

Preparing a custom Docker image:

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

```
mkdir docker_python
cd docker_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          a13ee4546a92   13 seconds ago  93MB
python              latest         4c0fd7901be8   2 days ago     92MB
root@ip-172-31-17-73:~/docker_python# docker run -d --name docker_python -p 80:80 docker_python
9e13a8fb15defe5c33463b1f40317225b966f7f4e6f3e1382c5dfe131b09d
root@ip-172-31-17-73:~/docker_python# docker ps
CONTAINER ID        IMAGE             COMMAND          CREATED         STATUS         PORTS                    NAMES
9e13a8fb15de       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](#)



Docker ID is required.



- ☐ 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
0db06dffb9d9a: Mounted from library/python
latest: digest: sha256:c448e76ad05db80de4f3dc4ff0e9b29176f330319e4deb14c311e6960d3d9e4a size: 2843
root@ip-172-31-17-73:~/docker_python#
```