1. Dockerfile Creation

- Create a **Dockerfile** to containerize your application (e.g., Python Flask).
- Include all necessary dependencies, base image, and configuration instructions (e.g., EXPOSE, CMD, COPY, and RUN directives).

harivansh.py

```
from flask import Flask, render template string
app = Flask(name)
HTML TEMPLATE = '''
<!doctype html>
<html lang="en">
 <meta charset="utf-8">
      font-family: Inter, Roboto, system-ui, -apple-system, "Segoe UI",
Arial, sans-serif;
```

```
color: #475569;
   <h1>Hello Everyone </h1>
 </div>
@app.route('/')
def home():
    return render template string(HTML TEMPLATE)
```

```
if __name__ == '__main__':
    app.run(host='0.0.0.0', port=5000, debug=True)
```

Dockerfile

```
FROM python:3.13-slim

COPY requirements.txt .

RUN pip install -r requirements.txt

EXPOSE 5000

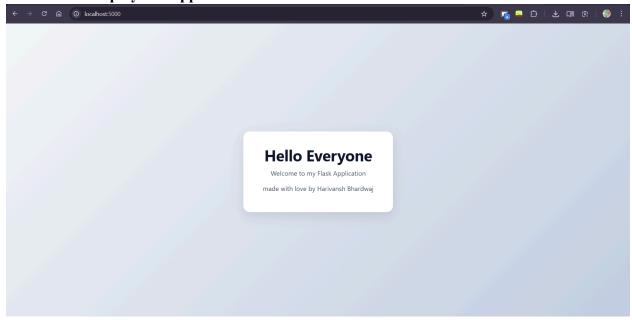
COPY . .

CMD ["python", "harivansh.py"]
```

Requirements.txt

flask

2. Build and Deploy the Application



```
Run 'docker run —help' for more information

BO Dickdec pgdal/Claves/AlT media/assignments/Assignment 2 Docker And DockerHub/Harivansh web app> docker build —t harivanshwebapp.

2 Internal, I load build definition from Bockerfile

3 Elinternal, I load build definition from Bockerfile

3 Elinternal, I load build definition from Bockerfile

4 .8.5

2 Elinternal, I load build definition from Bockerfile

5 .8.5

2 Elinternal, I load build definition from Bockerfile

6 .8.5

2 Elinternal, I load build definition from Bockerfile

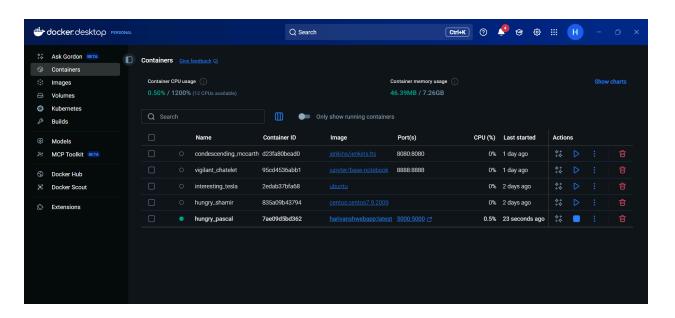
8 .8.5

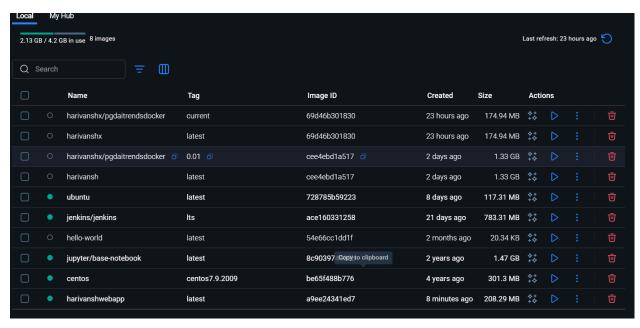
2 Elinternal, I load build definition from Bockerfile

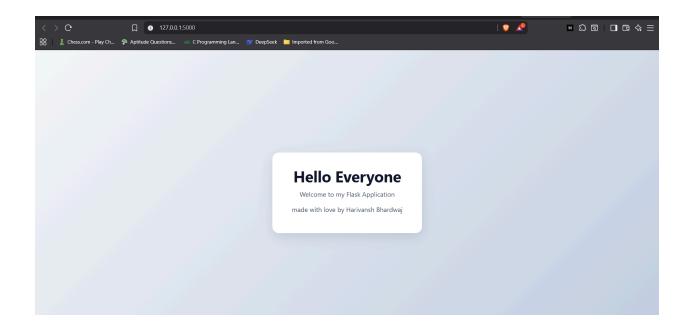
9 .8.5

2 Elinternal, I load .dockerignore

9
```







3. Push Image to Docker Hub

• Capture a screenshot of your repository on Docker Hub showing the uploaded image.

```
PS D:\cdac pgdai\Classes\AITrends\Assignments\Assignment 2 Docker And DockerHub\Harivansh web app> docker tag harivanshwebapp:latest harivanshx/harivanshwebapp:tagname

PS D:\cdac pgdai\Classes\AITrends\Assignments\Assignment 2 Docker And DockerHub\Harivansh web app> docker push harivanshx/harivanshwebapp:tagname

The push refers to repository [docker.io/harivanshx/harivanshwebapp]

97385090cab0: Layer already exists

0940966600fc: Already exists

d680b830c1d8: Layer already exists

d680b830c1d8: Layer already exists

077dea97cb30: Layer already exists

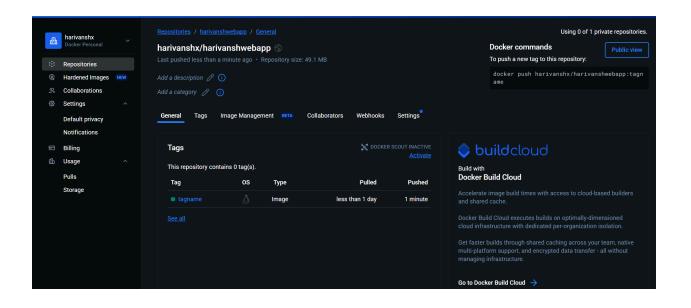
077dea97cb30: Layer already exists

077dea97cb30: Layer already exists

08bfab4bdf3: Pushed

be47ef3fe06b: Pushed

tagname: digest: sha256:a9ee24341ed7d716c6f9aa90b0la9127faffeebc2ad1970a943569f87782db7d size: 856
```



PS C:\Users\hariv> docker images					
TAG	IMAGE ID	CREATED			
tagname	a9ee24341ed7	13 hours ago			
latest	a9ee24341ed7	13 hours ago			
current	69d46b301830	36 hours ago			
latest	69d46b301830	36 hours ago			
0.01	cee4ebd1a517	2 days ago			
latest	cee4ebd1a517	2 days ago			
latest	728785b59223	8 days ago			
lts	ace160331258	3 weeks ago			
latest	54e66cc1dd1f	2 months ago			
latest	8c903974902b	23 months ago			
centos7.9.2009	be65f488b776	4 years ago			
	TAG tagname latest current latest 0.01 latest latest lts latest	TAG IMAGE ID tagname a9ee24341ed7 latest a9ee24341ed7 current 69d46b301830 latest 69d46b301830 0.01 cee4ebd1a517 latest 728785b59223 lts ace160331258 latest 54e66cc1dd1f latest 8c903974902b			

4. Execution and Validation

- Execute all Docker commands on the terminal (Docker Desktop or Linux shell).
- Verify and document:
 - o Image creation (docker images)
 - o Running containers (docker ps)
 - o Logs (docker logs <container_id>)
 - o Network details (docker network ls)

PS C:\Users\hariv> docker images				
REPOSITORY	TAG	IMAGE ID	CREATED	
SIZE				
harivanshx/harivanshwebapp 208MB	tagname	a9ee24341ed7	13 hours ago	
harivanshwebapp 208MB	latest	a9ee24341ed7	13 hours ago	
harivanshx/pgdaitrendsdocker 175MB	current	69d46b301830	36 hours ago	
harivanshx 175MB	latest	69d46b301830	36 hours ago	
harivanshx/pgdaitrendsdocker	0.01	cee4ebd1a517	2 days ago	
harivansh 1.34GB	latest	cee4ebd1a517	2 days ago	
ubuntu 117MB	latest	728785b59223	8 days ago	
jenkins/jenkins 783MB	lts	ace160331258	3 weeks ago	
hello-world 20.3kB	latest	54e66cc1dd1f	2 months ago	
jupyter/base-notebook 1.48GB	latest	8c903974902b	23 months ago	
centos 301MB	centos7.9.2009	be65f488b776	4 years ago	

PS C:\Users\hariv	docker ps				
CONTAINER ID IMA	\GE		COMMAND		CREATED
STATUS	PORTS N	NAMES			
36f9da0defaf haz	rivanshwebapp:	latest	"python	harivansh.py"	3 seconds ag
o Up 3 seconds	5000/tcp t	hirsty_ag	nesi		

```
PS C:\Users\hariv> docker ps -a
CONTAINER ID
             IMAGE
                                                   COMMAND
                                              PORTS
CREATED
                 STATUS
      NAMES
d65a012730d5 harivanshwebapp:latest
                                                   "python harivansh.py"
29 seconds ago Exited (0) 26 seconds ago
      thirsty_archimedes
2c89ea99f12b harivanshwebapp:latest
                                                   "python harivansh.py"
9 hours ago
                 Exited (255) 5 minutes ago
                                              0.0.0.0:5000->5000/tcp
      nostalgic_bohr
3d7d8b381238
              harivanshx/harivanshwebapp:tagname
                                                   "python harivansh.py"
                 Exited (255) 5 minutes ago
11 hours ago
                                              5000/tcp
       serene_bose
d1cca8bcbf35 harivanshx/harivanshwebapp:tagname
                                                   "python harivansh.py"
11 hours ago Exited (0) 11 hours ago
      sleepy_colden
7ae09d5bd362 harivanshwebapp:latest
                                                   "python harivansh.py"
                Exited (0) 12 hours ago
12 hours ago
      hungry_pascal
d23fa80bead0
             jenkins/jenkins:lts
                                                   "/usr/bin/tini -- /u..."
                 Exited (255) 13 hours ago
                                              0.0.0.0:8080->8080/tcp, 50000
37 hours ago
     condescending_mccarthy
                                                   "tini -g -- start-no..."
95cd4536abb1 jupyter/base-notebook
                 Exited (255) 13 hours ago
                                              0.0.0.0:8888->8888/tcp
37 hours ago
      vigilant_chatelet
2edab37bfa68 ubuntu
                                                   "bash"
2 days ago
                 Exited (137) 2 days ago
      interesting_tesla
                                                   "/bin/bash"
835a09b43794
              centos:centos7.9.2009
                 Exited (0) 2 days ago
2 days ago
     hungrv_shamir
```

```
PS C:\Users\hariv> docker logs 36f9da0defaf

* Serving Flask app 'harivansh'

* Debug mode: on

WARNING: This is a development server. Do not use it in a production deploym
ent. Use a production WSGI server instead.

* Running on all addresses (0.0.0.0)

* Running on http://127.0.0.1:5000

* Running on http://172.17.0.2:5000

Press CTRL+C to quit

* Restarting with stat

* Debugger is active!

* Debugger PIN: 769-358-284
```

PS C:\Users\ha	riv> docke:	r network	ls
NETWORK ID	NAME	DRIVER	SC0PE
c885b90d6291	bridge	bridge	local
00b82be0cb51	host	host	local
3e2fde8b85c8	none	null	local
DC C \ II \ I			OF 6

Run the commands on Docker terminal

- o docker –version
- o docker pull
- o docker run
- o docker ps
- o docker ps -a
- o docker exec
- o docker stop
- o docker kill
- o docker commit
- o docker login
- o docker push
- o docker images
- o docker rm
- o docker rmi
- o docker build

```
PS C:\Users\hariv> docker login
Authenticating with existing credentials... [Username: harivanshx]

Info → To login with a different account, run 'docker logout' followed by 'docker login'
```

PS C:\Users\hariv> docker pull harivanshx/harivanshwebapp:tagname tagname: Pulling from harivanshx/harivanshwebapp
Digest: sha256:a9ee24341ed7d716c6f9aa90b01a9127faffeebc2ad1970a943569f87782d
b7d
Status: Image is up to date for harivanshx/harivanshwebapp:tagname docker.io/harivanshx/harivanshwebapp:tagname

```
PS C:\Users\hariv> docker run harivanshwebapp:latest
    * Serving Flask app 'harivansh'
    * Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
    * Running on all addresses (0.0.0.0)
    * Running on http://127.0.0.1:5000
    * Running on http://172.17.0.2:5000
Press CTRL+C to quit
    * Restarting with stat
    * Debugger is active!
    * Debugger PIN: 111-971-414
```

PS C:\Users\hariv> docker ps
CONTAINER ID IMAGE COMMAND CREATED
STATUS PORTS NAMES
36f9da0defaf harivanshwebapp:latest "python harivansh.py" 3 seconds ag
o Up 3 seconds 5000/tcp thirsty_agnesi

```
PS C:\Users\hariv> docker ps -a
CONTAINER ID
             IMAGE
                                                   COMMAND
                                              PORTS
CREATED
                 STATUS
      NAMES
d65a012730d5 harivanshwebapp:latest
                                                   "python harivansh.py"
29 seconds ago Exited (0) 26 seconds ago
      thirsty_archimedes
2c89ea99f12b harivanshwebapp:latest
                                                   "python harivansh.py"
                 Exited (255) 5 minutes ago
9 hours ago
                                              0.0.0.0:5000->5000/tcp
      nostalgic_bohr
3d7d8b381238
              harivanshx/harivanshwebapp:tagname
                                                   "python harivansh.py"
                 Exited (255) 5 minutes ago
                                              5000/tcp
11 hours ago
      serene_bose
d1cca8bcbf35 harivanshx/harivanshwebapp:tagname
                                                   "python harivansh.py"
11 hours ago Exited (0) 11 hours ago
      sleepy_colden
7ae09d5bd362 harivanshwebapp:latest
                                                   "python harivansh.py"
                Exited (0) 12 hours ago
12 hours ago
      hungry_pascal
d23fa80bead0 jenkins/jenkins:lts
                                                   "/usr/bin/tini -- /u..."
                 Exited (255) 13 hours ago
                                              0.0.0.0:8080->8080/tcp, 50000
37 hours ago
     condescending_mccarthy
95cd4536abb1 jupyter/base-notebook
                                                   "tini -g -- start-no..."
                 Exited (255) 13 hours ago
                                              0.0.0.0:8888->8888/tcp
37 hours ago
      vigilant_chatelet
2edab37bfa68 ubuntu
                                                   "bash"
2 days ago
                 Exited (137) 2 days ago
      interesting_tesla
                                                   "/bin/bash"
835a09b43794
              centos:centos7.9.2009
                 Exited (0) 2 days ago
2 days ago
     hungrv_shamir
```

```
PS C:\Users\hariv> docker ps
CONTAINER ID IMAGE COMMAND CREATED STATU
S PORTS NAMES
36f9da0defaf a9ee24341ed7 "python harivansh.py" 13 minutes ago Up 13
minutes 5000/tcp thirsty_agnesi
PS C:\Users\hariv> docker exec -it thirsty_agnesi /bin/bash
root@36f9da0defaf:/#
```

```
PS C:\Users\hariv> docker rm 2edab37bfa68
2edab37bfa68
PS C:\Users\hariv> docker ps -a
CONTAINER ID IMAGE
                                                  COMMAND
CREATED
                STATUS
                                              PORTS
      NAMES
36f9da0defaf harivanshwebapp:latest
                                                   "python harivansh.py"
3 minutes ago Up 3 minutes
                                              5000/tcp
      thirsty_agnesi
d65a012730d5 harivanshwebapp:latest
                                                  "python harivansh.py"
5 minutes ago Exited (0) 5 minutes ago
      thirsty_archimedes
2c89ea99f12b harivanshwebapp:latest
                                                   "python harivansh.py"
                Exited (255) 10 minutes ago
                                             0.0.0.0:5000->5000/tcp
9 hours ago
      nostalgic_bohr
3d7d8b381238 harivanshx/harivanshwebapp:tagname
                                                  "python harivansh.py"
11 hours ago Exited (255) 10 minutes ago
                                             5000/tcp
      serene_bose
dlcca8bcbf35 harivanshx/harivanshwebapp:tagname
                                                  "python harivansh.py"
11 hours ago
               Exited (0) 11 hours ago
      sleepy_colden
7ae09d5bd362 harivanshwebapp:latest
                                                  "python harivansh.py"
13 hours ago
                Exited (0) 12 hours ago
      hungry_pascal
d23fa80bead0 jenkins/jenkins:lts
                                                   "/usr/bin/tini -- /u..."
               Exited (255) 13 hours ago
37 hours ago
                                             0.0.0.0:8080->8080/tcp, 50000
/tcp condescending_mccarthy
95cd4536abb1 jupyter/base-notebook
                                                   "tini -q -- start-no..."
               Exited (255) 13 hours ago
                                             0.0.0.0:8888->8888/tcp
37 hours ago
      vigilant_chatelet
835a09b43794 centos:centos7.9.2009
                                                  "/bin/bash"
 2 days ago
                Exited (0) 2 days ago
```

PS C:\Users\hariv> docker stop 36f9da0defaf 36f9da0defaf

```
PS C:\Users\hariv> docker ps
CONTAINER ID IMAGE COMMAND
CREATED STATUS PORTS NAMES
d6f07fcbd763 harivanshx/harivanshwebapp:tagname "python harivansh.py"
22 seconds ago Up 21 seconds 5000/tcp sleepy_ride
PS C:\Users\hariv> docker kill d6f07fcbd763
d6f07fcbd763
```

PS D:\cdac pgdai> docker commit -a "Harivansh Bhardwaj" -m "Added Some Text" 7fb4a46cf751 harivanshwebap p sha256:bc3e84cdb6d434ef990660bf001e03a60b7a4112db8b3 b0753167cb3097c3b4c

```
PS C:\Users\hariv> docker login
Authenticating with existing credentials... [Username: harivanshx]

i Info → To login with a different account, run 'docker logout' followed by 'docker login'

Login Succeeded
```

```
PS C:\Users\hariv> docker pull harivanshx/harivanshwebapp:tagname tagname: Pulling from harivanshx/harivanshwebapp
Digest: sha256:a9ee24341ed7d716c6f9aa90b01a9127faffeebc2ad1970a943569f87782d
b7d
Status: Image is up to date for harivanshx/harivanshwebapp:tagname
docker.io/harivanshx/harivanshwebapp:tagname
```

```
PS D:\cdac pgdai\Classes\AITrends\Assignments\Assignment 2 Docker And DockerHub\Harivansh web app> docker push harivanshx/harivanshwebapp:tagname
The push refers to repository [docker.io/harivanshx/harivanshwebapp]
97385090cab0: Layer already exists
0940966600fc: Already exists
d680b830c1d8: Layer already exists
326ad4d2abf0: Pushed
8c7716127147: Layer already exists
077dea97cb30: Layer already exists
208bfab4bdf3: Pushed
eb47ef3fe06b: Pushed
tagname: digest: sha256:a9ee2434led7d716c6f9aa90b01a9127faffeebc2ad1970a943569f87782db7d size: 856
```

PS C:\Users\hariv> docker imag			
REPOSITORY	TAG	IMAGE ID	CREATED
SIZE		0 000011 15	10.1
harivanshx/harivanshwebapp 208MB	tagname	a9ee24341ed7	13 hours ago
harivanshwebapp 208MB	latest	a9ee24341ed7	13 hours ago
harivanshx/pgdaitrendsdocker 175MB	current	69d46b301830	36 hours ago
harivanshx 175MB	latest	69d46b301830	36 hours ago
harivanshx/pgdaitrendsdocker 1.34GB	0.01	cee4ebd1a517	2 days ago
harivansh 1.34GB	latest	cee4ebd1a517	2 days ago
ubuntu 117MB	latest	728785b59223	8 days ago
jenkins/jenkins 783MB	lts	ace160331258	3 weeks ago
hello-world 20.3kB	latest	54e66cc1dd1f	2 months ago
jupyter/base-notebook 1.48GB	latest	8c903974902b	23 months ago
centos 301MB	centos7.9.2009	be65f488b776	4 years ago

PS C:\Users\hariv> docker rm 2edab37bfa68 2edab37bfa68

```
PS C:\Users\hariv> docker rmi harivanshwebapp:latest
Untagged: harivanshwebapp:latest
PS C:\Users\hariv> docker ps -a
CONTAINER ID
               IMAGE
                                                     COMMAND
                                               PORTS
                 STATUS
 CREATED
       NAMES
36f9da0defaf
               a9ee24341ed7
                                                     "python harivansh.py"
 3 minutes ago Up 3 minutes
                                               5000/tcp
       thirsty_agnesi
d65a012730d5 a9ee24341ed7
                                                     "python harivansh.py"
 5 minutes ago Exited (0) 5 minutes ago
       thirsty_archimedes
2c89ea99f12b a9ee24341ed7
                                                     "python harivansh.py"
 9 hours ago
                 Exited (255) 11 minutes ago
                                               0.0.0.0:5000->5000/tcp
       nostalgic_bohr
3d7d8b381238 harivanshx/harivanshwebapp:tagname
                                                     "python harivansh.py"
 11 hours ago
               Exited (255) 11 minutes ago
                                               5000/tcp
       serene_bose
d1cca8bcbf35 harivanshx/harivanshwebapp:tagname
                                                     "python harivansh.py"
 11 hours ago Exited (0) 11 hours ago
       sleepv_colden
7ae09d5bd362 a9ee24341ed7
                                                     "python harivansh.py"
 13 hours ago Exited (0) 12 hours ago
       hungry_pascal
d23fa80bead0 jenkins/jenkins:lts
37 hours ago Exited (255) 13 ho
                                                     "/usr/bin/tini -- /u..."
               Exited (255) 13 hours ago
                                               0.0.0.0:8080->8080/tcp, 50000
tcp condescending_mccarthy
95cd4536abb1 jupyter/base-notebook
                                                     "tini -g -- start-no..."
               Exited (255) 13 hours ago
                                               0.0.0.0:8888->8888/tcp
 37 hours ago
       vigilant_chatelet
835a09b43794 centos:centos7.9.2009
                                                     "/bin/bash"
 2 days ago
                 Exited (0) 2 days ago
       hungry_shamir
PS C:\Users\hariv>
```