpacking containerd.io (1.6.18-1) ...
Selecting previously unselected package docker-buildx-plugin.
Preparing to unpack .../02-docker-buildx-plugin_0.10.2-1-ubuntu.22.04-jammy_amd64.deb ...
Unpacking docker-buildx-plugin (0.10.2-1-ubuntu.22.04-jammy) ...
Selecting previously unselected package docker-ce-cli.
Preparing to unpack .../03-docker-ce-cli_5%3a23.0.1-1-ubuntu.22.04-jammy_amd64.deb ...
Unpacking docker-ce-cli (5:23.0.1-1-ubuntu.22.04-jammy) ...
Selecting previously unselected package docker-ce.
Preparing to unpack .../04-docker-ce_5%3a23.0.1-1-ubuntu.22.04-jammy_amd64.deb ...
Unpacking docker-ce (5:23.0.1-1-ubuntu.22.04-jammy) ...
Selecting previously unselected package docker-ce-rootless-extras.
Preparing to unpack .../05-docker-ce-rootless-extras_5%3a23.0.1-1-ubuntu.22.04-jammy_amd64.deb ...
Unpacking docker-ce-rootless-extras (5:23.0.1-1-ubuntu.22.04-jammy) ...
Selecting previously unselected package docker-compose-plugin.
Preparing to unpack .../06-docker-compose-plugin_2.16.0-1-ubuntu.22.04-jammy_amd64.deb ...
Unpacking docker-compose-plugin (2.16.0-1-ubuntu.22.04-jammy) ...
Selecting previously unselected package docker-scan-plugin.
Preparing to unpack .../07-docker-scan-plugin_0.23.0-ubuntu-jammy_amd64.deb ...
Unpacking docker-scan-plugin (0.23.0-ubuntu-jammy) ...
Selecting previously unselected package liberror-perl.
Preparing to unpack .../08-liberror-perl_0.17029-1_all.deb ...
Unpacking liberror-perl (0.17029-1) ...
Selecting previously unselected package git-man.
Preparing to unpack .../09-git-man_1%3a2.34.1-1ubuntu1.8_all.deb ...
Unpacking git-man (1:2.34.1-1ubuntu1.8) ...
Selecting previously unselected package git.
Preparing to unpack .../10-git_1%3a2.34.1-1ubuntu1.8_amd64.deb ...
Unpacking git (1:2.34.1-1ubuntu1.8) ...
Selecting previously unselected package libslirp0:amd64.
Preparing to unpack .../11-libslirp0_4.6.1-1build1_amd64.deb ...
Unpacking libslirp0:amd64 (4.6.1-1build1) ...
Selecting previously unselected package slirp4netns.
Preparing to unpack .../12-slirp4netns_1.0.1-2_amd64.deb ...
Unpacking slirp4netns (1.0.1-2) ...
Setting up docker-scan-plugin (0.23.0-ubuntu-jammy) ...
Setting up liberror-perl (0.17029-1) ...
Setting up docker-buildx-plugin (0.10.2-1-ubuntu.22.04-jammy) ...
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.22.04-jammy) ...
Setting up docker-ce-cli (5:23.0.1-1-ubuntu.22.04-jammy) ...
Setting up libslirp0:amd64 (4.6.1-1build1) ...
Setting up pigz (2.6-1) ...
Setting up git-man (1:2.34.1-1ubuntu1.8) ...
Setting up docker-ce-rootless-extras (5:23.0.1-1-ubuntu.22.04-jammy) ...
```

5. Run the following command to check the installation of Docker container:

```
sudo docker run hello-world
```

```
omkar@omkar-virtual-machine:~$ sudo 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)
 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/

omkar@omkar-virtual-machine:~$
```