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ATTOCK CAMPUS



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LAB ASSIGNMENT #1

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REG. NO.: SP22-BSE-020  
DATE: March 5<sup>th</sup>, 2025  
SUBJECT: DevOps For Cloud Computing

## Overview:

This assignment is a demonstration of implementation of containerization using Dockers. I created a python file that simply shows a dummy text, then I created an image of that file using docker. Then using docker cli, I packed that image in a docker container. The complete implementation can be seen through the following screenshots.

The complete project can be forked from my GitHub repository through the following link:

[DevOps/Guide to working with Dockers at main · flickShot555/DevOps](https://github.com/flickShot555/DevOps)

## Step 1:

I had already installed and integrated the docker, so my verification was seamless. Figure 1 shows the command “docker –version”.

## Step 2:

Then I created a simple python application, that displayed a dummy text. The back-end was python coded and the front-end was rendered using html.

Code for app.py and index.html are as follows:

### App.py

```
from flask import Flask, render_template
app = Flask(__name__)

@app.route('/')
def home():
    return render_template('index.html')

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

### Index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Weather App</title>
</head>
<body style="display:flex; flex-direction:column;align-items:center;">
    <h1>Weather App</h1>
    <div style="display:flex; flex-direction:column;align-items:center;">
        <h2>This is our first docker project.</h2>
        <h4>congratulations!!</h4>
    </div>
</body>
</html>
```

Figure 2 shows the output of the code in the browser.

### **Step 3:**

Then I containerized the python app using a dockerfile file, that had a simple template on how this app will be run when hosted on a virtual machine.

Figure 4 shows the screenshot of the dockerfile.

### **Step 4:**

Then I, using docker CLI, prompted the system to build me a container for the image.

The following command created a docker image:

`'docker build -t my-first-docker-proj.'`

Then to check the running images, I entered:

`'docker ps'`

Figure 5 shows the output of the docker CLI after the container was built, and the total running images.

### **Step 5:**

Then I, using the docker-compose file, automated the running of the app without having it live on my host docker desktop. I mapped the host server 5000 to host sever 8081 for running it independently.

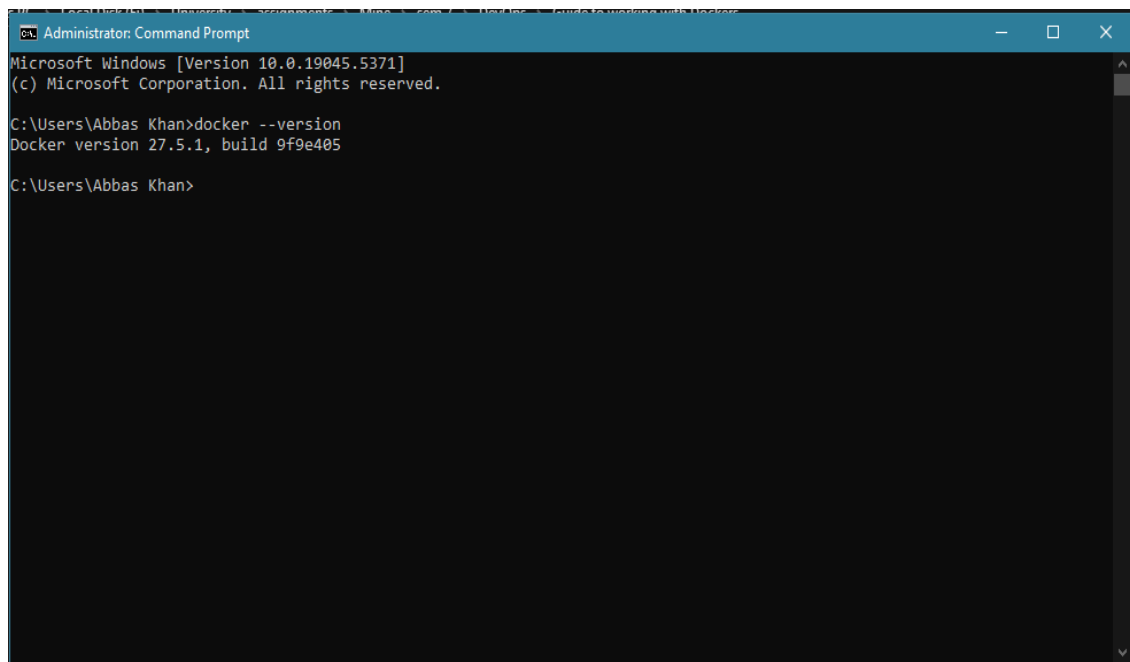
Figure 6 & 7 shows the image of the web browser showing the output of the app, and the output of the 'docker ps' and 'docker-compose.yml' file.

## Step 6:

This step mostly comprises of cleaning up process and documentation process.

## Screenshot:

1.



```
Administrator Command Prompt
Microsoft Windows [Version 10.0.19045.5371]
(c) Microsoft Corporation. All rights reserved.

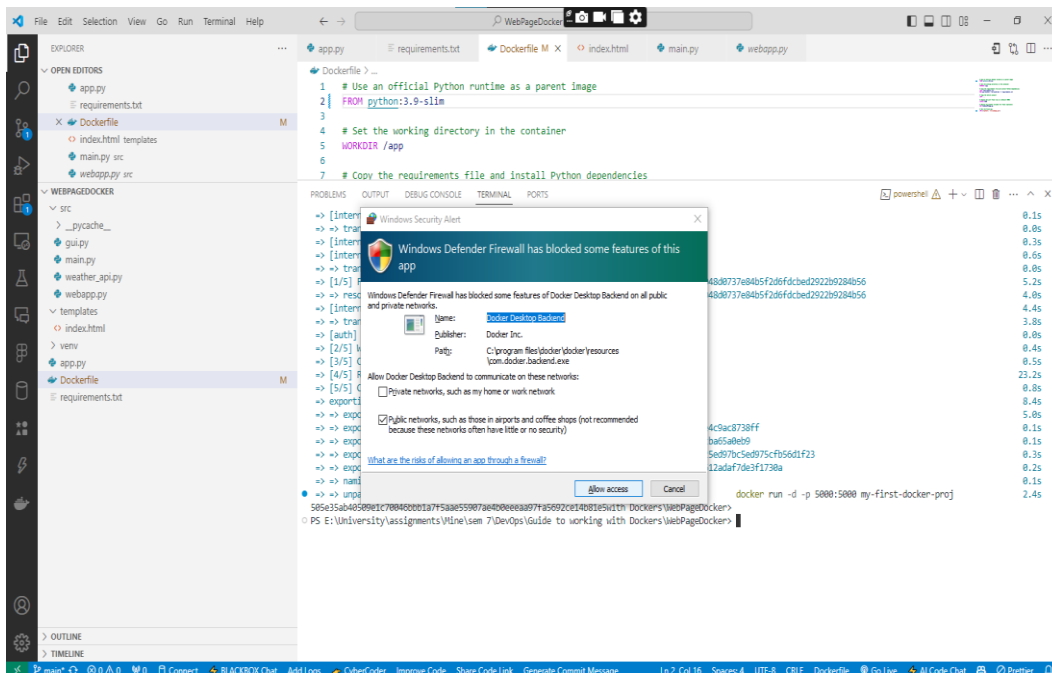
C:\Users\Abbas Khan>docker --version
Docker version 27.5.1, build 9f9e405

C:\Users\Abbas Khan>
```

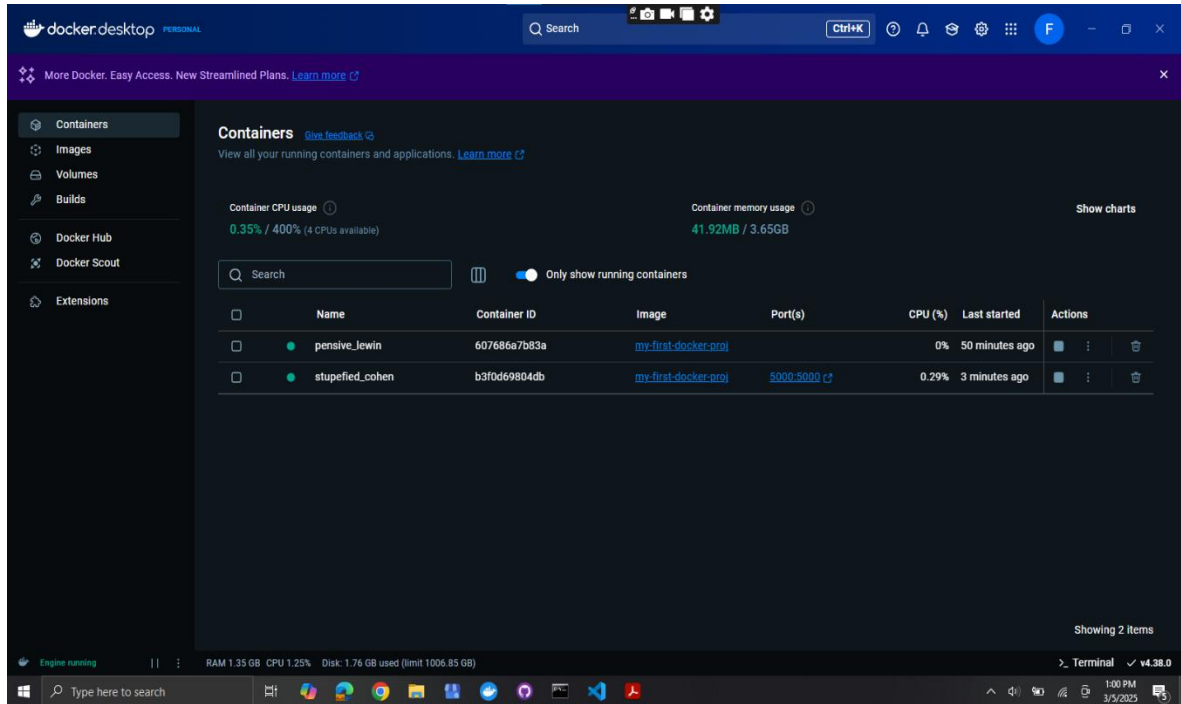
2.



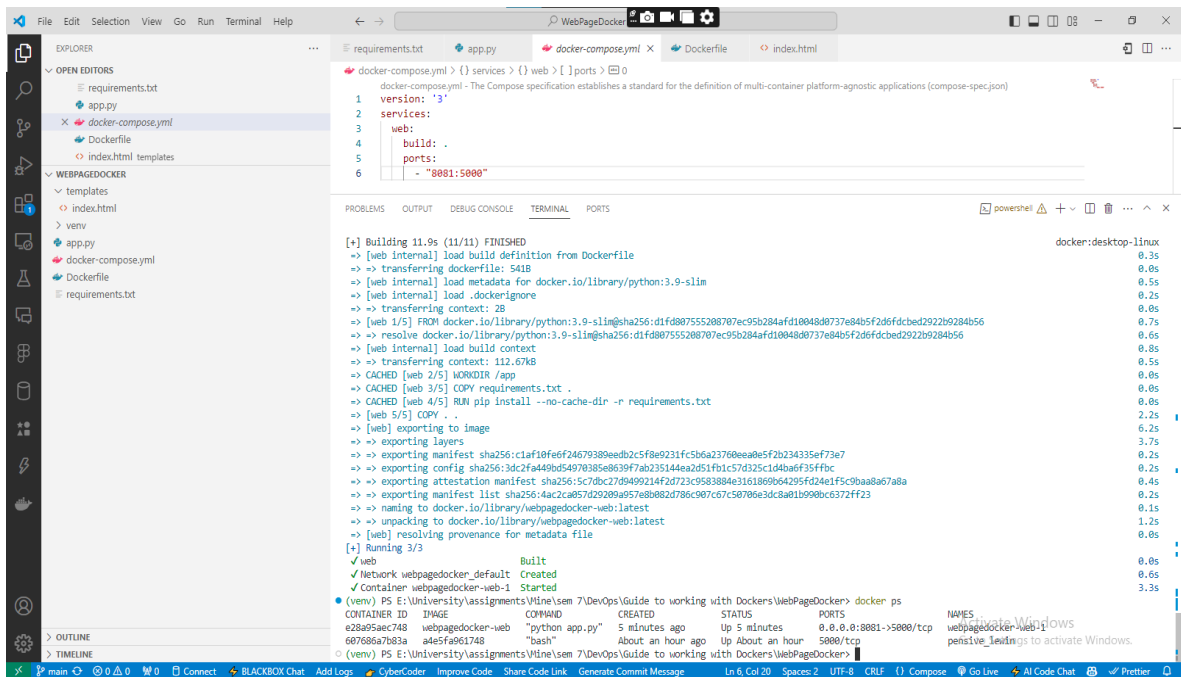
3.



4.



5.



6.

The screenshot shows the VS Code editor with a Dockerfile open. The Dockerfile contains the following code:

```

1 from flask import Flask, render_template
2 app = Flask(__name__)
3
4 @app.route('/')
5 def home():
6     return render_template('index.html')
7

```

The terminal output shows the execution of the command `docker-compose up -d`. The output indicates that the services are being built and started successfully. The final output is:

```

(venv) PS E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker> docker-compose up -d
time="2025-03-08T13:06:58+08:00" level=warning msg="E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker\docker-comp
ose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion"
[*] Building 11/9s (11/11) FINISHED
-> [web internal] load build definition from Dockerfile
-> [web internal] load metadata for docker.io/library/python:3.9-slim
-> [web internal] load .dockerignore
-> [web internal] transferring context: 28
-> [web 1/5] FROM docker.io/library/python:3.9-slim@sha256:d1f480755208707ec95b284afd10848d9737e84b5f2d6fdbcbed292b9284b56
-> resolve docker.io/library/python:3.9-slim@sha256:d1f480755208707ec95b284afd10848d9737e84b5f2d6fdbcbed292b9284b56
-> [web internal] load build context
-> transferring context: 112.67kB
-> CACHED [web 2/5] WORKDIR /app
-> CACHED [web 3/5] COPY requirements.txt .
-> CACHED [web 4/5] RUN pip install --no-cache-dir -r requirements.txt
-> [web 5/5] COPY .
-> [web] exporting to image
-> exporting layers
-> exporting manifest sha256:c1af10f6f24679389eeb2c5f0e9231fc5b6a23760eeaa0e5f2b234335ef7367
-> exporting config sha256:3dc2fa48b5d49785e8639f7a6235144ea2d51fb1c57d325c148ab6f35ffbc
-> exporting attestation manifest sha256:5c70bc27b9499214f3d723c9583884e31618696a4295fd24e1f5c9baa8a67a8a
-> exporting manifest list sha256:4ac2ca057d29209a957e8b882d786c907c67c58706e3dc8a01b990bc6372ff23
-> naming to docker.io/library/webpagedocker-web:latest
-> unpacking to docker.io/library/webpagedocker-web:latest
-> [web] resolving provenance for metadata file
[*] Running 3/3
✓ web Built
✓ Network webpagedocker_default Created
✓ Container webpagedocker-web-1 Started
(venv) PS E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker>

```

7.

The screenshot shows the VS Code editor with the `docker-compose.yml` file open. The file contains the following code:

```

1 version: '3'
2 services:
3   web:
4     build: .
5     ports:
6       - "8081:5000"

```

The terminal output shows the execution of the command `docker-compose down`. The output indicates that the services are being stopped and removed successfully. The final output is:

```

Usage: docker stop [OPTIONS] CONTAINER [CONTAINER...]

Stop one or more running containers
(venv) PS E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker> docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
e28a95aec748   webpagedocker-web   "python app.py"         13 minutes ago   Exited (137) 4 minutes ago         0.0.0.0:8081->5000/tcp   pensive_leidn
607686a7b83a   a4e5fa61748        "bash"                  About an hour ago   Exited (1) About an hour ago         great_elbakyan
0c390b7bee79   a38d16d43753       "python src/webapp.py"   About an hour ago   Exited (1) About an hour ago         first-container
fc92c50e99c9   6a3c5a116559       "python src/webapp.py"   About an hour ago   Exited (1) About an hour ago         blissful_gates
3a1740f0f66d   6a3c5a116559       "python src/webapp.py"   2 hours ago      Exited (1) About an hour ago         cool_ellon
585e35ab4050   6a3c5a116559       "python src/webapp.py"   2 hours ago      Exited (1) 2 hours ago             angry_burnell
74c541f043bc   hello-world        "/hello"                 3 hours ago      Exited (0) 3 hours ago             awesome_neumann
15f8828afda1   hello-world        "/hello"                 39 hours ago     Exited (0) 39 hours ago

(venv) PS E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker> docker stop $(docker ps -q)
e28a95aec748
(venv) PS E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker> docker-compose down
time="2025-03-08T13:21:54+08:00" level=warning msg="E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker\docker-comp
ose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion"
[*] Running 2/2
✓ Container webpagedocker-web-1 Removed
✓ Network webpagedocker_default Removed
(venv) PS E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker> docker images
REPOSITORY    TAG      IMAGE ID      CREATED      SIZE
webpagedocker-web   latest   4ac2ca057d29   16 minutes ago   232MB
nginx          latest   9d5b58feebd2   3 weeks ago     279MB
hello-world     latest   bf5b0cc14f13   6 weeks ago     20.4kB
python          3.9-slim d1f480755520   3 months ago   189MB

(venv) PS E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker> docker rmi webpagedocker-web
Untagged: webpagedocker-web:latest
Deleted: sha256:4ac2ca057d29209a957e8b882d786c907c67c58706e3dc8a01b990bc6372ff23
(venv) PS E:\University\assignments\Vine\sem 7\DevOps\Guide to working with Docker\WebPageDocker>

```

A handwritten note is present over the terminal output, stating: "Stop one or more running containers".

