

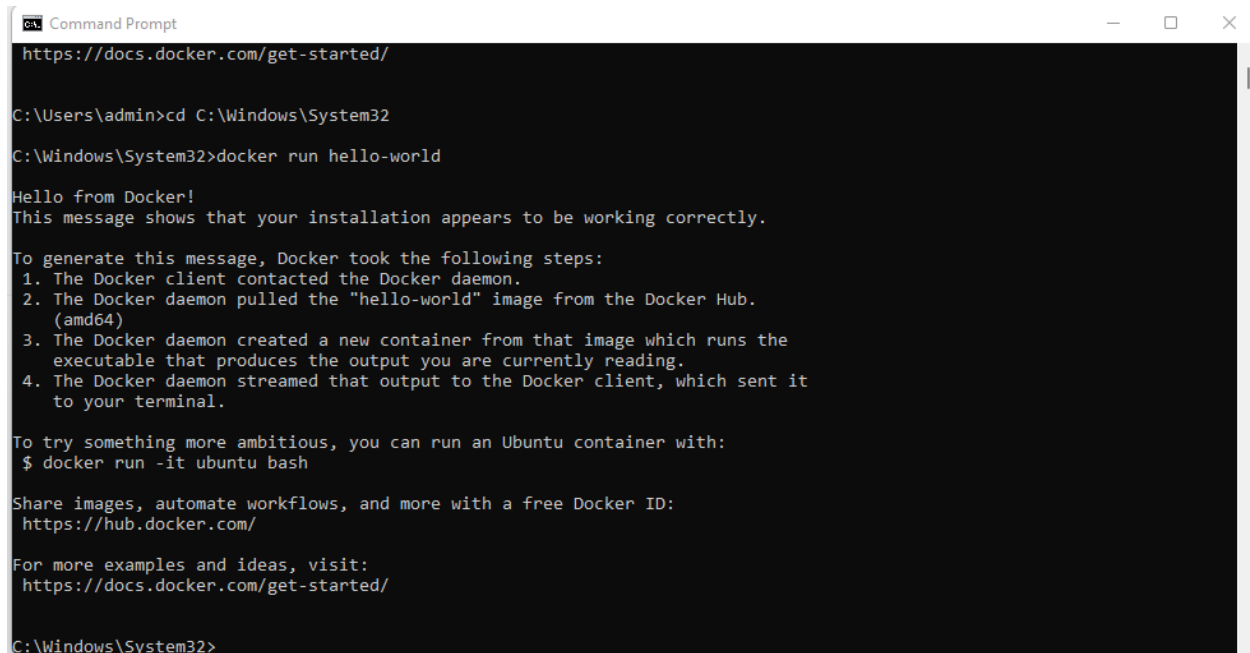
## BCDV

Student Name: Harsh Bhavsar  
Student ID: 101440339

Term: Winter 2024

## BCDV 4032 – Building scalable blockchain applications

### Screenshots of lab-1



```
Command Prompt
https://docs.docker.com/get-started/

C:\Users\admin>cd C:\Windows\System32
C:\Windows\System32>docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

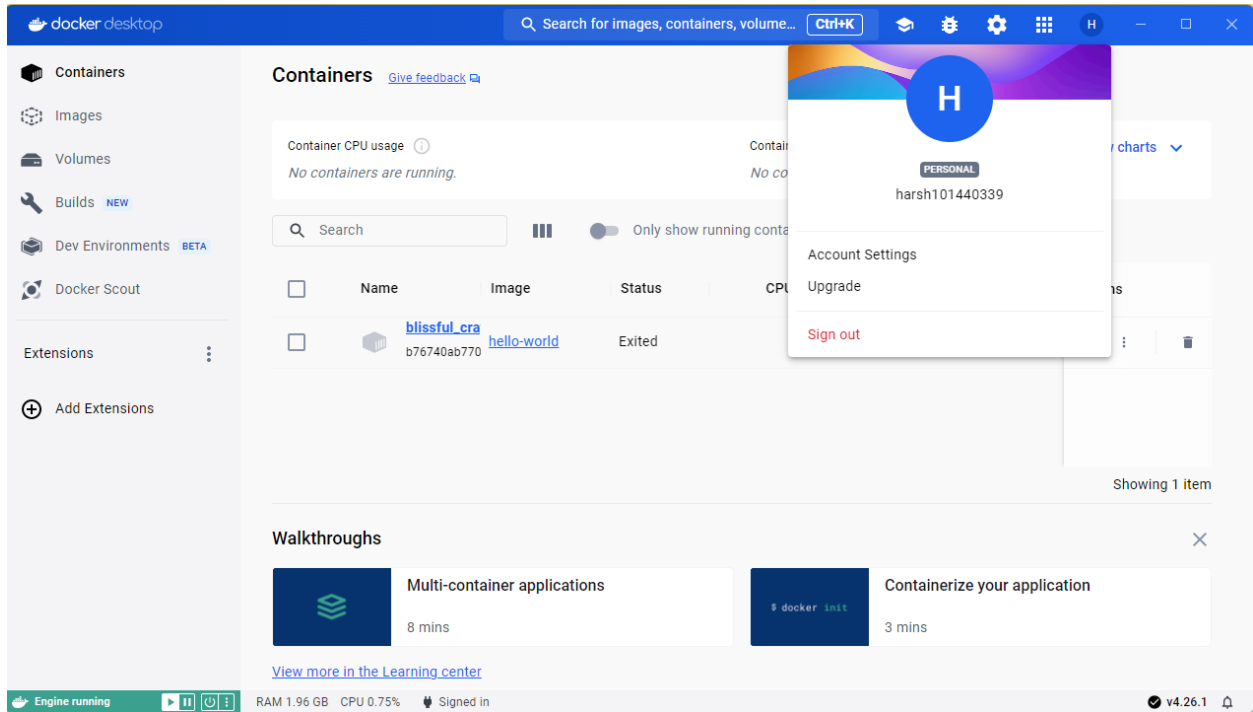
For more examples and ideas, visit:
https://docs.docker.com/get-started/

C:\Windows\System32>
```

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```
Command Prompt

C:\Windows\System32>$ docker pull alpine
'$' is not recognized as an internal or external command,
operable program or batch file.

C:\Windows\System32> docker pull alpine
Using default tag: latest
latest: Pulling from library/alpine
661ff4d9561e: Pull complete
Digest: sha256:51b67269f354137895d43f3b3d810bfacd3945438e94dc5ac55fdac340352f48
Status: Downloaded newer image for alpine:latest
docker.io/library/alpine:latest

What's Next?
View a summary of image vulnerabilities and recommendations → docker scout quickview alpine

C:\Windows\System32>
```

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```
Command Prompt
operable program or batch file.

C:\Windows\System32>docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
alpine               latest              f8c20f8bbcb6       4 weeks ago        7.38MB
docker/welcome-to-docker latest              c1f619b6477e       2 months ago       18.6MB
hello-world          latest              d2c94e258dcb       8 months ago       13.3kB

C:\Windows\System32>
```

```
Command Prompt
operable program or batch file.

C:\Windows\System32>docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
alpine               latest              f8c20f8bbcb6       4 weeks ago        7.38MB
docker/welcome-to-docker latest              c1f619b6477e       2 months ago       18.6MB
hello-world          latest              d2c94e258dcb       8 months ago       13.3kB

C:\Windows\System32>docker run alpine ls -l
total 56
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 bin
drwxr-xr-x  5 root    root      340 Jan 11 00:05 dev
drwxr-xr-x  1 root    root      4096 Jan 11 00:05 etc
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 home
drwxr-xr-x  7 root    root      4096 Dec  7 09:43 lib
drwxr-xr-x  5 root    root      4096 Dec  7 09:43 media
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 mnt
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 opt
dr-xr-xr-x 213 root    root        0 Jan 11 00:05 proc
drwx----- 2 root    root      4096 Dec  7 09:43 root
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 run
drwxr-xr-x  2 root    root      4096 Dec  7 09:43/sbin
drwxr-xr-x  2 root    root      4096 Dec  7 09:43/srv
dr-xr-xr-x 11 root    root        0 Jan 11 00:05 sys
drwxrwxrwt  2 root    root      4096 Dec  7 09:43 tmp
drwxr-xr-x  7 root    root      4096 Dec  7 09:43 usr
drwxr-xr-x 12 root    root      4096 Dec  7 09:43 var

C:\Windows\System32>
```

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```
Command Prompt
docker/welcome-to-docker  latest  c1f619b6477e  2 months ago  18.6MB
hello-world               latest  d2c94e258dcb  8 months ago   13.3kB

C:\Windows\System32>docker run alpine ls -l
total 56
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 bin
drwxr-xr-x  5 root    root      340  Jan 11 00:05 dev
drwxr-xr-x  1 root    root      4096 Jan 11 00:05 etc
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 home
drwxr-xr-x  7 root    root      4096 Dec  7 09:43 lib
drwxr-xr-x  5 root    root      4096 Dec  7 09:43 media
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 mnt
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 opt
dr-xr-xr-x 213 root    root        0 Jan 11 00:05 proc
drwx----- 2 root    root      4096 Dec  7 09:43 root
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 run
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 sbin
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 srv
dr-xr-xr-x 11 root    root        0 Jan 11 00:05 sys
drwxrwxrwt  2 root    root      4096 Dec  7 09:43 tmp
drwxr-xr-x  7 root    root      4096 Dec  7 09:43 usr
drwxr-xr-x 12 root    root      4096 Dec  7 09:43 var

C:\Windows\System32>docker run alpine echo "hello from alpine"
hello from alpine

C:\Windows\System32>
```

```
Command Prompt
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 sbin
drwxr-xr-x  2 root    root      4096 Dec  7 09:43 srv
dr-xr-xr-x 11 root    root        0 Jan 11 00:05 sys
drwxrwxrwt  2 root    root      4096 Dec  7 09:43 tmp
drwxr-xr-x  7 root    root      4096 Dec  7 09:43 usr
drwxr-xr-x 12 root    root      4096 Dec  7 09:43 var

C:\Windows\System32>docker run alpine echo "hello from alpine"
hello from alpine

C:\Windows\System32> docker run alpine /bin/sh

C:\Windows\System32> docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
59a1f422f6f2   alpine    "/bin/sh"               49 seconds ago Exited (0) 45 seconds ago          sleepy_rob
nson
cfbcf50bb56e   alpine    "echo 'hello from al..." 2 minutes ago  Exited (0) 2 minutes ago          adoring_eul
er
e55857e5b615   alpine    "ls -l"                 3 minutes ago  Exited (0) 3 minutes ago          admiring_va
rahamihira
b76740ab770e   hello-world "/hello"               35 minutes ago Exited (0) 35 minutes ago          blissful_cr
ay

C:\Windows\System32>
```

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```
Command Prompt - docker run -it alpine /bin/sh
drwxr-xr-x 7 root root 4096 Dec 7 09:43 usr
drwxr-xr-x 12 root root 4096 Dec 7 09:43 var

C:\Windows\System32>docker run alpine echo "hello from alpine"
hello from alpine

C:\Windows\System32> docker run alpine /bin/sh

C:\Windows\System32> docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
C:\Windows\System32> docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
59a1f422f6f2   alpine    "/bin/sh"  49 seconds ago  Exited (0) 45 seconds ago           sleepy_rob
nson
cfbcf50bb56e   alpine    "echo 'hello from al..."  2 minutes ago  Exited (0) 2 minutes ago           adoring_eul
er
e55857e5b615   alpine    "ls -l"    3 minutes ago  Exited (0) 3 minutes ago           admiring_va
rahamihira
b76740ab770e   hello-world  "/hello"   35 minutes ago  Exited (0) 35 minutes ago           blissful_cr
ay

C:\Windows\System32>docker run -it alpine /bin/sh
/ # ls
bin    dev    etc    home   lib    media  mnt    opt    proc   root   run    sbin   srv    sys    tmp    usr    var
/ # uname -a
Linux 567655e35b85 5.15.133.1-microsoft-standard-WSL2 #1 SMP Thu Oct 5 21:02:42 UTC 2023 x86_64 Linux
/ # sys
/bin/sh: sys: not found
/ #
```

```
Command Prompt - docker run -d dockersamples/static-site
Microsoft Windows [Version 10.0.22000.2538]
(c) Microsoft Corporation. All rights reserved.

C:\Users\admin>cd C:\Windows\System32

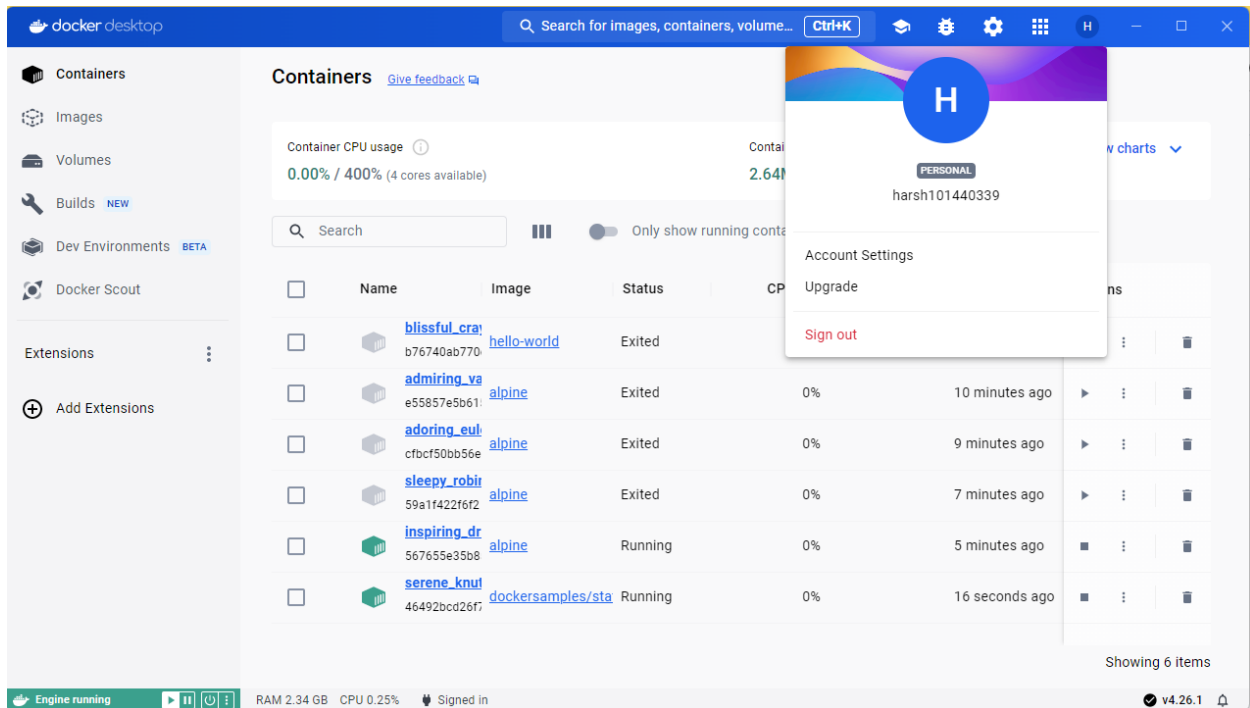
C:\Windows\System32>docker run -d dockersamples/static-site
Unable to find image 'dockersamples/static-site:latest' locally
latest: Pulling from dockersamples/static-site
fdd5d7827f33: Pull complete
a3ed95caeb02: Pull complete
716f7a5f3082: Extracting [=====>] 5.767MB/23.51MB
7b10f03a0309: Download complete
aff3ab7e9c39: Download complete
```

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```
C:\Users\admin>cd C:\Windows\System32

C:\Windows\System32>docker run -d dockersamples/static-site
Unable to find image 'dockersamples/static-site:latest' locally
latest: Pulling from dockersamples/static-site
fdd5d7827f33: Pull complete
a3ed95cae02: Pull complete
716f7a5f3082: Pull complete
7b10f03a0309: Pull complete
aff3ab7e9c39: Pull complete
Digest: sha256:daa686c61d7d239b7977e72157997489db49f316b9b9af3909d9f10fd28b2dec
Status: Downloaded newer image for dockersamples/static-site:latest
46492bcd26f78ee32f2789b4c8d57067d52fcd2aff2252c5ee3656e71940ef18

C:\Windows\System32>
C:\Windows\System32>docker ps
CONTAINER ID   IMAGE                COMMAND                  CREATED        STATUS        PORTS
NAMES
46492bcd26f7   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  2 minutes ago  Up About a minute  80/tcp, 443/tcp
serene_knuth
567655e35b85   alpine                "/bin/sh"                6 minutes ago  Up 6 minutes
inspiring_driscoll

C:\Windows\System32>docker stop 46492bcd26f7
46492bcd26f7

C:\Windows\System32>docker rm 46492bcd26f7
46492bcd26f7

C:\Windows\System32>
```

```
aff3ab7e9c39: Pull complete
Digest: sha256:daa686c61d7d239b7977e72157997489db49f316b9b9af3909d9f10fd28b2dec
Status: Downloaded newer image for dockersamples/static-site:latest
46492bcd26f78ee32f2789b4c8d57067d52fcd2aff2252c5ee3656e71940ef18

C:\Windows\System32>
C:\Windows\System32>docker ps
CONTAINER ID   IMAGE                COMMAND                  CREATED        STATUS        PORTS
NAMES
46492bcd26f7   dockersamples/static-site  "/bin/sh -c 'cd /usr..."  2 minutes ago  Up About a minute  80/tcp, 443/tcp
serene_knuth
567655e35b85   alpine                "/bin/sh"                6 minutes ago  Up 6 minutes
inspiring_driscoll

C:\Windows\System32>docker stop 46492bcd26f7
46492bcd26f7

C:\Windows\System32>docker rm 46492bcd26f7
46492bcd26f7

C:\Windows\System32>docker run --name static-site -e AUTHOR="Your Name" -d -P dockersamples/static-site
aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e319

C:\Windows\System32>
```

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```
Command Prompt

C:\Windows\System32>docker stop aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e319
aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e319

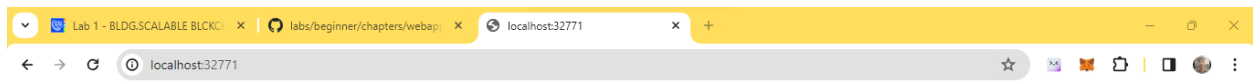
C:\Windows\System32>docker rm aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e31
aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e31

C:\Windows\System32>docker run --name static-site -e AUTHOR="Harsh" -d -P dockersamples/static-site
e3066df6c8d5c47241561cc42fd396b2354ec798a590ed1e2b9920423f0cb133

C:\Windows\System32>docker port static-site
80/tcp -> 0.0.0.0:32771
443/tcp -> 0.0.0.0:32770

C:\Windows\System32>
```

http://192.168.99.100:32773



**Hello Harsh!**

This is being served from a **docker**  
container running Nginx.



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```
Command Prompt

C:\Windows\System32>docker stop aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e319
aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e319

C:\Windows\System32>docker rm aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e31
aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e31

C:\Windows\System32>docker run --name static-site -e AUTHOR="Harsh" -d -P dockersamples/static-site
e3066df6c8d5c47241561cc42fd396b2354ec798a590ed1e2b9920423f0cb133

C:\Windows\System32>docker port static-site
80/tcp -> 0.0.0.0:32771
443/tcp -> 0.0.0.0:32770

C:\Windows\System32> docker stop static-site
static-site

C:\Windows\System32>docker rm static-site
static-site

C:\Windows\System32>
```

```
Command Prompt

C:\Windows\System32>docker stop aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e319
aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e319

C:\Windows\System32>docker rm aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e31
aff4f0521760440936d1cb9996e7af46533d73d69d2b3610011d9fd149a1e31

C:\Windows\System32>docker run --name static-site -e AUTHOR="Harsh" -d -P dockersamples/static-site
e3066df6c8d5c47241561cc42fd396b2354ec798a590ed1e2b9920423f0cb133

C:\Windows\System32>docker port static-site
80/tcp -> 0.0.0.0:32771
443/tcp -> 0.0.0.0:32770

C:\Windows\System32> docker stop static-site
static-site

C:\Windows\System32>docker rm static-site
static-site

C:\Windows\System32>docker images
REPOSITORY          TAG         IMAGE ID      CREATED        SIZE
alpine               latest      f8c20f8bbcb6  4 weeks ago    7.38MB
docker/welcome-to-docker latest      c1f619b6477e  2 months ago   18.6MB
hello-world          latest      d2c94e258dcb  8 months ago   13.3kB
dockersamples/static-site latest      f589ccde7957  7 years ago    191MB

C:\Windows\System32>
```

## BCDV

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```
Command Prompt
443/tcp -> 0.0.0.0:32770

C:\Windows\System32> docker stop static-site
static-site

C:\Windows\System32> docker rm static-site
static-site

C:\Windows\System32> docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
alpine               latest          f8c20f8bbcb6   4 weeks ago    7.38MB
docker/welcome-to-docker latest         c1f619b6477e   2 months ago   18.6MB
hello-world          latest          d2c94e258dcb   8 months ago   13.3kB
dockersamples/static-site latest         f589ccde7957   7 years ago    191MB

C:\Windows\System32> docker pull ubuntu:12.04
12.04: Pulling from library/ubuntu
d8868e50ac4c: Pull complete
83251ac64627: Pull complete
589bba2f1b36: Pull complete
d62ecaceda39: Pull complete
6d93b41cfc6b: Pull complete
Digest: sha256:18305429afa14ea462f810146ba44d4363ae76e4c8dfc38288cf73aa07485005
Status: Downloaded newer image for ubuntu:12.04
docker.io/library/ubuntu:12.04

What's Next?
  View a summary of image vulnerabilities and recommendations -> docker scout quickview ubuntu:12.04

C:\Windows\System32>
```

```
Command Prompt
3304affc7ca780ce4fc1fd8710527771b58311a3229/click-8.1.7-py3-none-any.whl.metadata
Downloading click-8.1.7-py3-none-any.whl.metadata (3.0 kB)
Collecting blinker>=1.6.2 (from Flask)
  Obtaining dependency information for blinker>=1.6.2 from https://files.pythonhosted.org/packages/fa/2a/7f3714cbc6356a0efec525ce7a0613d581072ed6eb53eb7b9754f33db807/blinker-1.7.0-py3-none-any.whl.metadata
Downloading blinker-1.7.0-py3-none-any.whl.metadata (1.9 kB)
Collecting colorama (from click>=8.1.3->Flask)
  Downloading colorama-0.4.6-py2.py3-none-any.whl (25 kB)
Collecting MarkupSafe>=2.0 (from Jinja2>=3.1.2->Flask)
  Obtaining dependency information for MarkupSafe>=2.0 from https://files.pythonhosted.org/packages/be/bb/08b85bc194034efbf572e70c3951549c8eca0ada25363afc154386b5390a/MarkupSafe-2.1.3-cp311-cp311-win_amd64.whl.metadata
Downloading MarkupSafe-2.1.3-cp311-cp311-win_amd64.whl.metadata (3.1 kB)
Downloading flask-3.0.0-py3-none-any.whl (99 kB)
----- 99.7/99.7 kB 821.0 kB/s eta 0:00:00
Downloading blinker-1.7.0-py3-none-any.whl (13 kB)
Downloading click-8.1.7-py3-none-any.whl (97 kB)
----- 97.9/97.9 kB 1.4 MB/s eta 0:00:00
Downloading Jinja2-3.1.3-py3-none-any.whl (133 kB)
----- 133.2/133.2 kB 2.6 MB/s eta 0:00:00
Downloading werkzeug-3.0.1-py3-none-any.whl (226 kB)
----- 226.7/226.7 kB 7.0 MB/s eta 0:00:00
Downloading MarkupSafe-2.1.3-cp311-cp311-win_amd64.whl (17 kB)
Installing collected packages: MarkupSafe, itsdangerous, colorama, blinker, Werkzeug, Jinja2, click, Flask
Successfully installed Flask-3.0.0 Jinja2-3.1.3 MarkupSafe-2.1.3 Werkzeug-3.0.1 blinker-1.7.0 click-8.1.7 colorama-0.4.6 itsdangerous-2.1.2

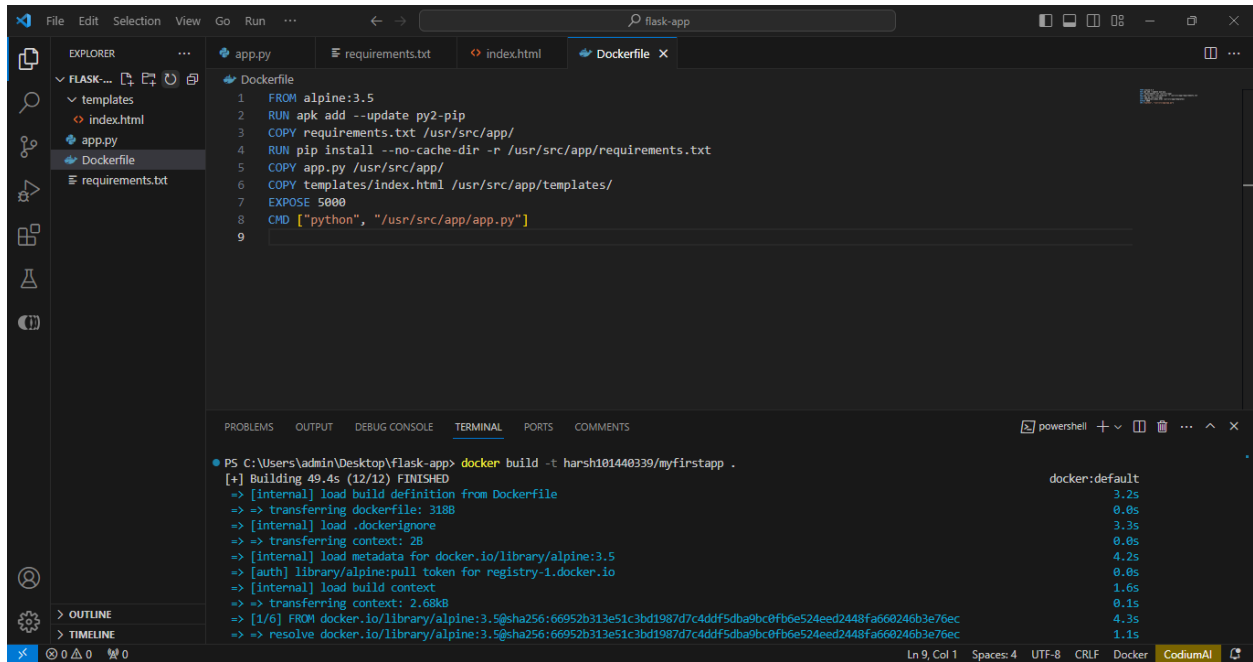
[notice] A new release of pip is available: 23.2.1 -> 23.3.2
[notice] To update, run: python.exe -m pip install --upgrade pip

(.venv) C:\Users\admin\Desktop\flask-app\myproject>
```

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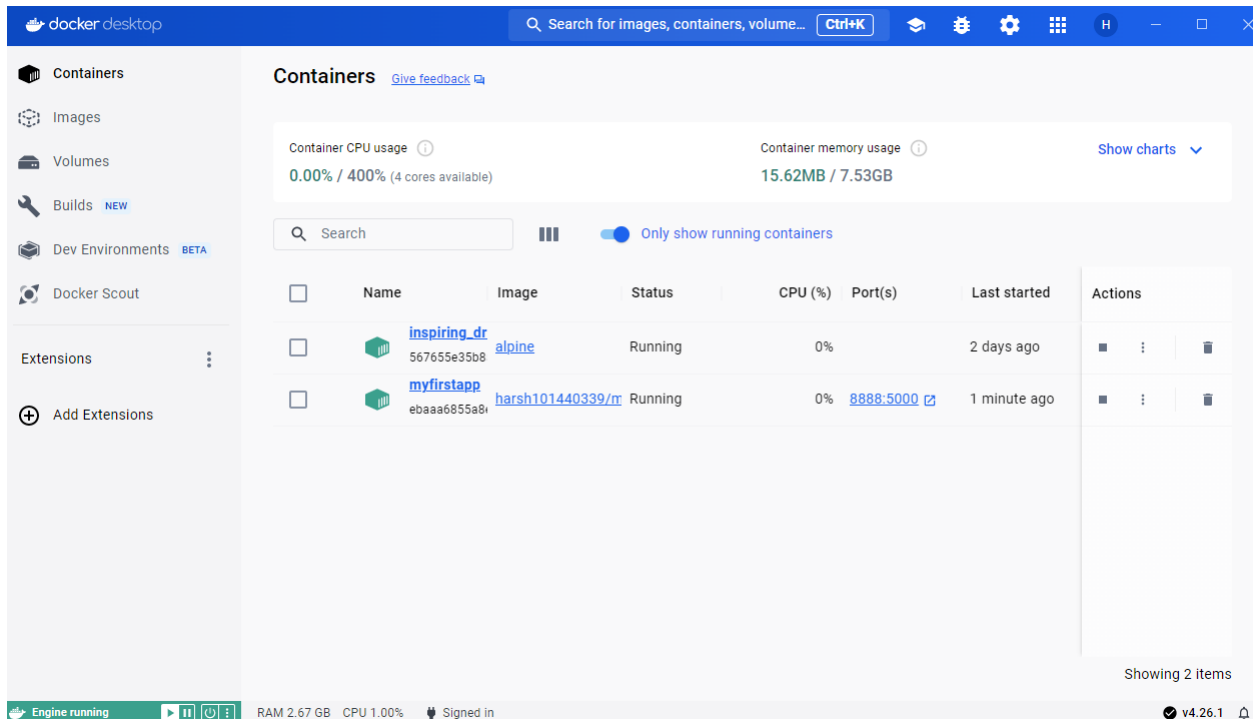


The screenshot shows the Visual Studio Code editor with a file named 'flask-app' open. The Explorer sidebar on the left shows a folder structure with 'templates', 'index.html', 'app.py', 'Dockerfile', and 'requirements.txt'. The Dockerfile content is as follows:

```
1 FROM alpine:3.5
2 RUN apk add --update py2-pip
3 COPY requirements.txt /usr/src/app/
4 RUN pip install --no-cache-dir -r /usr/src/app/requirements.txt
5 COPY app.py /usr/src/app/
6 COPY templates/index.html /usr/src/app/templates/
7 EXPOSE 5000
8 CMD ["python", "/usr/src/app/app.py"]
9
```

The TERMINAL panel at the bottom shows the output of the command 'docker build -t harsh101440339/myfirstapp .'. The build process is complete, showing the following steps and durations:

```
PS C:\Users\admin\Desktop\flask-app> docker build -t harsh101440339/myfirstapp .
[+] Building 49.4s (12/12) FINISHED
=> [internal] load build definition from Dockerfile                    docker:default
=> => transferring dockerfile: 318B                                   3.2s
=> [internal] load .dockerignore                                       0.0s
=> => transferring context: 2B                                         3.3s
=> [internal] load metadata for docker.io/library/alpine:3.5         4.2s
=> [auth] library/alpine:pull token for registry-1.docker.io         0.0s
=> [internal] load build context                                     1.6s
=> => transferring context: 2.68kB                                     0.1s
=> [1/6] FROM docker.io/library/alpine:3.5@sha256:66952b313e51c3bd1987d7c4ddf5dba9bc0fb6e524eed2448fa660246b3e76ec 4.3s
=> resolve docker.io/library/alpine:3.5@sha256:66952b313e51c3bd1987d7c4ddf5dba9bc0fb6e524eed2448fa660246b3e76ec 1.1s
```



The screenshot shows the Docker Desktop interface. The left sidebar contains navigation options: Containers, Images, Volumes, Builds, Dev Environments, Docker Scout, Extensions, and Add Extensions. The main panel displays the 'Containers' section, showing a summary of container usage and a table of running containers.

Container CPU usage: 0.00% / 400% (4 cores available)  
Container memory usage: 15.62MB / 7.53GB

Search:  Only show running containers

	Name	Image	Status	CPU (%)	Port(s)	Last started	Actions
<input type="checkbox"/>	inspiring_dr	alpine	Running	0%		2 days ago	
<input type="checkbox"/>	myfirstapp	harsh101440339/m	Running	0%	8888:5000	1 minute ago	

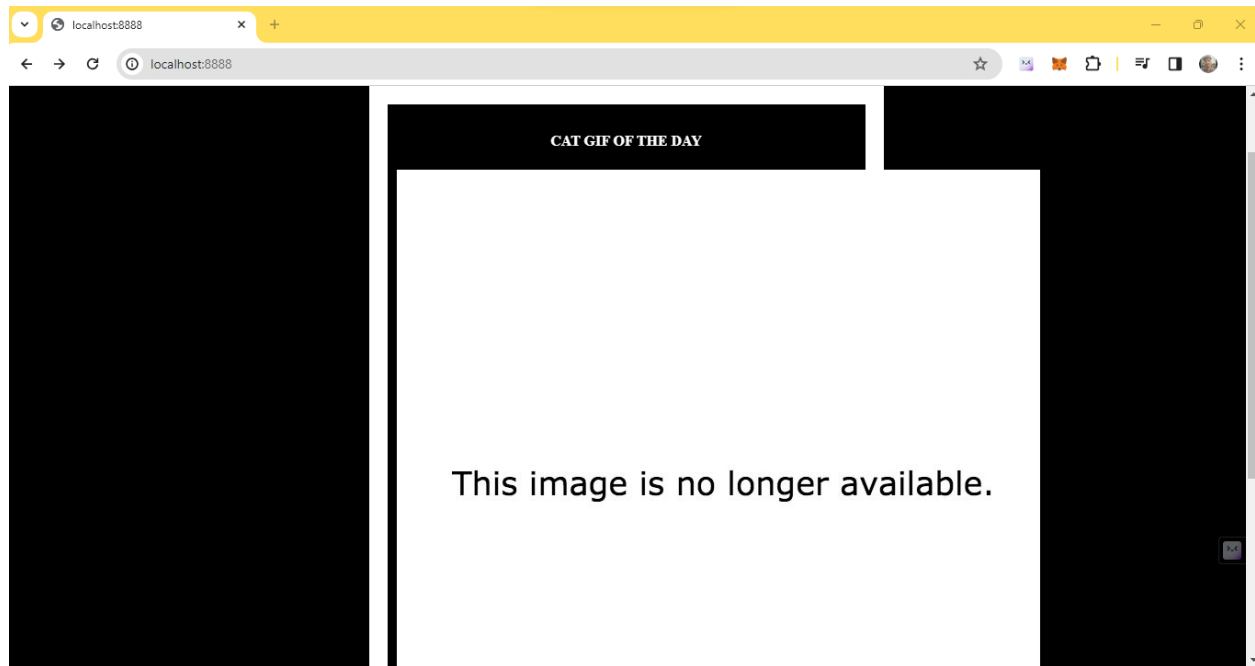
Showing 2 items

Engine running RAM 2.67 GB CPU 1.00% Signed in v4.26.1

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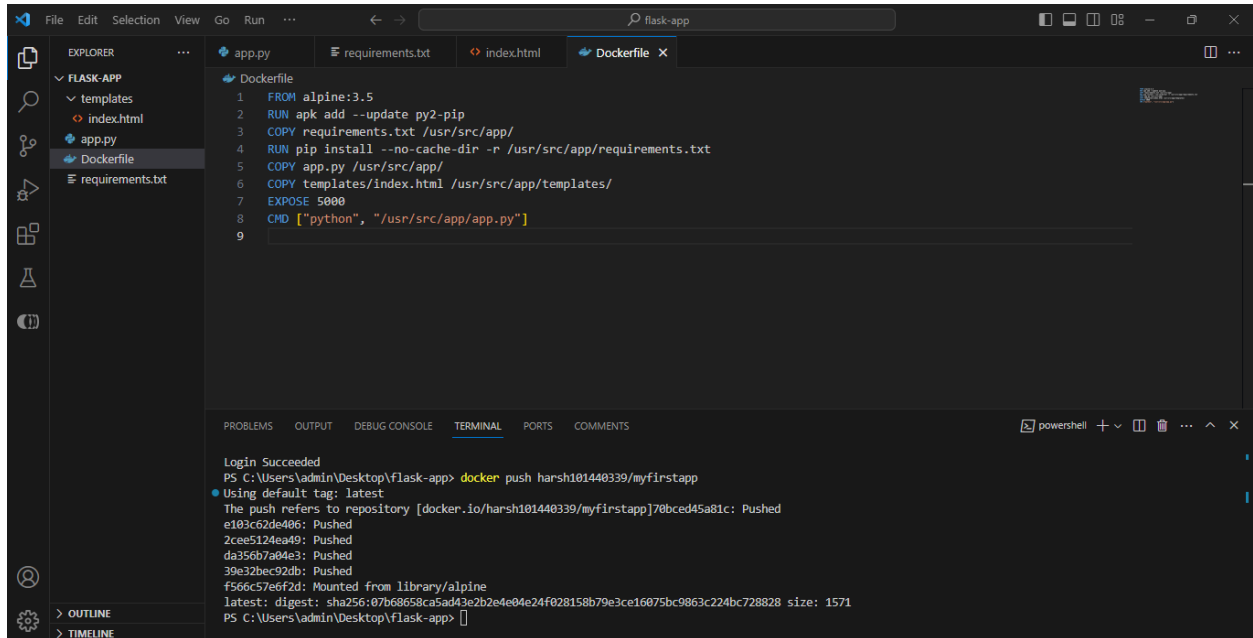
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## BCDV

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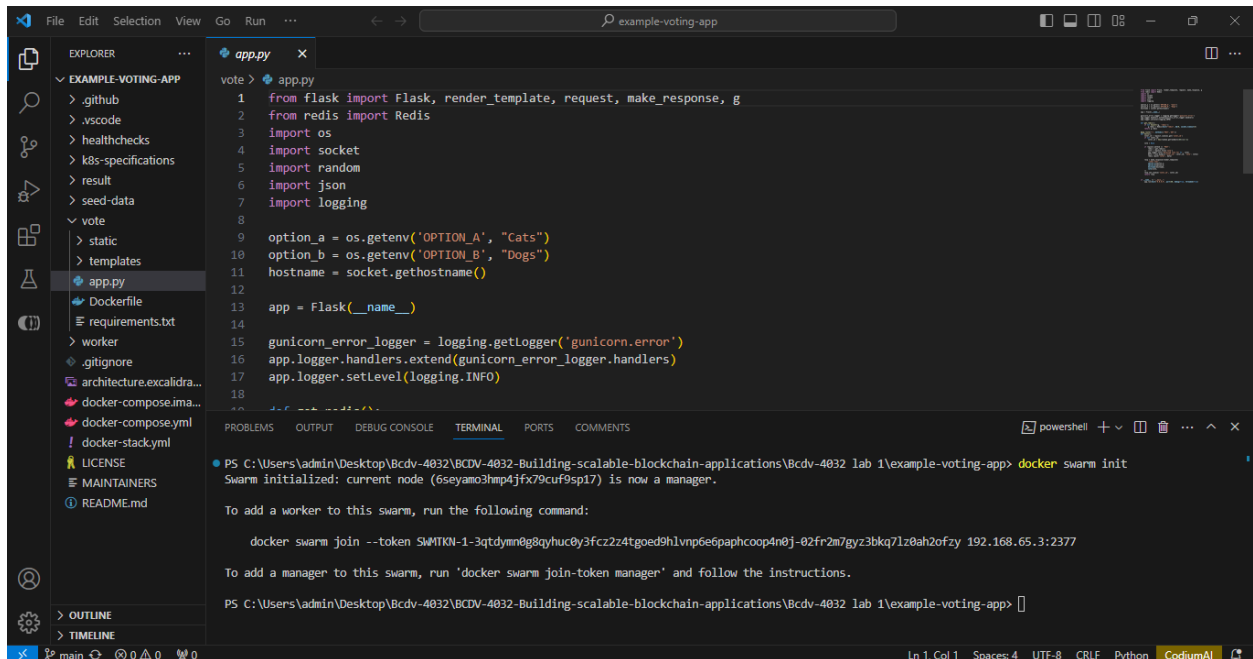


The screenshot shows a VS Code editor with a project named 'flask-app'. The Explorer sidebar on the left shows the file structure: 'FLASK-APP' containing 'templates', 'index.html', 'app.py', 'Dockerfile', and 'requirements.txt'. The Dockerfile is open in the editor, showing the following content:

```
1 FROM alpine:3.5
2 RUN apk add --update py2-pip
3 COPY requirements.txt /usr/src/app/
4 RUN pip install --no-cache-dir -r /usr/src/app/requirements.txt
5 COPY app.py /usr/src/app/
6 COPY templates/index.html /usr/src/app/templates/
7 EXPOSE 5000
8 CMD ["python", "/usr/src/app/app.py"]
9
```

The terminal at the bottom shows the output of the command `docker push harsh101440339/myfirstapp`:

```
Login Succeeded
PS C:\Users\admin\Desktop\flask-app> docker push harsh101440339/myfirstapp
Using default tag: latest
The push refers to repository [docker.io/harsh101440339/myfirstapp]7bced45a81c: Pushed
e103c62de406: Pushed
2cee5124ea49: Pushed
da356b7a04e3: Pushed
39e32bec92db: Pushed
f566c57e6f2d: Mounted from library/alpine
latest: digest: sha256:07b68658ca5ad43e2b2e4e04e24f028158b79e3ce16075bc9863c224bc728828 size: 1571
PS C:\Users\admin\Desktop\flask-app>
```



The screenshot shows a VS Code editor with a project named 'example-voting-app'. The Explorer sidebar on the left shows the file structure: 'EXAMPLE-VOTING-APP' containing '.github', '.vscode', 'healthchecks', 'k8s-specifications', 'result', 'seed-data', 'vote', 'static', 'templates', 'app.py', 'Dockerfile', 'requirements.txt', 'worker', '.gitignore', 'architecture.excalidra...', 'docker-compose.ima...', 'docker-compose.yml', 'docker-stack.yml', 'LICENSE', 'MAINTAINERS', and 'README.md'. The 'app.py' file is open in the editor, showing the following content:

```
1 from flask import Flask, render_template, request, make_response, g
2 from redis import Redis
3 import os
4 import socket
5 import random
6 import json
7 import logging
8
9 option_a = os.getenv('OPTION_A', "Cats")
10 option_b = os.getenv('OPTION_B', "Dogs")
11 hostname = socket.gethostname()
12
13 app = Flask(__name__)
14
15 gunicorn_error_logger = logging.getLogger('gunicorn.error')
16 app.logger.handlers.extend(gunicorn_error_logger.handlers)
17 app.logger.setLevel(logging.INFO)
18
19 @app.route('/')
20 def index():
21     return render_template("index.html", option_a=option_a, option_b=option_b, hostname=hostname)
22
23 if __name__ == '__main__':
24     app.run(host='0.0.0.0', port=5000)
```

The terminal at the bottom shows the output of the command `docker swarm init`:

```
PS C:\Users\admin\Desktop\Bcdv-4032\BCDV-4032-Building-scalable-blockchain-applications\Bcdv-4032 lab 1\example-voting-app> docker swarm init
Swarm initialized: current node (6seyamo3hmp4jfx79cuf9sp17) is now a manager.

To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-3qtdymn0g8qyhuc0y3fc2z24tgoed9h1vnp6e6paphcoop4n0j-02fr2m7gyz3bkq71z0ah2ofzy 192.168.65.3:2377

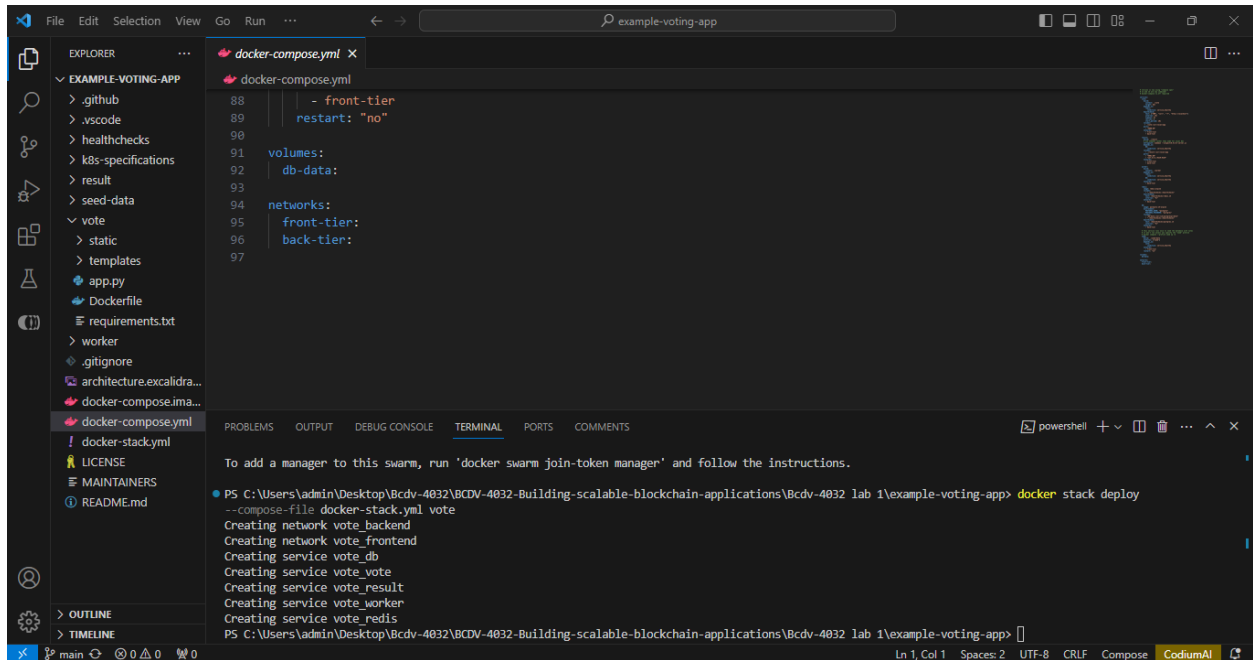
To add a manager to this swarm, run 'docker swarm join-token manager' and follow the instructions.

PS C:\Users\admin\Desktop\Bcdv-4032\BCDV-4032-Building-scalable-blockchain-applications\Bcdv-4032 lab 1\example-voting-app>
```

## BCDV

Student Name: Harsh Bhavsar  
Student ID: 101440339

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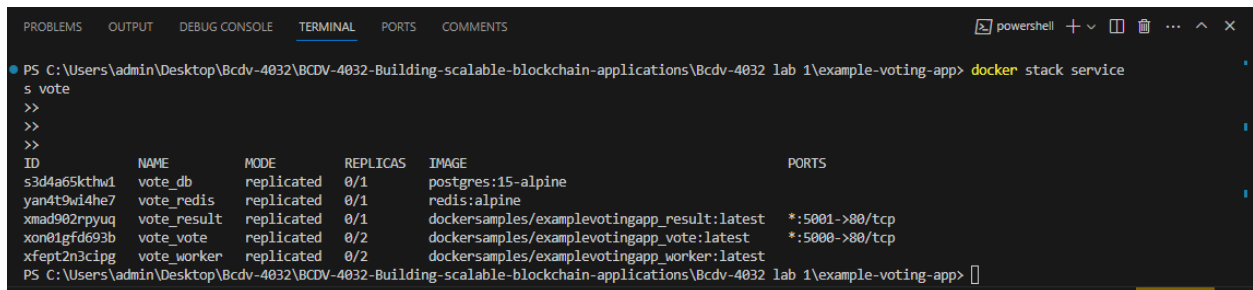


The screenshot shows the Visual Studio Code editor with the `docker-compose.yml` file open. The file contains the following configuration:

```
88   - front-tier
89   restart: "no"
90
91   volumes:
92   db-data:
93
94   networks:
95   front-tier:
96   back-tier:
97
```

The terminal output shows the command `docker stack deploy` being executed, which creates a new swarm and deploys the services.

```
To add a manager to this swarm, run 'docker swarm join-token manager' and follow the instructions.
PS C:\Users\admin\Desktop\Bcdv-4032\BCDV-4032-Building-scalable-blockchain-applications\Bcdv-4032 lab 1\example-voting-app> docker stack deploy
--compose-file docker-stack.yml vote
Creating network vote_backend
Creating network vote_frontend
Creating service vote_db
Creating service vote_vote
Creating service vote_result
Creating service vote_worker
Creating service vote_redis
PS C:\Users\admin\Desktop\Bcdv-4032\BCDV-4032-Building-scalable-blockchain-applications\Bcdv-4032 lab 1\example-voting-app>
```



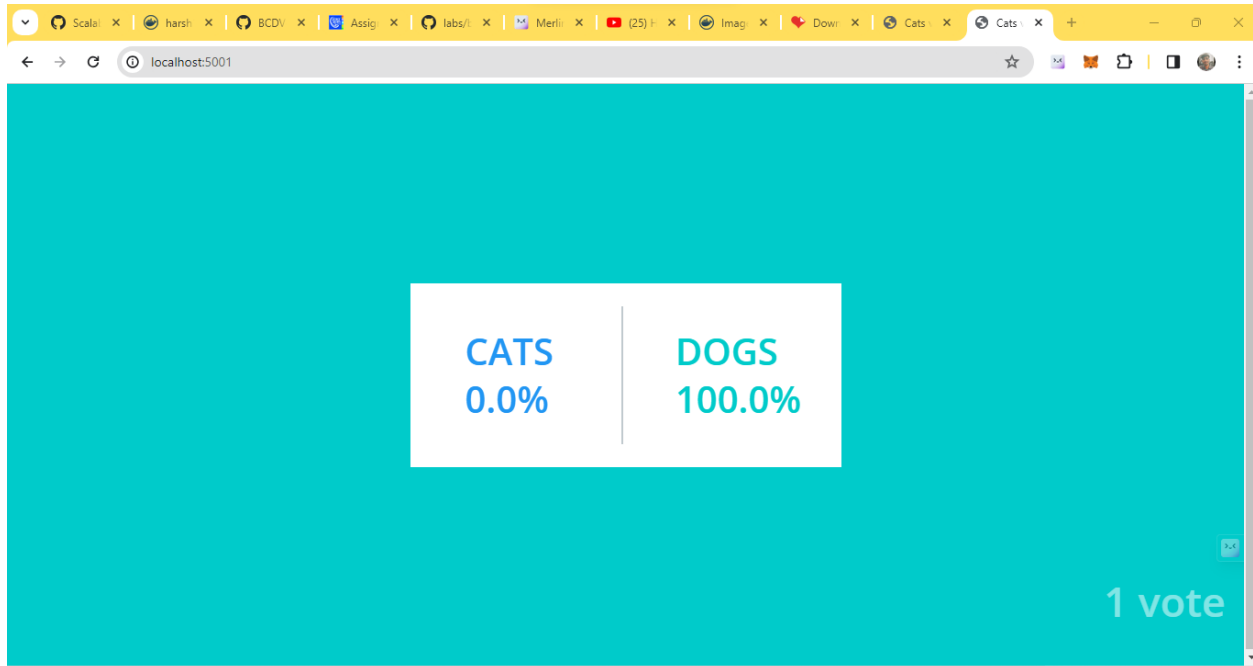
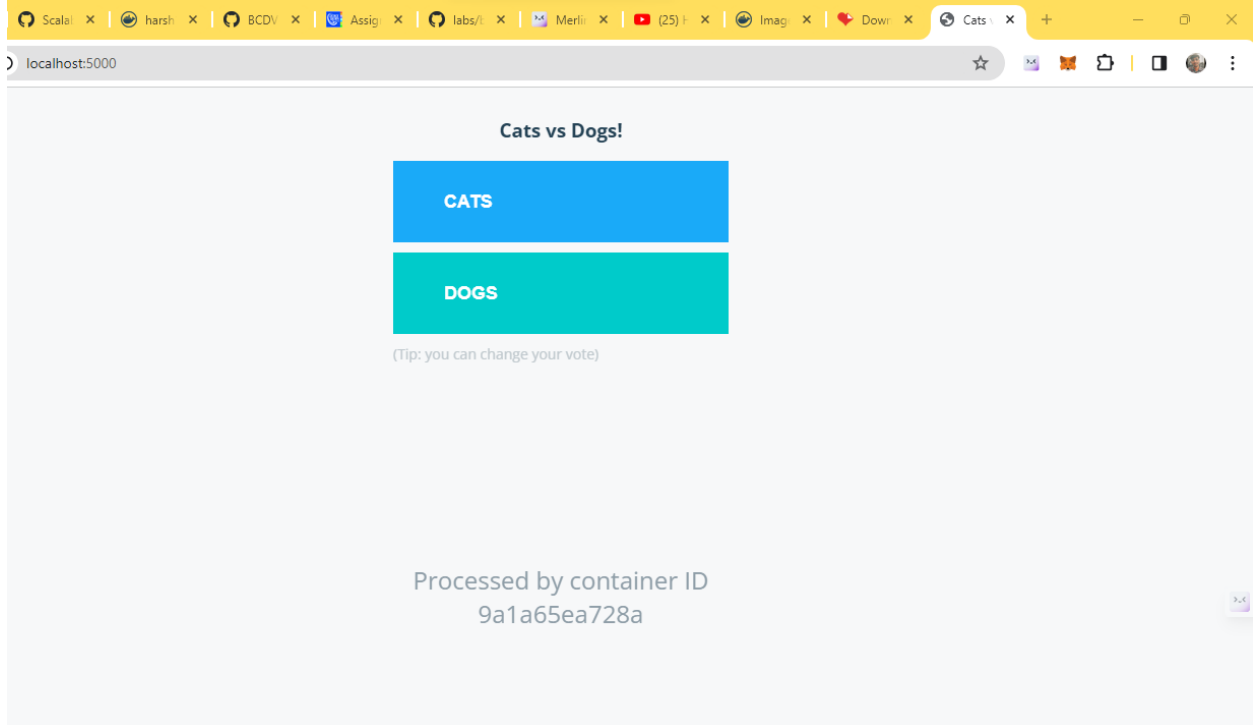
The screenshot shows the terminal output of the `docker stack service` command, displaying the details of the services running in the stack.

```
PS C:\Users\admin\Desktop\Bcdv-4032\BCDV-4032-Building-scalable-blockchain-applications\Bcdv-4032 lab 1\example-voting-app> docker stack service
s vote
>>
>>
>>
ID          NAME          MODE          REPLICAS  IMAGE                                  PORTS
s3d4a65kthw1 vote_db        replicated    0/1        postgres:15-alpine
yan4t9wi4he7 vote_redis     replicated    0/1        redis:alpine
xmad902rpyuq vote_result    replicated    0/1        dockersamples/examplevotingapp_result:latest *:5001->80/tcp
xon01gfd693b vote_vote      replicated    0/2        dockersamples/examplevotingapp_vote:latest  *:5000->80/tcp
xfep2n3cipg vote_worker    replicated    0/2        dockersamples/examplevotingapp_worker:latest
PS C:\Users\admin\Desktop\Bcdv-4032\BCDV-4032-Building-scalable-blockchain-applications\Bcdv-4032 lab 1\example-voting-app>
```

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