

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

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Experiment Number	4
Experiment Title	Using Docker Hub for saving container repositories.
Resources / Apparatus Required	Hardware : Laptop / Desktop Software : Linux Operating System
Theory	<p>DOCKER</p> <p>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.</p> <p>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.</p> <p>CONTAINER</p> <p>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.</p>

Commands

apt-get update

This method updates packages from the Internet on to the Linux system.

```
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 Packages [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 Packages [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 [1728 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 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2144 kB]
```

apt-get install apache2

This command installs the apache2 web server.

```
root@3ad29fbbbd10:/# apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils ca-certificates file krb5-locales
  libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap
  libasn1-8-heimdal libbrotli1 libcurl4 libexpat1 libgdbm-compat4 libgdbm6
  libgssapi-krb5-2 libgssapi3-heimdal libhcrypto4-heimdal
  libheimbase1-heimdal libheimntlm0-heimdal libhx509-5-heimdal libicu66
  libjansson4 libk5crypto3 libkeyutils1 libkrb5-26-heimdal libkrb5-3
  libkrb5support0 libldap-2.4-2 libldap-common liblua5.2-0 libmagic-mgc
  libmagic1 libnghttp2-14 libperl5.30 libpsl5 libroken18-heimdal librtmp1
  libsasl2-2 libsasl2-modules libsasl2-modules-db libsasl2-modules-gssapi-mit
  libsasl2-modules-gssapi-heimdal libsasl2-modules-ldap
  libsasl2-modules-otp libsasl2-modules-sql perl-doc
  libterm-readline-gnu-perl | libterm-readline-perl-perl make libb-debug-perl
  liblocale-codes-perl openssl-blacklist
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils ca-certificates file
  krb5-locales libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap
```

ls

This command list all the containers in docker.

```
root@3ad29fbbbd10:/# ls
bin  dev  home  lib32  libx32  mnt  proc  run  srv  tmp  var
boot  etc  lib  lib64  media  opt  root  sbin  sys  usr
```

service apache2 start

This command starts the apache2 web server.

```
root@3ad29fbbbd10:/# service apache2 start
* Starting Apache httpd web server apache2
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
*
```

sudo docker login

This command is used to login to the docker hub repository.

```
tanaya@tanaya-VirtualBox:~$ sudo docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: tanayadesai
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
```

sudo docker commit 3ad29fbbbd10 tanayadesai/ubuntunew

This command creates a new image of an edited container on the local system.

```
tanaya@tanaya-VirtualBox:~$ sudo docker commit 3ad29fbbbd10 tanayadesai
sha256:0aadb498b2d13e750a1e1125b2018bfa4438c5bfd97d5b74e34b77de5f56b9fc
```

sudo docker images

This command lists all the locally stored docker images.

```
tanaya@tanaya-VirtualBox:~$ sudo docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
tanayadesai         latest             0aadb498b2d1       4 seconds ago      221MB
<none>              <none>             41a009e4768d       54 seconds ago     221MB
ubuntu              latest             825d55fb6340       34 hours ago       72.8MB
```

sudo docker push

This command is used to push an image to the docker hub repository.

```
tanaya@tanaya-VirtualBox:~$ sudo docker push tanayadesai/ubuntunew
Using default tag: latest
The push refers to repository [docker.io/tanayadesai/ubuntunew]
6b0f16b4e868: Pushing 24.68MB/148.3MB
6b0f16b4e868: Pushed
c5ec52c98b31: Pushed
latest: digest: sha256:5c47ebbd201231c77f201a1a667794c6bda8f2ac4497cba0aaf4794fbf1040af size: 741
```

sudo docker ps -a

This command is used to show all the running and exited containers.

```
tanaya@tanaya-VirtualBox:~$ sudo docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
AMES						
3ad29fbbbd10	ubuntu	"bash"	20 minutes ago	Up 20 minutes		using_poitras