EXPERIMENT – 5

AIM - To Install and Configure Docker for creating Containers of different Operating System Images and running dockerfile.

LAB OUTCOME – [LO1, LO4] - Remember the importance of DevOps tools used in software development life cycle. Analyze & Illustrate the Containerization of OS images and deployment of applications over Docker

THEORY - Docker is a software platform that allows you to build, test, and deploy applications quickly. Docker packages software into standardized units called containers that have everything the software needs to run including libraries, system tools, code, and runtime. Using Docker, you can quickly deploy and scale applications into any environment and know your code will run.

Docker works by providing a standard way to run your code. Docker is an operating system for containers. Similar to how a virtual machine virtualizes (removes the need to directly manage) server hardware, containers virtualize the operating system of a server. Docker is installed on each server and provides simple commands you can use to build, start, or stop containers.

PROCEDURE -

Steps to create dockerfile

```
  GNU nano 2.9.3                                              dockerfile


FROM ubuntu
█

ENV TZ=Asia/Dubai
RUN ln -snf /usr/share/zoneinfo/$TZ /etc/localtime && echo $TZ > /etc/timezone

RUN apt-get update
RUN apt-get -y install apache2
ADD . /var/www/html
ENTRYPOINT apachect1 -D FOREGROUND
ENV name Intellipaat
```

Steps to build image of dockerfile

```
lab309-1@lab309-1:~$ sudo docker build dockerfile
Sending build context to Docker daemon  3.072kB
Step 1/6 : FROM ubuntu
 ---> 54c9d81cbb44
Step 2/6 : RUN apt-get update
 ---> Running in d56bf6c06e0b
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [982 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [842 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [1579 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
```

```
invoke-rc.d: could not determine current runlevel
```

```
lab309-1@lab309-1:~/dockerfile$ sudo docker images
REPOSITORY          TAG          IMAGE ID       CREATED            SIZE
<none>              <none>       41968ef10331   About a minute ago  220MB
<none>              <none>       a5e7ef134c92   6 minutes ago       107MB
<none>              <none>       d8e7e49c6443   24 minutes ago      107MB
new_ubuntu          latest       b62931d33d3b   7 days ago          72.8MB
ubuntu              latest       54c9d81cbb44   3 weeks ago         72.8MB
dockerfile          latest       2c473978044b   24 months ago       189MB
new_dockerfile      latest       e3d0cfb688ca   24 months ago       189MB
ubuntu              <none>       72300a873c2c   2 years ago         64.2MB
hello-world         latest       fce289e99eb9   3 years ago         1.84kB
lab309-1@lab309-1:~/dockerfile$ sudo docker run -it -p 84:80 -d dockerfile
6177d7874deecf3ac8829479ea33a6d50c51535f34561e84c76d4749ed21b19d
lab309-1@lab309-1:~/dockerfile$ █
```
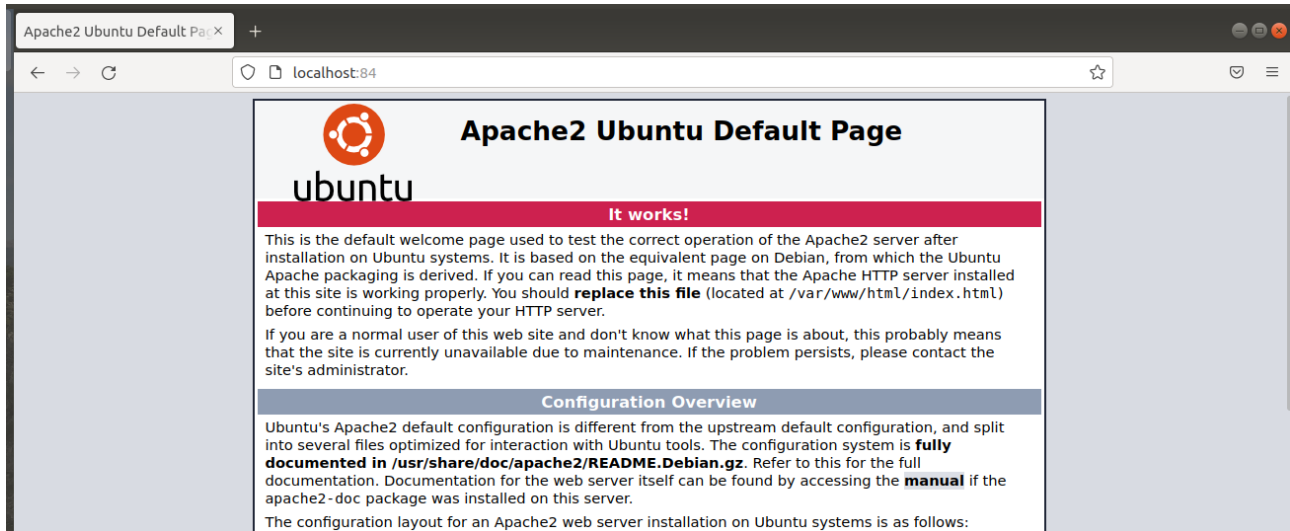
```
Step 8/8 : ENV name Intellipaat
 ---> Running in 39fd7a8962e3
Removing intermediate container 39fd7a8962e3
 ---> 41968ef10331
Successfully built 41968ef10331 _
```

```
lab309-1@lab309-1:~/dockerfile$ sudo docker ps
CONTAINER ID   IMAGE           COMMAND               CREATED         STATUS                      PORTS
  NAMES
6177d7874dee   dockerfile      "/bin/sh -c 'apachec…"   28 seconds ago   Up 25 seconds               0.0.0.0:84->80/tcp, :::84->80/tcp
  romantic_davinci
8db925a214ff   new_dockerfile  "/bin/sh -c 'apachec…"   24 months ago    Restarting (127) 13 seconds ago
  hopeful_babbage
lab309-1@lab309-1:~/dockerfile$ sudo docker exec -it 6177d7874dee bash
root@6177d7874dee:/# exit
exit
lab309-1@lab309-1:~/dockerfile$
```

Apache2 Ubuntu Default Page

localhost:84

Apache2 Ubuntu Default Page

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at /var/www/html/index.html) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in /usr/share/doc/apache2/README.Debian.gz**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the apache2-doc package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

CONCLUSION – Successfully used Docker for creating Containers of different Operating System Images and running dockerfile.