| VIT Vidyalankar institute of Technology ACCREDITED A+ BY NAAC | Department of Information Technology |
|---|---|

| | |
|---|---|
| Semester | BE Semester VIII– INFT Engineering |
| Subject | Devops Lab |
| Lab Professor In-charge | Prof. Rohit Barve |

| | | |
|---|---|---|
| Student Name | Devang Shetye | |
| Roll Number | 18101B0068 | |
| Grade and Subject Teacher's Signature | | |

| | | |
|---|---|---|
| Experiment Number | 3 | |
| Experiment Title | To Install and Configure Docker for creating Containers. | |
| Resources / Apparatus Required | **Hardware :** Laptop / Desktop | **Software :** Linux Operating System |
| Theory | **DOCKER**<br>Docker is an open source containerization platform. It enables developers to package applications into containers—standardized executable components combining application source code with the operating system (OS) libraries and dependencies required to run that code in any environment. Containers simplify delivery of distributed applications, and have become increasingly popular as organizations shift to cloud-native development and hybrid multicloud environments.<br>Developers can create containers without Docker, but the platform makes it easier, simpler, and safer to build, deploy and manage containers. Docker is essentially a toolkit that enables developers to build, deploy, run, update, and stop containers using simple commands and work-saving automation through a single API.<br><br>**CONTAINER**<br>Containers are made possible by process isolation and virtualization capabilities built into the Linux kernel. These capabilities - such as control *groups* (Cgroups) for allocating resources among processes and *namespaces* for restricting a processes access or visibility into other resources or areas of the system - enable multiple application components to share the resources of a single instance of the host operating system in much the same way that a hypervisor enables multiple virtual machines (VMs) to share the CPU, memory and other resources of a single hardware server. | |

| Commands | |
|---|---|

**sudo apt-get install docker.io**

The sudo command is used to ensure that the command runs with root access.

Apt -get This method installs packages from the Internet on to the Linux system.

```
tanaya@tanaya-VirtualBox:~$ sudo apt-get install docker.io
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  bridge-utils containerd git git-man liberror-perl pigz runc ubuntu-fan
Suggested packages:
  ifupdown aufs-tools btrfs-progs cgroupfs-mount | cgroup-lite debootstrap
  docker-doc rinse zfs-fuse | zfsutils 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:
  bridge-utils containerd docker.io git git-man liberror-perl pigz runc
  ubuntu-fan
0 upgraded, 9 newly installed, 0 to remove and 179 not upgraded.
Need to get 76.4 MB of archives.
After this operation, 345 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://in.archive.ubuntu.com/ubuntu impish/universe amd64 pigz amd64 2.6-
1 [63.6 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu impish/main amd64 bridge-utils amd64
1.7-1ubuntu2 [34.4 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu impish/main amd64 runc amd64 1.0.1-0u
buntu2 [3,260 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu impish-updates/main amd64 containerd
amd64 1.5.5-0ubuntu3.1 [27.9 MB]
Get:5 http://in.archive.ubuntu.com/ubuntu impish-updates/universe amd64 docker.
io amd64 20.10.7-0ubuntu5.1 [41.1 MB]
```

**sudo docker –version**

It is used to ensure the Docker command returns the Docker version installed.

```
tanaya@tanaya-VirtualBox:~$ sudo docker --version
[sudo] password for tanaya:
Docker version 20.10.7, build 20.10.7-0ubuntu5.1
```

**sudo docker images**

This command is used to display all the images currently installed on the system.

```
tanaya@tanaya-VirtualBox:~$ sudo docker images
REPOSITORY   TAG       IMAGE ID   CREATED   SIZE
```

**sudo docker run -it -d ubuntu**

This command is used to create a container from an image.

```
tanaya@tanaya-VirtualBox:~$ sudo docker run -it -d ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
e0b25ef51634: Pull complete
Digest: sha256:9101220a875cee98b016668342c489ff0674f247f6ca20dfc91b91c0f28581ae
Status: Downloaded newer image for ubuntu:latest
3ad29fbbbd102e2a98f9bfd993a7d7a342664d6e57b6bf9ae6cd7fa5cc878f8c
```

**sudo docker ps**

This command is used to list the running containers.

```
tanaya@tanaya-VirtualBox:~$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED          STATUS          PORTS     N
AMES
3ad29fbbbd10   ubuntu    "bash"    49 seconds ago   Up 43 seconds             m
using_poitras
```

**sudo docker exec -it 3ad29fbbbd10 bash**

This command is used to access the running container.

```
tanaya@tanaya-VirtualBox:~$ sudo docker exec -it 3ad29fbbbd10 bash
root@3ad29fbbbd10:/# apt-get update
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Package
s [25.8 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Package
s [1104 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [172
8 kB]
Get:9 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:11 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages
 [864 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 k
B]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2144
 kB]
```