Phase-5 Practice Project: Assisted Practice

2. Push an Image to Docker Hub.

✓ Preparing a custom Docker image:

● Create a directory and write basic Python source code using the procedure given below:

mkdirdocker_python

cddocker_python/

vi Dockerfile

● Add the code given below to this Dockerfile

```
FROM python
     WORKDIR /app
     ADD . /app
     RUN pip install -r requirements.txt
     EXPOSE 80
     ENV NAME world
     CMD ["python", "app.py"]
```

```
root@ip-172-31-17-73:~# mkdir docker_python
root@ip-172-31-17-73:~# cd docker_python/
root@ip-172-31-17-73:~/docker_python# vi Dockerfile
root@ip-172-31-17-73:~/docker_python# cat Dockerfile
FROM python
WORKDIR /app
ADD . /app
RUN pip install -r requirements.txt
EXPOSE 80
ENV NAME world
CMD ["python", "app.py"]
root@ip-172-31-17-73:~/docker_python#
```

● Create a Python app. Follow the steps below to create an app.py python file

vi app.py

- Add the content below in app.py python source file

```
from flask import Flask
import os
import socket
app = Flask(__name__)@app.route("/")def hello():
    html = "<h3>Hello {name}!</h3>" \
        "<b>Hostname:</b> {hostname}<br/>"
    return html.format(name=os.getenv("NAME", "world"),
hostname=socket.gethostname())
if __name__ == "__main__":
app.run(host='0.0.0.0', port=80)
```

```
root@ip-172-31-17-73:~/docker_python# cat app.py
from flask import Flask
import os
import socket

app = Flask(__name__)

@app.route("/")

def hello():
        html = "<h3>Hello {name}!</h3>" \
            "<b>Hostname:</b> {hostname}<br/>"
        return html.format(name=os.getenv("NAME", "world"), hostname=socket.gethostname())
if __name__ == "__main__":
app.run(host=.0.0.0.0', port=80)
root@ip-172-31-17-73:~/docker_python#
```

- Create a **requirements.txt** file with the content below
  vi requirements.txt

Flask

- You will get the file mentioned below for building a custom Docker image

```
root@ip-172-31-17-73:~/docker_python# ls -alrt
total 20
-rw-r--r--  1 root root   122 Jul 11 02:43 Dockerfile
-rw-r--r--  1 root root   348 Jul 11 02:48 app.py
-rw-r--r--  1 root root     6 Jul 11 02:49 requirements.txt
drwx------ 12 root root  4096 Jul 11 02:49 ..
drwxr-xr-x  2 root root  4096 Jul 11 02:49 .
root@ip-172-31-17-73:~/docker_python#
```

- Proceed with docker build command to build a custom Docker image

dockerbuild -t docker_python . -f Dockerfile

```
root@ip-172-31-17-73:~/docker_python# docker build -t docker_python . -f Dockerfile
Sending build context to Docker daemon   4.096kB
Step 1/7 : FROM python
 ---> 4c0fd7901be8
Step 2/7 : WORKDIR /app
 ---> Using cache
 ---> 3e14f552d2a7
Step 3/7 : ADD . /app
 ---> Using cache
 ---> bb70b7abc0eb
Step 4/7 : RUN pip install -r requirements.txt
 ---> Using cache
 ---> 8a975e9d8faf
Step 5/7 : EXPOSE 80
 ---> Using cache
 ---> 71e2b3a4e69c
Step 6/7 : ENV NAME world
 ---> Using cache
 ---> 97135b098ad5
Step 7/7 : CMD ["python", "app.py"]
 ---> Using cache
 ---> 2ce510d91695
Successfully built 2ce510d91695
Successfully tagged docker_python:latest
root@ip-172-31-17-73:~/docker_python#
```

- Once the image is built, check the image using **docker run** command and run it to initialize the custom container on Docker host.

  docker images

  docker run -d --name docker_python-p 80:80 docker_python

```
root@ip-172-31-17-73:~/docker_python# docker images
REPOSITORY          TAG         IMAGE ID        CREATED           SIZE
docker_python       latest      a39ee4545a92    13 seconds ago    939MB
python              latest      4c0fd7901be8    2 days ago        929MB
root@ip-172-31-17-73:~/docker_python# docker run -d --name docker_python -p 80:80 docker_python
9e43a8fb15defe5c33463b31f403327225b956f7f4e8f3e4392c5df1e131b09d
root@ip-172-31-17-73:~/docker_python# docker ps
CONTAINER ID        IMAGE              COMMAND             CREATED          STATUS          PORTS                  NAMES
9e43a8fb15de        docker_python      "python app.py"     2 seconds ago    Up 1 second     0.0.0.0:80->80/tcp     docker_python
root@ip-172-31-17-73:~/docker_python#
```

- Once the container is up and running, validate the connectivity using the **curl** command to see if Python code is running on port 80 or not.

  curl localhost

```
root@ip-172-31-17-73:~/docker_python# curl localhost
<h3>Hello world!</h3><b>Hostname:</b> 9e43a8fb15de<br/>root@ip-172-31-17-73:~/docker_python#
root@ip-172-31-17-73:~/docker_python#
```

✓ Pushing Docker image to Docker Hub

- Once the Docker image is prepared, we need to push this custom Docker image to Docker Hub.

- For pushing the image to Docker Hub, create an account on Docker Hub. Follow simple sign up process to create a new account.

Docker Identification

In order to get you started, let us get you a Docker ID.
Already have an account? **Sign In**

| Enter a Docker ID | ! | Docker ID is required. |

Password

Email

☐ I agree to Docker's Terms of Service.
☐ I agree to Docker's Privacy Policy and Data Processing Terms.

☐ (Optional) I would like to receive email updates from Docker, including its various services and products.

☐ I'm not a robot   reCAPTCHA
Privacy - Terms

Continue

- Once the account is created, we need to login to Docker Hub to push the Docker image to Docker Hub.

docker login

```
root@ip-172-31-17-73:~/docker_python# 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: anujsharma1990
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
root@ip-172-31-17-73:~/docker_python#
```

- Create a tag that can be used to push the custom image to Docker Hub.

docker tag docker_python anujsharma1990/docker_python

docker push anujsharma1990/docker_python

```
root@ip-172-31-17-73:~/docker_python# docker tag docker_python anujsharma1990/docker_python
root@ip-172-31-17-73:~/docker_python# docker images
REPOSITORY                      TAG          IMAGE ID        CREATED              SIZE
docker_python                   latest       a39ee4545a92    About an hour ago    939MB
anujsharma1990/docker_python    latest       a39ee4545a92    About an hour ago    939MB
python                          latest       4c0fd7901be8    2 days ago           929MB
root@ip-172-31-17-73:~/docker_python# docker push anujsharma1990/docker_python
The push refers to repository [docker.io/anujsharma1990/docker_python]
4ca3f54abbb7: Pushed
7ad993436b6a: Pushed
8514ba3cd21c: Pushed
fb32633979db: Mounted from library/python
a0595cebe89c: Mounted from library/python
a9ada1fd814d: Mounted from library/python
bb9c02680a15: Mounted from library/python
a637c551a0da: Mounted from library/python
2c8d31157b81: Mounted from library/python
7b76d801397d: Mounted from library/python
f32868cde90b: Mounted from library/python
0db06dff9d9a: Mounted from library/python
latest: digest: sha256:c448e76ad05db80de4f3dc4ff0e9b29176f330319e4deb14c311e6960d3d9e4a size: 2843
root@ip-172-31-17-73:~/docker_python#
```

- Shown below is the uploaded custom Docker image to Docker Hub.