Installing Docker as containerization tool

1. Following the instructions given at the following link

https://docs.docker.com/engine/install/ubuntu/

2. Set up the repository and Update the apt package index and install packages to allow apt to use a repository over HTTPS:

```
devops@devops-VirtualBox:~$ sudo apt-get update

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

devops@devops-VirtualBox:~$ sudo apt-get install \
>     apt-transport-https \
>     ca-certificates \
>     curl \
>     gnupg \
>     lsb-release
```

3. Add Docker's official GPG key:

```
devops@devops-VirtualBox:~$ curl -fsSL
https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o
/usr/share/keyrings/docker-archive-keyring.gpg
```

4. Use the following command to set up the **stable** repository

```
echo \
  "deb [arch=amd64 signed-by=/usr/share/keyrings/docker-archive-
keyring.gpg] https://download.docker.com/linux/ubuntu \
  $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list
> /dev/null

devops@devops-VirtualBox:~$ echo \
>   "deb [arch=amd64 signed-by=/usr/share/keyrings/docker-archive-
keyring.gpg] https://download.docker.com/linux/ubuntu \
>   $(lsb_release -cs) stable" | sudo tee
/etc/apt/sources.list.d/docker.list > /dev/null
```

Install Docker Engine

5. Update the apt package index, and install the latest version of Docker Engine and containerd,

```
devops@devops-VirtualBox:~$ sudo apt-get update

devops@devops-VirtualBox:~$ sudo apt-get install docker-ce docker-ce-cli
containerd.io
```

6. Verify that Docker Engine is installed correctly by running the hello-world image.

```
devops@devops-VirtualBox:~$ sudo docker run hello-world
```

7. To manage Docker as a non-root user create the docker group and add your user:

```
devops@devops-VirtualBox:~$ sudo groupadd docker
groupadd: group 'docker' already exists

devops@devops-VirtualBox:~$ sudo usermod -aG docker $USER
```

8. Log out and log back in so that your group membership is re-evaluated.

```
Note: If it doesn’t works then restart the machine

devops@devops-VirtualBox:~$ docker image ls
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
hello-world   latest    d1165f221234   4 months ago   13.3kB
```

9. Creating Tomcat Server Container

```
devops@devops-VirtualBox:~$ docker container run -d -P tomcat:9
Unable to find image 'tomcat:9' locally
9: Pulling from library/tomcat
627b765e08d1: Pull complete
c040670e5e55: Pull complete
073a180f4992: Pull complete
bf76209566d0: Pull complete
f10db7ba7580: Pull complete
5b2f970878fa: Pull complete
ed434bfebf18: Pull complete
f6c437110aa9: Pull complete
a772951f83db: Pull complete
752225c3768e: Pull complete
Digest:
sha256:6e40250d8fac4eca05c2067cb81f79427e4ddbaf4e78d5ecd21c35e8c5f2bfcf
Status: Downloaded newer image for tomcat:9
f724eb95ef053de798b71192f3bc9c5750739df20a8ee8580653114efcc9bed6

devops@devops-VirtualBox:~$ docker image ls
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
tomcat        9         46cfbf1293b1   8 days ago     668MB
hello-world   latest    d1165f221234   4 months ago   13.3kB

devops@devops-VirtualBox:~$ docker container ls
CONTAINER ID   IMAGE      COMMAND             CREATED          STATUS
PORTS                                      NAMES
```

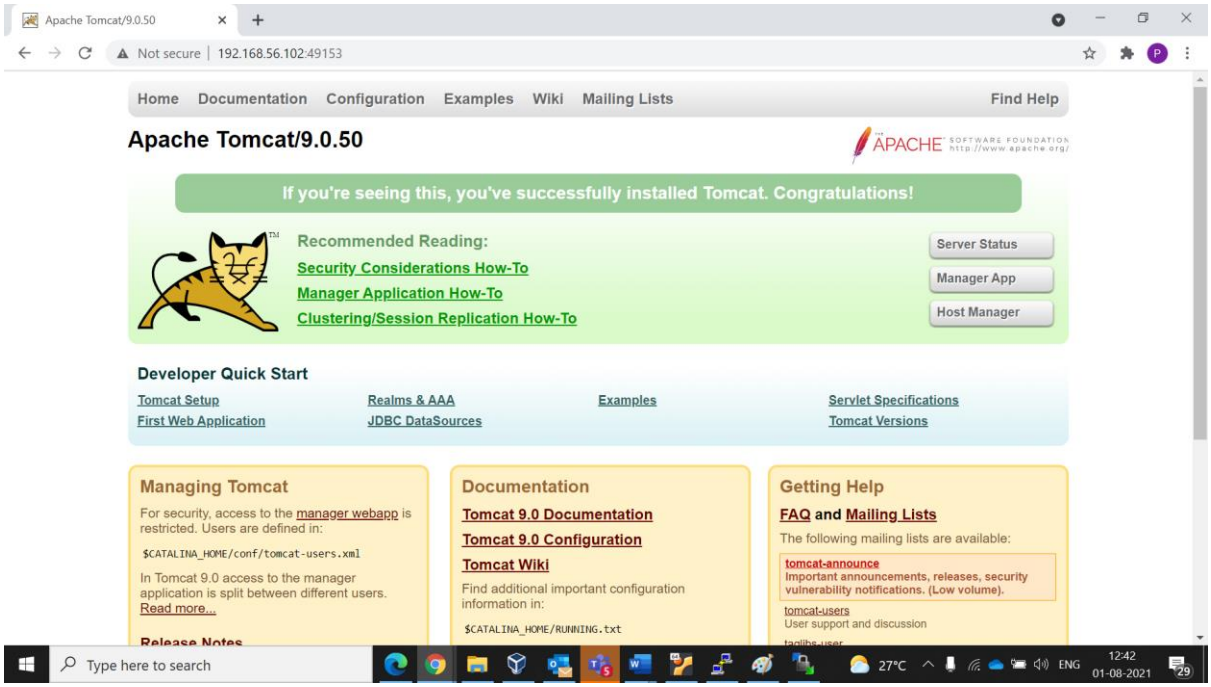
```
f724eb95ef05   tomcat:9   "catalina.sh run"   17 seconds ago   Up 7 seconds
0.0.0.0:49153->8080/tcp, :::49153->8080/tcp   suspicious_williams
```

10. Access Tomcat Server internal content and copy default home page contents

```
devops@devops-VirtualBox:~$ docker container exec -it suspicious_williams
/bin/bash

root@f724eb95ef05:/usr/local/tomcat# ls webapps

root@f724eb95ef05:/usr/local/tomcat# ls webapps.dist/
ROOT  docs  examples  host-manager  manager

root@f724eb95ef05:/usr/local/tomcat# cp -R webapps.dist/* webapps

root@f724eb95ef05:/usr/local/tomcat# ls webapps
ROOT  docs  examples  host-manager  manager
```

11. Access Tomcat server from the browser

http://192.168.56.102:49153/



Install Docker Compose on Linux systems

12. Run this command to download the current stable release of Docker Compose:

```
devops@devops-VirtualBox:~$ sudo curl -L
"https://github.com/docker/compose/releases/download/1.29.2/docker-compose-
$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
[sudo] password for devops:
  % Total    % Received % Xferd  Average Speed   Time    Time     Time
Current
                                 Dload  Upload   Total   Spent    Left
Speed
100   633  100   633    0     0    874      0 --:--:-- --:--:-- --:--:--
873
100 12.1M  100 12.1M    0     0  7128k      0  0:00:01  0:00:01 --:--:--
16.8M

devops@devops-VirtualBox:~$ ls -l /usr/local/bin/docker-compose
-rw-r--r-- 1 root root 12737304 Aug  1 12:49 /usr/local/bin/docker-compose
```

13. Apply executable permissions to the binary:

```
devops@devops-VirtualBox:~$ sudo chmod +x /usr/local/bin/docker-compose

devops@devops-VirtualBox:~$ ls -l /usr/local/bin/docker-compose
-rwxr-xr-x 1 root root 12737304 Aug  1 12:49 /usr/local/bin/docker-compose
```

14. Test the installation.

```
devops@devops-VirtualBox:~$ docker-compose --version
docker-compose version 1.29.2, build 5becea4c
```