

# CS451

## Cloud Computing

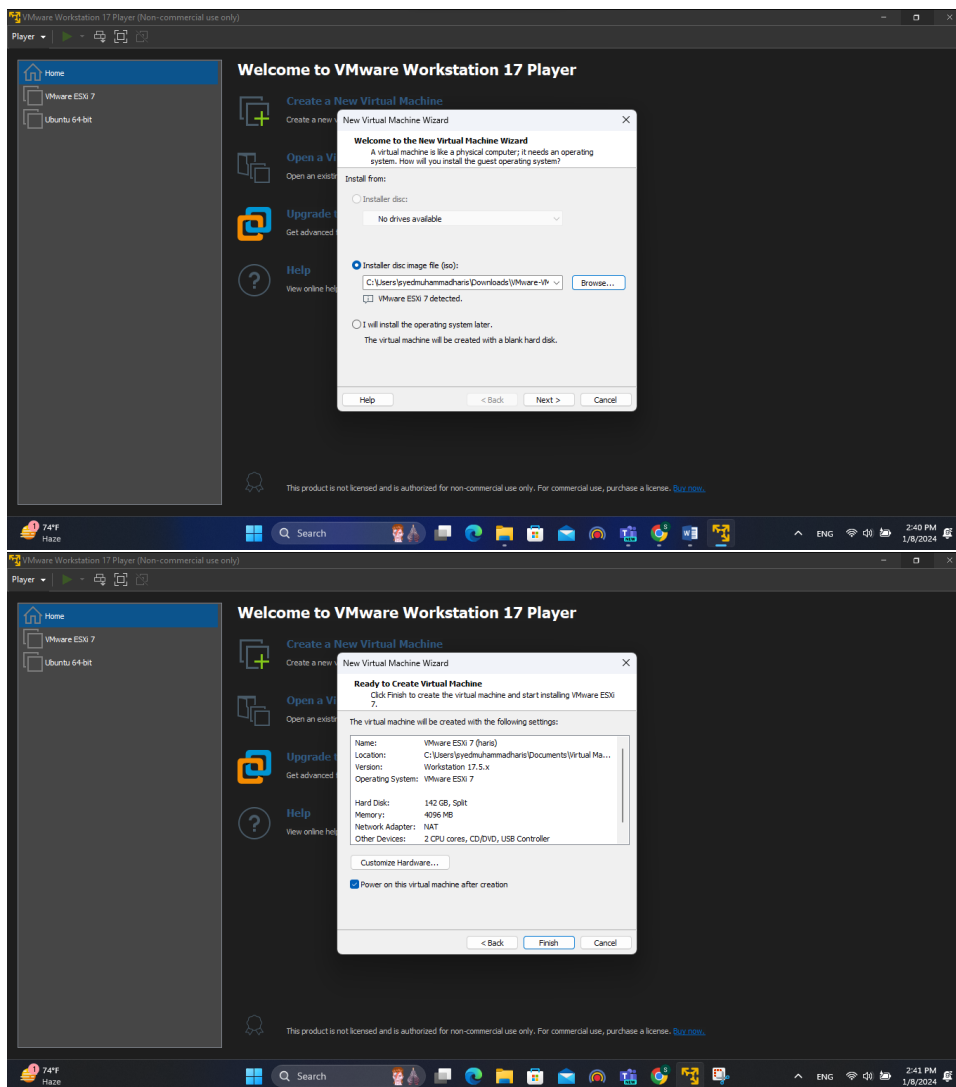
### FALL 2023

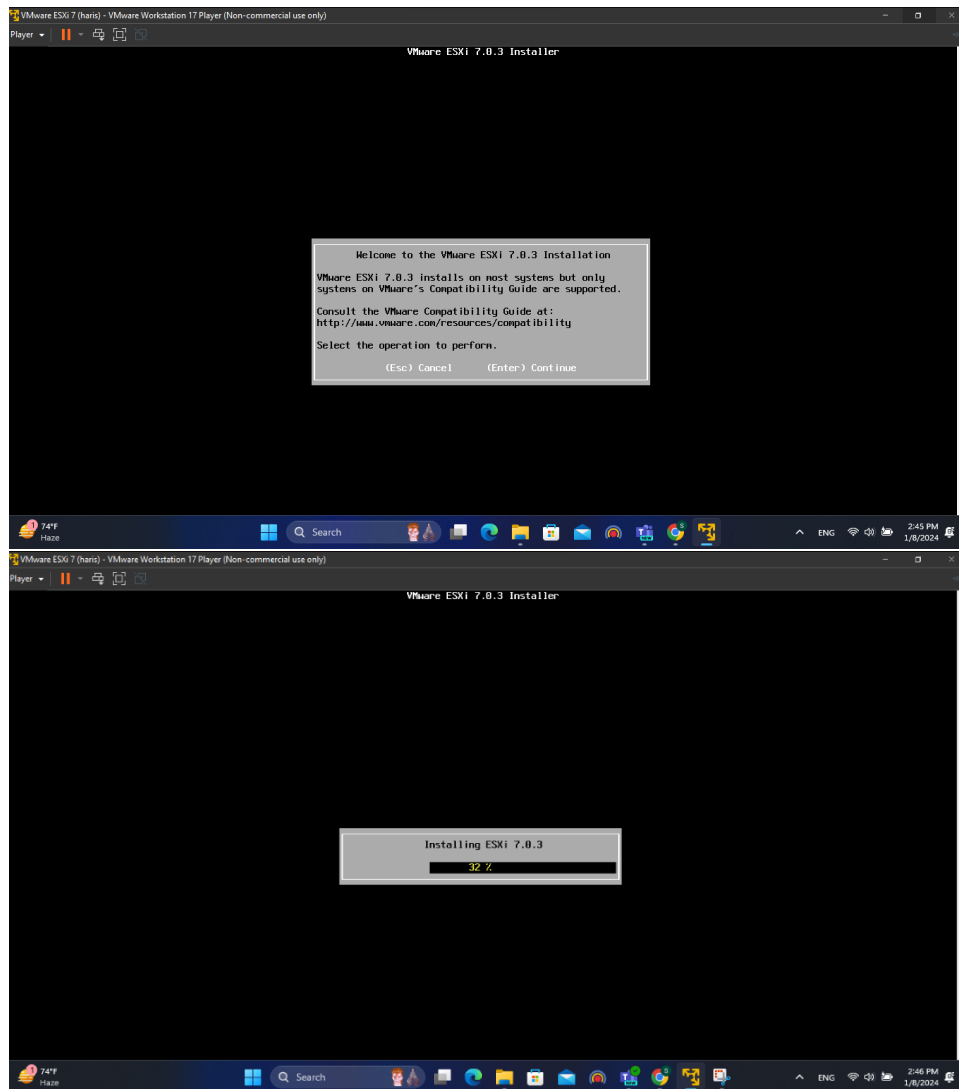
### Assignment

### 20B-100-SE

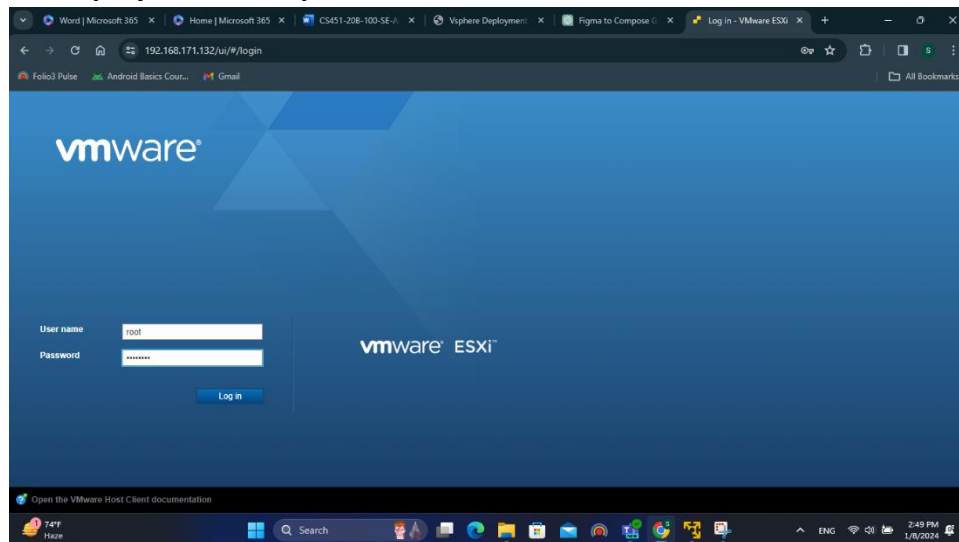
## TASK

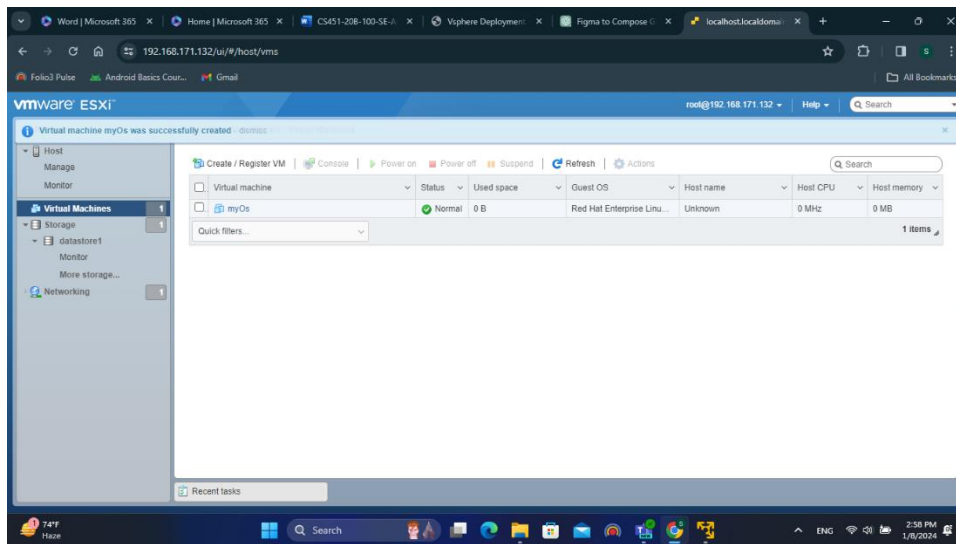
### 1 – Create a bare metal virtual machine environment.



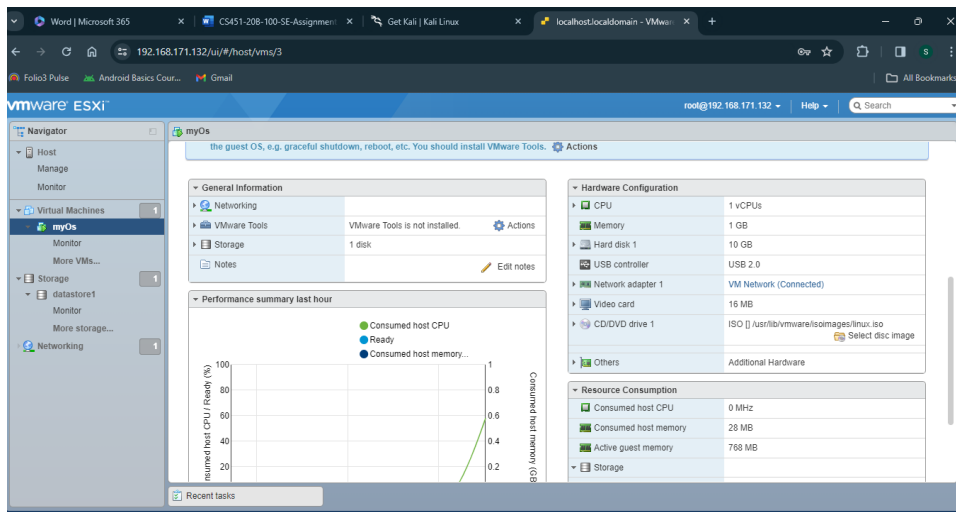


## 2 – Deploy the ESXi vsphere.






**3 – Deploy the webserver in ESXI virtual machine. Access the web services from the host.**





**4 – Create docker environment.**



## Windows Subsystem for Linux




Microsoft Corporation

4.2  Average    592 Ratings



ESRB EVERYONE

### Screenshots



### Description

Windows Subsystem for Linux (WSL) lets developers run a GNU/Linux environment -- including most command-line tools, utilities, and applications -- directly on Windows, unmodified, without the overhead of a traditional virtual machine or dual boot setup.

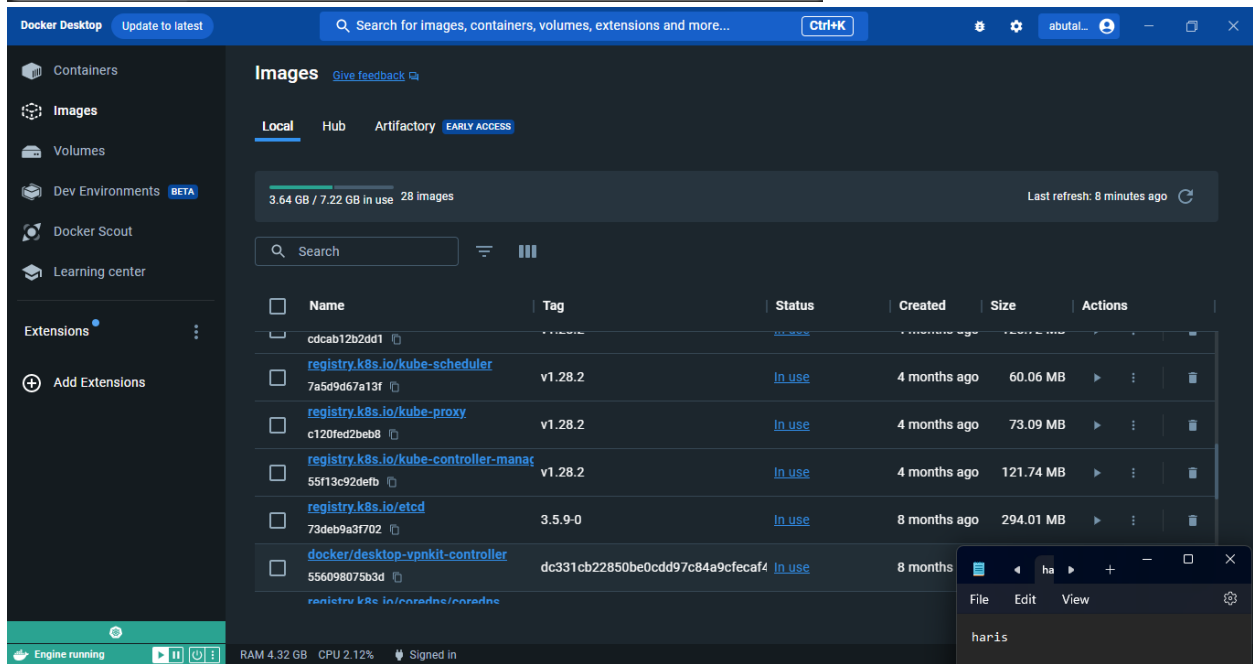
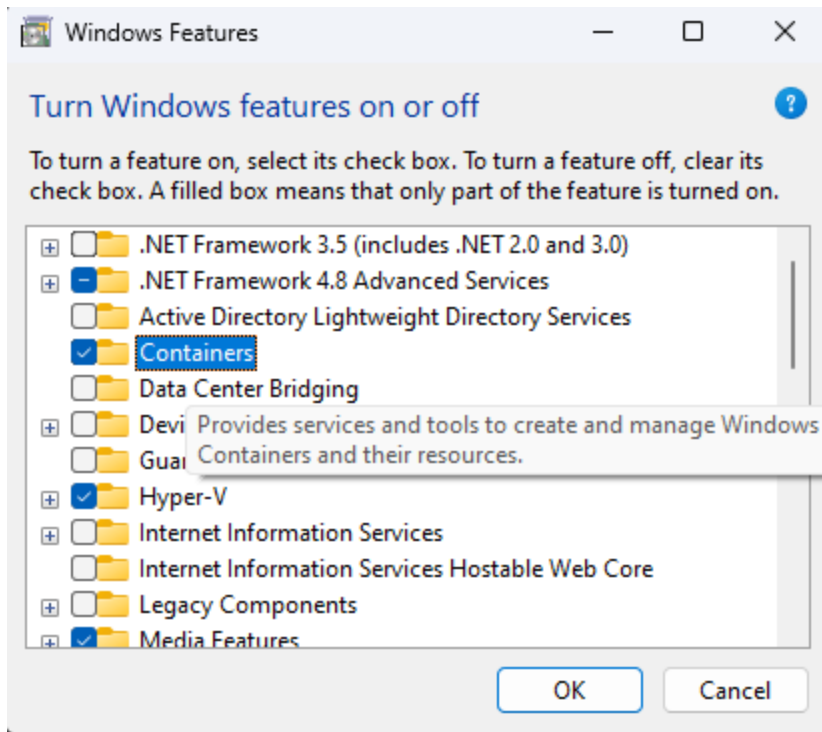
Installing WSL through the store will allow you to get the latest WSL updates and features faster, and without needing to modify your Windows version. To learn more please visit <https://aka.ms/wsl/docs>

### Ratings and reviews

Command Prompt

```
C:\Users\syedmuhammadharis>wsl -l -v
  NAME                STATE      VERSION
* docker-desktop      Running    2
  docker-desktop-data  Running    2

C:\Users\syedmuhammadharis>|
```



## 5 – Deploy torrent in containerize environment.

SYED MUHAMMAD HARIS (20B-100-SE)

```
C:\Users\syedmuhammadharis>docker run -d --name=qbittorrent -e PUID=1000 -e PGID=1000 -e TZ=Etc/UTC -e WEBUI_PORT=8090 -p 8090:8090 -p 6881:6881 -p 6881:6881/udp -v /path/to/appdata/config:/config -v /path/to/downloads:/downloads --restart unless-stopped lscr.io/linuxserver/qbittorrent:latest
58ece2df557478b5ff274c7293e7c91a54d7a0e32c9d8e5bd3d6958310030316

C:\Users\syedmuhammadharis>
```

SYED MUHAMMAD HARIS (20B-100-SE)

Meet - jyu-jrqw-fw

verify wsl installation - Google

linuxserver/docker-qbittorrent

qBittorrent v4.6.0 Web UI

localhost:8090

Folio3 Pulse Android Basics Cour... Gmail

All Bookmarks

File Edit View Tools Help

Filter torrent list...

Transfers Search RSS

STATUS

All (0)

Downloading (0)

Seeding (0)

Completed (0)

Resumed (0)

Paused (0)

Active (0)

Inactive (0)

Stalled (0)

Stalled Uploadi...

Stalled Downlo...

Checking (0)

Errored (0)

CATEGORIES

All (0)

Uncategorized (0)

TAGS

TRACKERS

#	Name	Size	Done	Status	Seeds	Peers	Down Speed	Up Speed	ETA	Ratio
---	------	------	------	--------	-------	-------	------------	----------	-----	-------

General

Trackers

Peers

HTTP Sources

Content

Progress:

Transfer

Time Active:

Downloaded:

Download Speed:

Download Limit:

Share Ratio:

ETA:

Uploaded:

Upload Speed:

Upload Limit:

Reannounce In:

Connections:

Seeds:

Peers:

Wasted:

Last Seen Complete:

Information

Total Size:

Added On:

Info Hash v1:

Pieces:

Completed On:

Created By:

Created On:

Free space: 3.80 GiB | DHT: 62 nodes | 0 B/s (0 B) | 0 B/s (0 B)

Meet - jyu-jrqw-fw

verify wsl installation - Goog

linuxserver/docker-qbittorr...

qBittorrent v4.6.0 Web UI

video torrent file link - Goog

localhost:8090

Folio3 Pulse Android Basics Cour... Gmail

All Bookmarks

File Edit View Tools Help

Filter torrent list...

Transfers Search RSS

STATUS

All (3)

Downloadin...

Seeding (0)

Completed (0)

Resumed (3)

Paused (0)

Active (3)

Inactive (0)

Stalled (0)

Stalled Uplo...

Stalled Dow...

Checking (0)

Errored (0)

CATEGOR...

All (3)

Uncategoriz...

TAGS

All (3)

Untagged (3)

TRACKERS

All (3)

#	Name	Size	Done	Status	Seeds	Peers	Down Speed	Up Speed	ETA	Ratio
1	GrandTheftAutoViceCity2002.rar	1.25 GiB	10.1%	Downloading	2 (0)	0 (0)	2.8 MiB/s	0 B/s	12m	0.00
2	Counter-Strike1.6.v48.exe	209.3 MiB	54.6%	Downloading	2 (0)	0 (0)	1.8 MiB/s	0 B/s	1m	0.00
3	Tejas.2023.HDRip.mp4	1.02 GiB	37.3%	Downloading	2 (0)	0 (0)	1.5 MiB/s	0 B/s	7m	0.00

General

Trackers

Peers

HTTP Sources

Content

Progress:

Transfer

Time Active:

Downloaded:

Download Speed:

Download Limit:

Share Ratio:

ETA:

Uploaded:

Upload Speed:

Upload Limit:

Reannounce In:

Connections:

Seeds:

Peers:

Wasted:

Last Seen Complete:

Information

Total Size:

Added On:

Info Hash v1:

Pieces:

Completed On:

Created By:

Created On:

Free space: 2.64 GiB | DHT: 0 nodes | 6.9 MiB/s (640.8 MiB) | 0 B/s (0 B)

**Docker Desktop** | Update to latest | Search for images, containers, volumes, extensions and more... | Ctrl+K

**Containers** | Images | Volumes | Dev Environments | Docker Scout | Learning center

**Extensions** | Add Extensions

**Engine running** | RAM 6.67 GB | CPU 15.28% | Signed in

**qbittorrent** | [lscr.io/linuxserver/qbittorrent-latest](https://lscr.io/linuxserver/qbittorrent-latest) | STATUS: Running (24 minutes ago)

6881:6881 | 6881:6881 (UDP) | 8090:8090 | Show less

Logs | Inspect | Bind mounts | Exec | **Files** | Stats | Open file editor

Name	Note	Size	Last modified	Mode
docker-moos		18.5 KB	54 years ago	-rwxr-xr-x
downloads	MOUNT		3 minutes ago	drwxr-xr-x
Counter-Strike1.6.v48.exe	MOUNT	209.4 MB	44 seconds ago	-rw-r--r--
GrandTheftAutoViceCity.2002.rar	MOUNT	1.3 GB	1 second ago	-rw-r--r--
Tejas.2023.HDRip.mp4	MOUNT	1 GB	1 second ago	-rw-r--r--
etc	Bind mount at /downloads		26 minutes ago	drwxr-xr-x
home			2 months ago	drwxr-xr-x
init		907 Bytes	8 months ago	-rwxr-xr-x
lib			2 months ago	drwxr-xr-x
lsio.py			2 months ago	drwxr-xr-x
media			2 months ago	drwxr-xr-x
mnt			2 months ago	drwxr-xr-x
opt			2 months ago	drwxr-xr-x
package			2 months ago	drwxr-xr-x

6 – Deploy 3 webserver which executed in parallel. Access the web service from host through different ports.

**nginx:latest** | IN USE | c20060033e06 | 186.77 MB | CREATED 2 months ago

Recommended fixes | Run | Stop

Advanced image analysis is provided by Docker Scout. Upgrade to continue to get access to guided vulnerability remediation and additional software supply chain features. [Learn more](#) and [upgrade](#).

**Image hierarchy**

FROM: debian:12-slim, 12.2-slim, bookworm-2023... | ALL: nginx:latest

**Layers (16)**

Layer	Command	Size	Status
0	ADD file:fb8521c24ed7580237285...	74.82 MB	Warning
1	CMD ["bash"]	0 B	Success
2	LABEL maintainer=NGINX Docker M...	0 B	Success
3	ENV NGINX_VERSION=1.25.3	0 B	Success
4	ENV NJS_VERSION=0.8.2	0 B	Success
5	ENV PKG_RELEASE=1~bookworm	0 B	Success
6	set -x && groupadd --system --gid 10...	111.95 MB	Warning

**Images (2)** | Vulnerabilities (38) | Packages (234) | Give feedback

**FROM debian:12-slim** | 0 H | 1 M | 14 L | DOCKER OFFICIAL IMAGE

Packages: 127 | created 2 months ago | Newer image available | [View in Github](#)

**nginx:latest** | 1 C | 2 H | 7 M | 28 L | DOCKER OFFICIAL IMAGE

Packages: 234 | Newer image available | [View in Github](#)

RAM 7.88 GB | CPU 1.26% | Signed in | v4.25.0



Command Prompt

Microsoft Windows [Version 10.0.22631.2861]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\syedmuhammadharis>docker run --name nginx1 -d -p 8081:80 nginx  
8aec02effb1470774c39e2d3167969e116cc6233cb5199ef03aeaf644663bc80  
  
C:\Users\syedmuhammadharis>|

Docker Desktop

Update to latest

Search for images, containers, volumes, extensions and more...

Ctrl+K

abutaL

Containers

Give feedback

Container CPU usage 4.65% / 800% (8 cores available)

Container memory usage 863.49MB / 7.46GB

Show charts

Search

Only show running containers

	Name	Image	Status	CPU (%)	Port(s)	Last started	Actions
	minikube	docker.io/kicbase/stable:v	Exited (255)	0%		1 day ago	
	brave_tesla	flask-mongo-app	Exited	0%	5000:5000	2 days ago	
	Ngix3	nginx:latest	Running	0%	8092:80	1 minute ago	
	Ngix2	nginx:latest	Running	0%	8091:80	1 minute ago	
	Ngix1	nginx:latest	Running	0%	8090:80	1 minute ago	
	qbittorrentharis	lscr.io/linuxserver/qbittorr	Exited	0%	6881:6881	2 months ago	
	peaceful_sanderso		Exited	0%	8080:80	2 months ago	

Showing 35 items

Engine running

RAM 7.88 GB CPU 2.50%

Signed in

v4.25.0

68°F Haze

Search

10:21 PM 1/7/2024

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to [nginx.org](https://nginx.org).  
Commercial support is available at [nginx.com](https://nginx.com).

Thank you for using nginx.

Welcome to nginx 2! By Haris

If you see this page, the nginx web server is successfully installed on port 8091

Ngix3! Haris

localhost:8092

Welcome to nginx 3! By Haris

If you see this page, the nginx web server is successfully installed on port 8092 and working. Further configuration is required.

For online documentation and support please refer to [nginx.org](https://nginx.org).  
Commercial support is available at [nginx.com](https://nginx.com).

Thank you for using nginx.

## 7 – Create kubernetes environment.

The screenshot displays the Docker Desktop interface. The 'Settings' window is open, showing the 'Kubernetes' tab. The 'Kubernetes' section is titled 'v1.28.2'. Two options are checked: 'Enable Kubernetes' (with a sub-note: 'Start a Kubernetes single-node cluster when starting Docker Desktop.') and 'Show system containers (advanced)' (with a sub-note: 'Show Kubernetes internal containers when using Docker commands.'). A red box highlights the 'Reset Kubernetes Cluster' button, with a note below it: 'All stacks and Kubernetes resources will be deleted.' At the bottom of the settings window are 'Cancel' and 'Apply & restart' buttons.

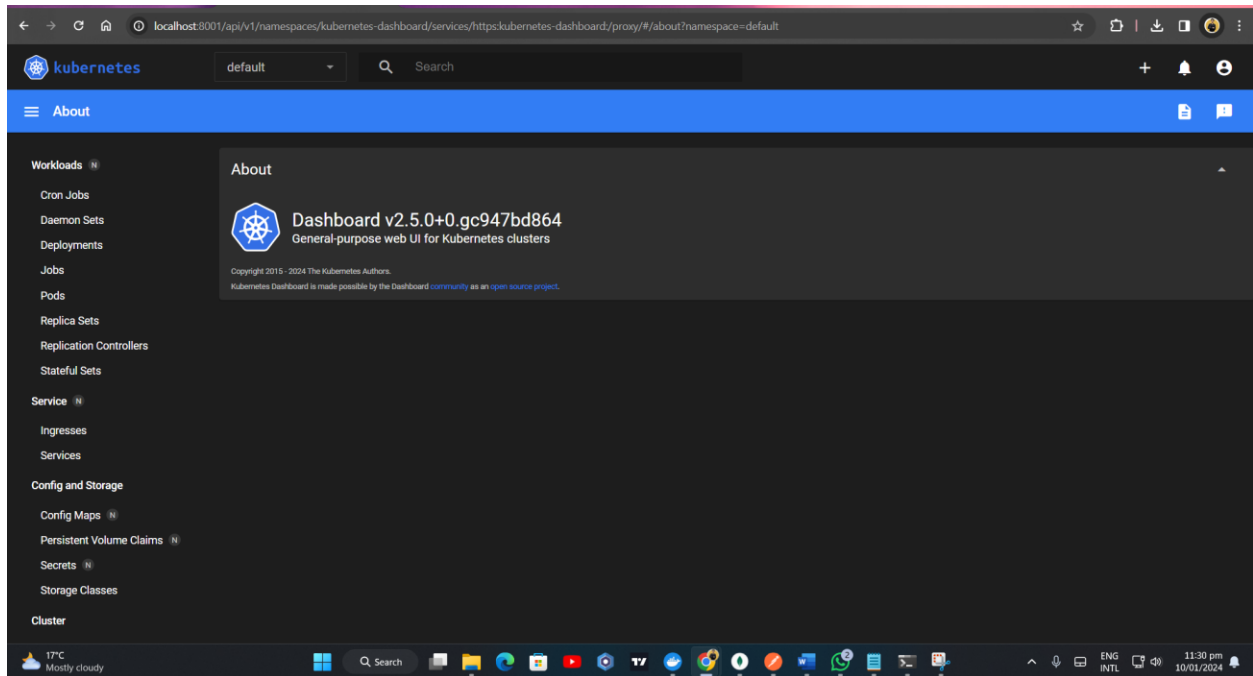
Below the settings window, a Windows taskbar is visible with system information: RAM 7.86 GB, CPU 3.24%, and a 'Signed in' status. The system clock shows 10:36 PM on 1/7/2024.

In the foreground, a Windows Command Prompt window is open, showing the execution of the following command and its output:

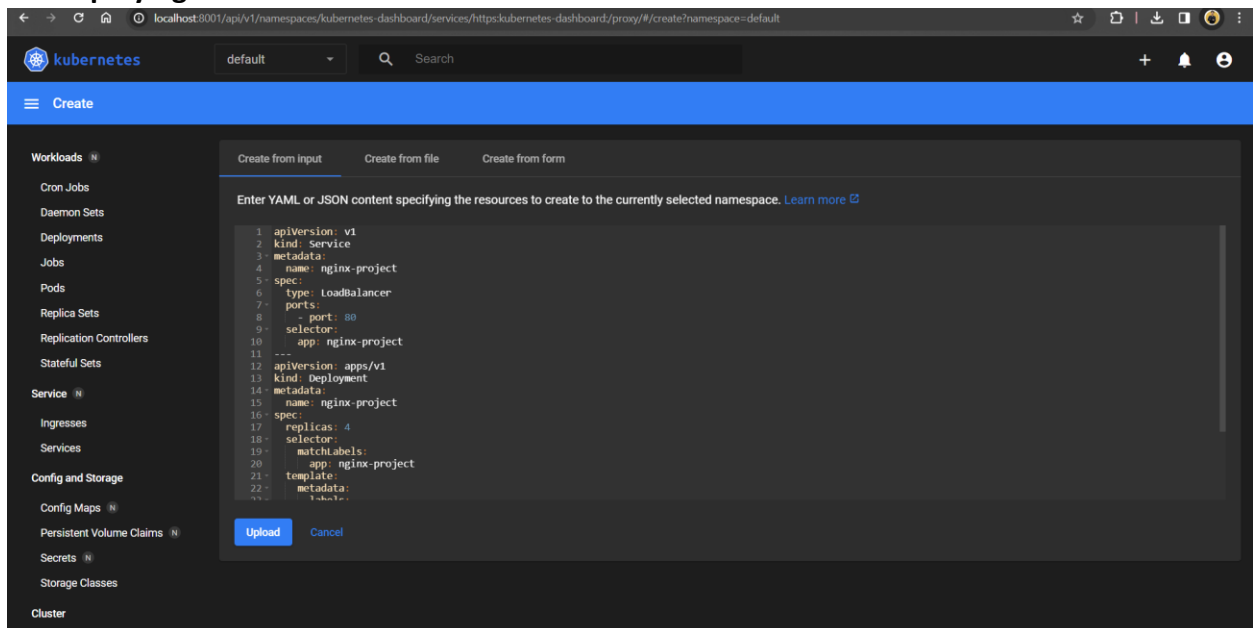
```
C:\Users\coolh\OneDrive\Desktop\Cloud Computing>kubectl apply -f https://raw.githubusercontent.com/kubernetes/dashboard/v2.5.0/aio/deploy/recommended.yaml
namespace/kubernetes-dashboard created
serviceaccount/kubernetes-dashboard created
service/kubernetes-dashboard created
secret/kubernetes-dashboard-certs created
secret/kubernetes-dashboard-csrf created
secret/kubernetes-dashboard-key-holder created
configmap/kubernetes-dashboard-settings created
role.rbac.authorization.k8s.io/kubernetes-dashboard created
clusterrole.rbac.authorization.k8s.io/kubernetes-dashboard created
rolebinding.rbac.authorization.k8s.io/kubernetes-dashboard created
clusterrolebinding.rbac.authorization.k8s.io/kubernetes-dashboard created
deployment.apps/kubernetes-dashboard created
service/dashboard-metrics-scraper created
deployment.apps/dashboard-metrics-scraper created

C:\Users\coolh\OneDrive\Desktop\Cloud Computing>
```

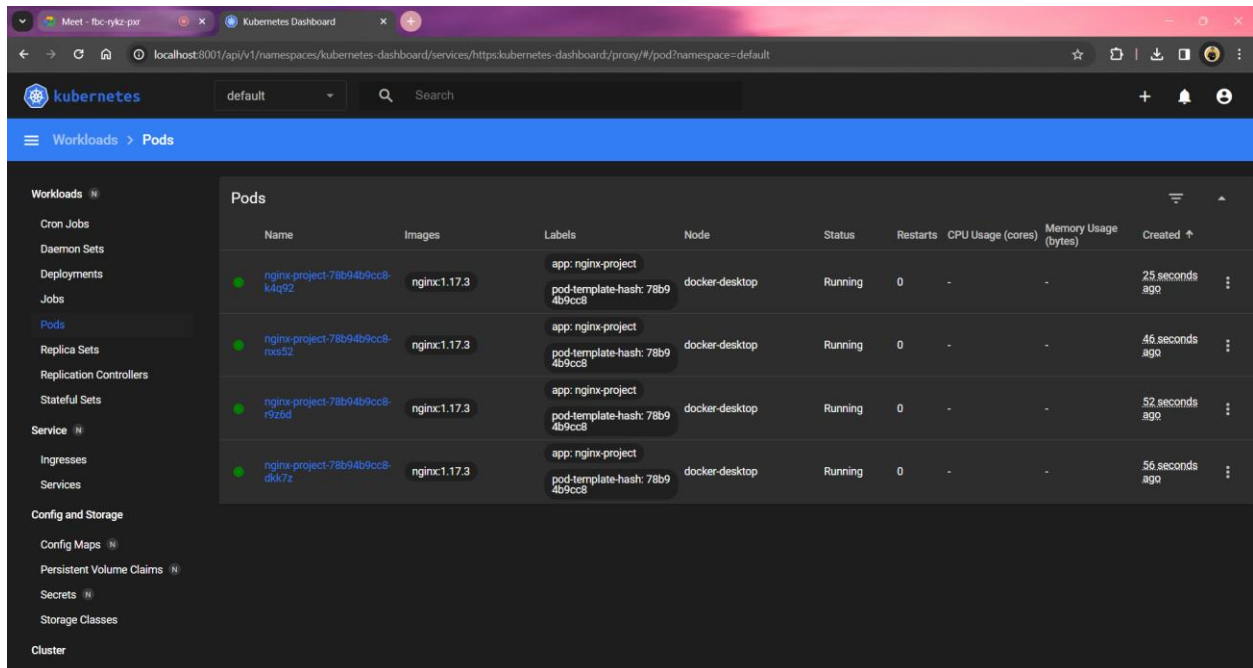




## 8 – Deploy nginx PODs



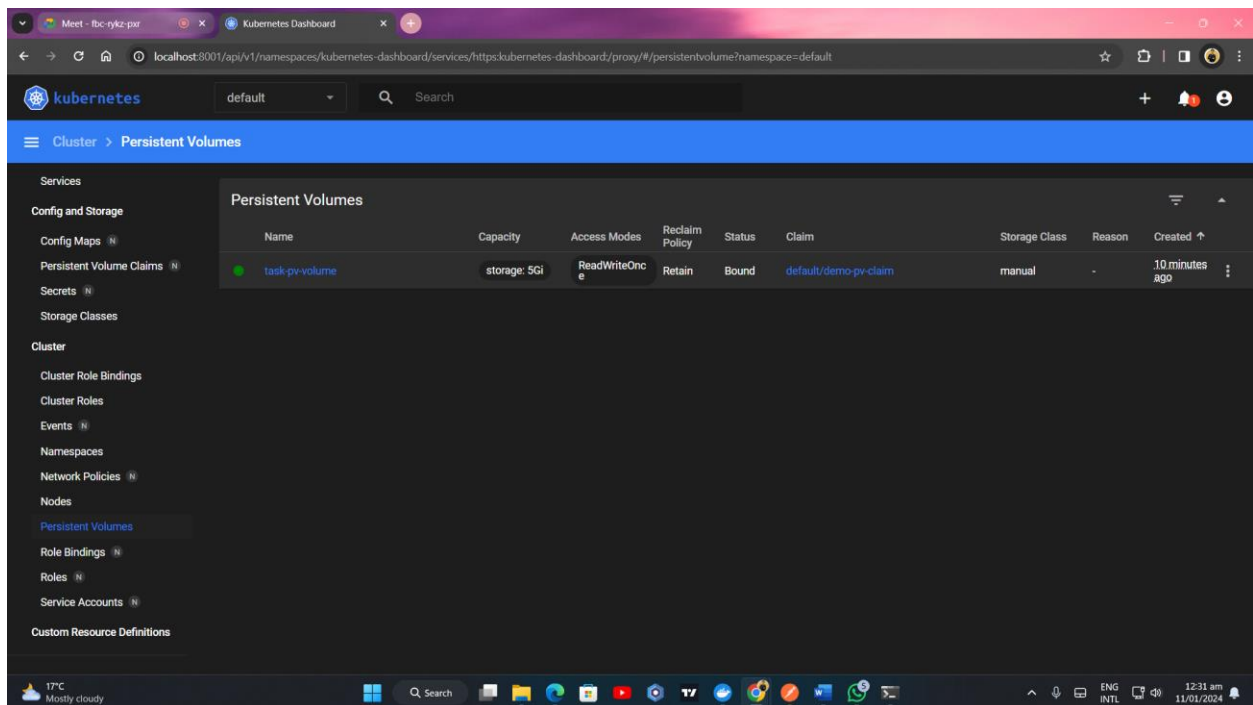
## SYED MUHAMMAD HARIS (20B-100-SE)



**Workloads > Pods**

Name	Images	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created
nginx-project-78b94b9cc8-k4q92	nginx:1.17.3	app: nginx-project pod-template-hash: 78b94b9cc8	docker-desktop	Running	0	-	-	25 seconds ago
nginx-project-78b94b9cc8-nxs52	nginx:1.17.3	app: nginx-project pod-template-hash: 78b94b9cc8	docker-desktop	Running	0	-	-	46 seconds ago
nginx-project-78b94b9cc8-r9zfd	nginx:1.17.3	app: nginx-project pod-template-hash: 78b94b9cc8	docker-desktop	Running	0	-	-	52 seconds ago
nginx-project-78b94b9cc8-ddk7z	nginx:1.17.3	app: nginx-project pod-template-hash: 78b94b9cc8	docker-desktop	Running	0	-	-	56 seconds ago

## 9 - Deploy the nginx containers connecting with persistent storage.



**Cluster > Persistent Volumes**

Name	Capacity	Access Modes	Reclaim Policy	Status	Claim	Storage Class	Reason	Created
task-pv-volume	storage: 5Gi	ReadWriteOnce	Retain	Bound	default/demo-pv-claim	manual	-	10 minutes ago

The image displays two screenshots of the Kubernetes Dashboard interface, showing different resource types in the 'default' namespace.

**Top Screenshot: Persistent Volume Claims**

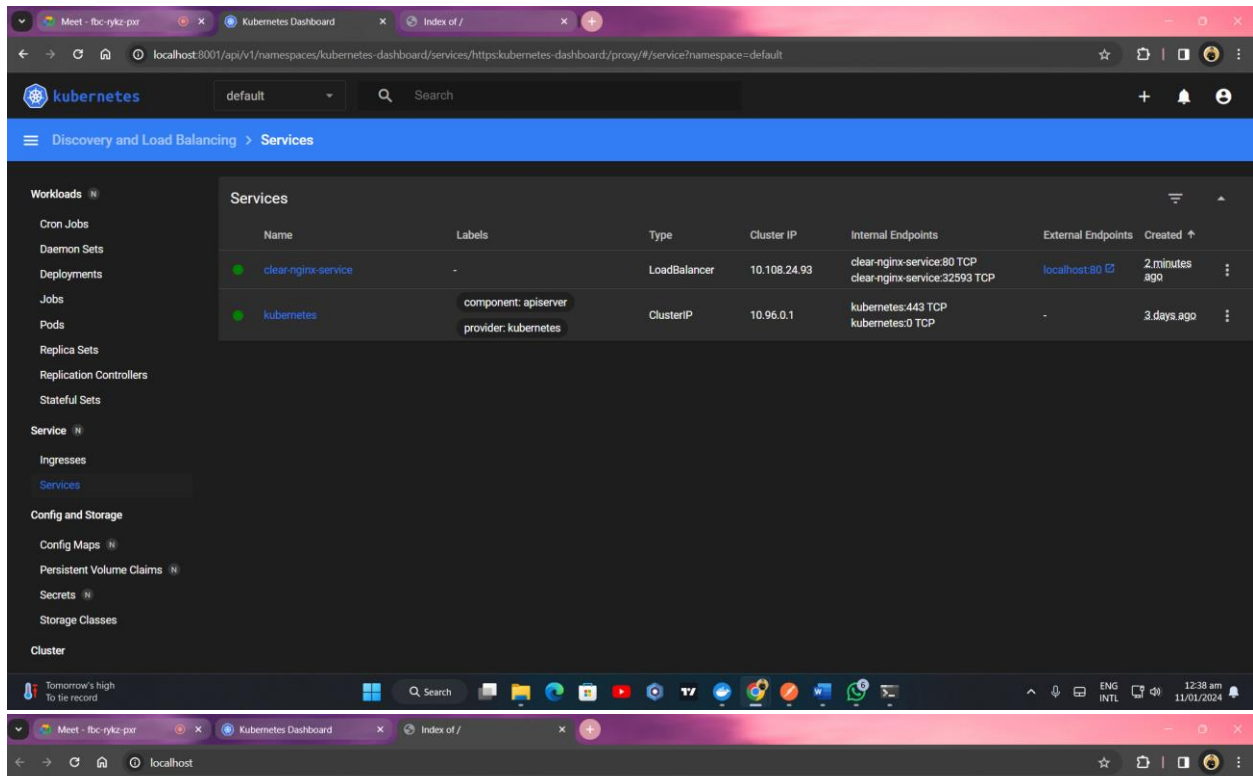
The breadcrumb navigation is: **Config and Storage > Persistent Volume Claims**. The left sidebar shows the 'Config and Storage' section expanded, with 'Persistent Volume Claims' selected. The main content area displays a table of Persistent Volume Claims.

Name	Labels	Status	Volume	Capacity	Access Modes	Storage Class	Created
demo-pv-claim	-	Bound	task-pv-volume	5Gi	ReadWriteOnce	manual	10 minutes ago

**Bottom Screenshot: Deployments**

The breadcrumb navigation is: **Workloads > Deployments**. The left sidebar shows the 'Workloads' section expanded, with 'Deployments' selected. The main content area displays a table of Deployments.

Name	Images	Labels	Pods	Created
clear-nginx-deployment	clearlinux/nginx	-	1 / 1	2 minutes ago
nginx-project	nginx:1.17.3	-	4 / 4	55 minutes ago



Index of /

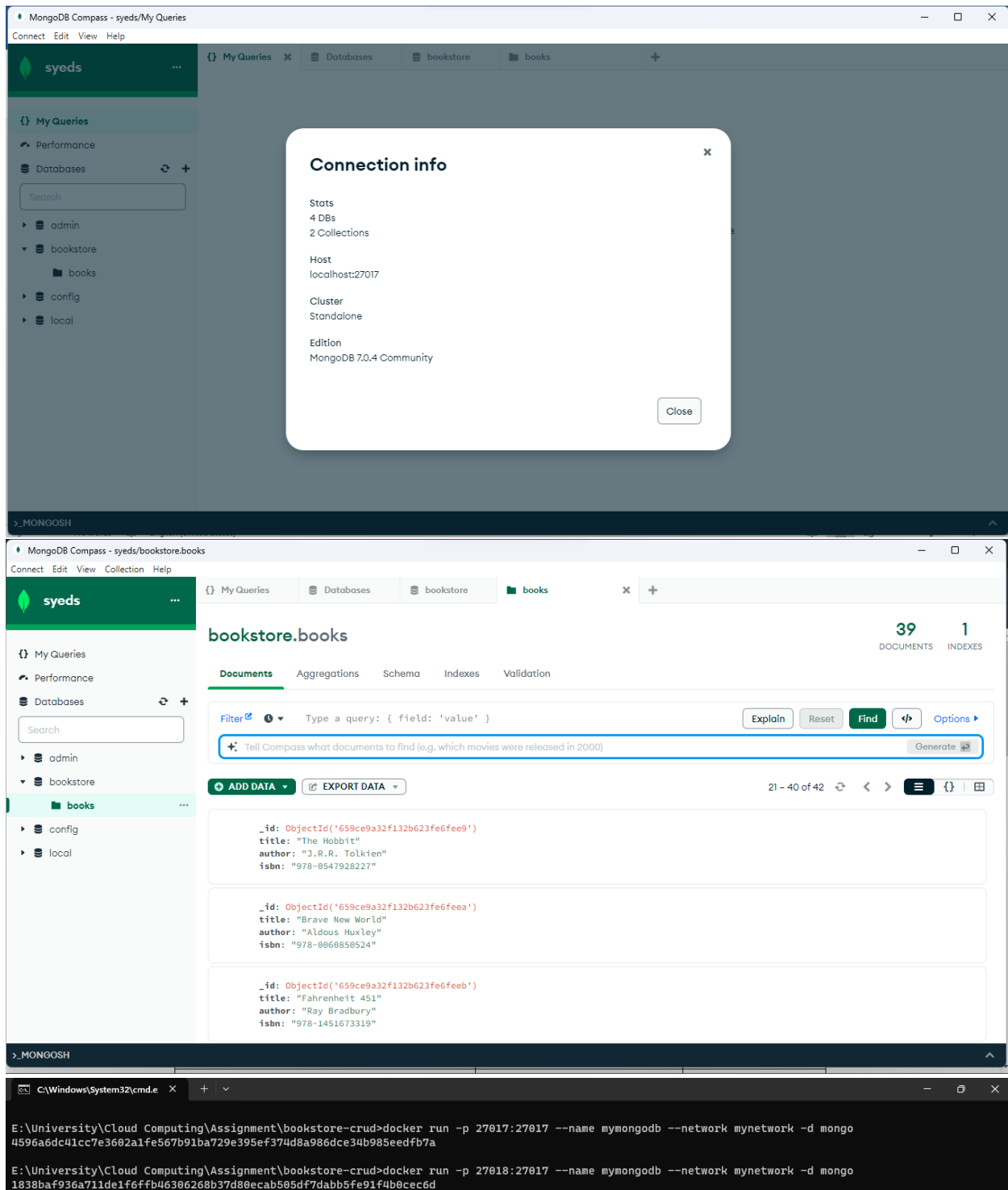
and



**10 – Need to create a single feature application having front end and backend. Backend code connects the data base, the database is running over the container or host machine. Deploy the application over the kubernetes PODs.**

## SYED MUHAMMAD HARIS (20B-100-SE)

A simple Flask API and React APP that provides CRUD functionality to a bookstore. A custom image containing the project was created and deployed on Kubernetes. A host MongoDB server was deployed to store the data on local machine.





## SYED MUHAMMAD HARIS (20B-100-SE)

The image shows the development environment for a Flask application using Docker. The top section is a VS Code editor with a Dockerfile named `mongo-service.yaml` open. The Dockerfile contains instructions to build a Python 3.9-slim image, set the working directory to `/app`, copy the application files, install dependencies from `requirements.txt`, and expose port 5000. The terminal shows the command to run the container: `docker run -d --name my_python_container syedharis/pythonimage:new`.

The bottom section is the Docker Desktop interface. It shows the container `myflaskapp` (syedharis/python-image) is running. The logs tab is selected, displaying a series of HTTP requests to `/books?__debugger__=yes&cmd=resource&f=style.css` and `/books?__debugger__=yes&cmd=resource&f=debugger.js`, all returning 200 status codes. There is also a log entry showing a `ServerSelectionTimeoutError` from the MongoDB driver.

```
1 FROM python:3.9-slim
2     syedmuhammadharis, 1 hour ago • CC Repo
3
4 # Set the working directory in the container to /app
5 WORKDIR /app
6
7 # Copy the current directory contents into the container at /app
8 COPY . /app
9
10 # Install any needed packages specified in requirements.txt
11 RUN pip install --no-cache-dir -r requirements.txt
12
13 # Make port 5000 available to the world outside this container
14 EXPOSE 5000
15
16 # Define environment variable
17 ENV NAME World
18
19 # Run app.py when the container launches
20 CMD ["python", "app.py"]
```

Terminal output:

```
(env) PS C:\Users\coolh\OneDrive\Desktop\cloud computing\bookstore-crud> docker run -d --name my_python_container syedharis/pythonimage:new
d6585e0763c42ab7fdec6978fcd1d48af191925b428c43c0cf5309c8b747
(env) PS C:\Users\coolh\OneDrive\Desktop\cloud computing\bookstore-crud>
```

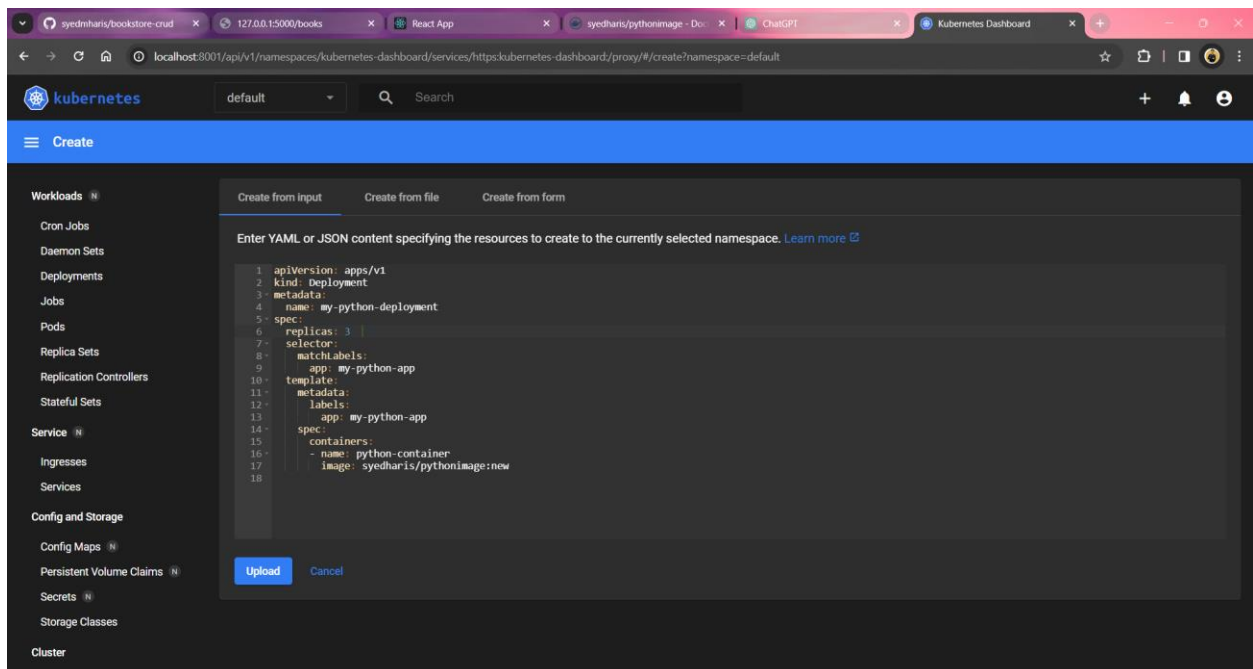
Docker Desktop logs:

```
2024-01-11 16:37:28 File "/usr/local/lib/python3.9/site-packages/pymongo/topology.py", line 573, in _check_implicit_session_support
2024-01-11 16:37:28 self._check_session_support()
2024-01-11 16:37:28 File "/usr/local/lib/python3.9/site-packages/pymongo/topology.py", line 585, in _check_session_support
2024-01-11 16:37:28 self._select_servers_loop()
2024-01-11 16:37:28 File "/usr/local/lib/python3.9/site-packages/pymongo/topology.py", line 259, in _select_servers_loop
2024-01-11 16:37:28 raise ServerSelectionTimeoutError(
2024-01-11 16:37:28 pymongo.errors.ServerSelectionTimeoutError: mymongodb:27017: [Errno -2] Name or service not known (configured timeout
s: socketTimeoutMS: 20000.0ms, connectTimeoutMS: 20000.0ms), Timeout: 30s, Topology Description: <TopologyDescription id: 659fd067a63219a
5506b3593, topology_type: Single, servers: [<ServerDescription ('mymongodb', 27017) server_type: Unknown, rtt: None, error=AutoReconnect(
'mymongodb:27017: [Errno -2] Name or service not known (configured timeouts: socketTimeoutMS: 20000.0ms, connectTimeoutMS: 20000.0ms)')>]
>
2024-01-11 16:37:28 172.18.0.1 - - [11/Jan/2024 11:37:28] "GET /books?__debugger__=yes&cmd=resource&f=style.css HTTP/1.1" 200 -
2024-01-11 16:37:28 172.18.0.1 - - [11/Jan/2024 11:37:28] "GET /books?__debugger__=yes&cmd=resource&f=debugger.js HTTP/1.1" 200 -
2024-01-11 16:37:29 172.18.0.1 - - [11/Jan/2024 11:37:29] "GET /books?__debugger__=yes&cmd=resource&f=console.png HTTP/1.1" 200 -
2024-01-11 16:37:30 172.18.0.1 - - [11/Jan/2024 11:37:30] "GET /books?__debugger__=yes&cmd=resource&f=console.png HTTP/1.1" 304 -
2024-01-11 16:38:10 172.18.0.1 - - [11/Jan/2024 11:38:10] "GET / HTTP/1.1" 200 -
2024-01-11 16:38:14 172.18.0.1 - - [11/Jan/2024 11:38:14] "GET /books HTTP/1.1" 200 -
2024-01-11 16:38:17 172.18.0.1 - - [11/Jan/2024 11:38:17] "GET /books HTTP/1.1" 200 -
2024-01-11 16:40:42 172.18.0.1 - - [11/Jan/2024 11:40:42] "GET /books HTTP/1.1" 200 -
2024-01-11 16:41:03 172.18.0.1 - - [11/Jan/2024 11:41:03] "GET /books HTTP/1.1" 200 -
2024-01-11 16:41:20 172.18.0.1 - - [11/Jan/2024 11:41:20] "GET /books HTTP/1.1" 200 -
2024-01-11 16:41:36 172.18.0.1 - - [11/Jan/2024 11:41:36] "GET / HTTP/1.1" 200 -
2024-01-11 16:41:39 172.18.0.1 - - [11/Jan/2024 11:41:39] "GET /books HTTP/1.1" 200 -
2024-01-11 16:43:01 172.18.0.1 - - [11/Jan/2024 11:43:01] "GET /books HTTP/1.1" 200 -
2024-01-11 16:43:33 172.18.0.1 - - [11/Jan/2024 11:43:33] "GET /books HTTP/1.1" 200 -
2024-01-11 17:25:11 172.18.0.1 - - [11/Jan/2024 12:25:11] "GET /books HTTP/1.1" 200 -
```

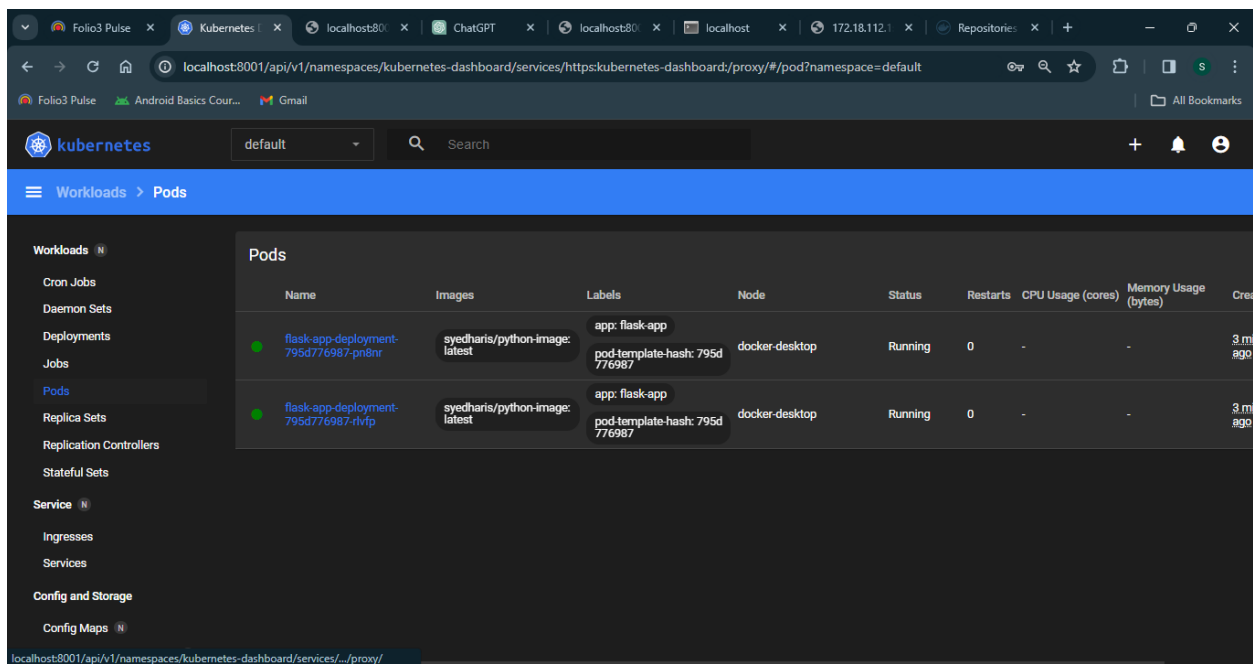
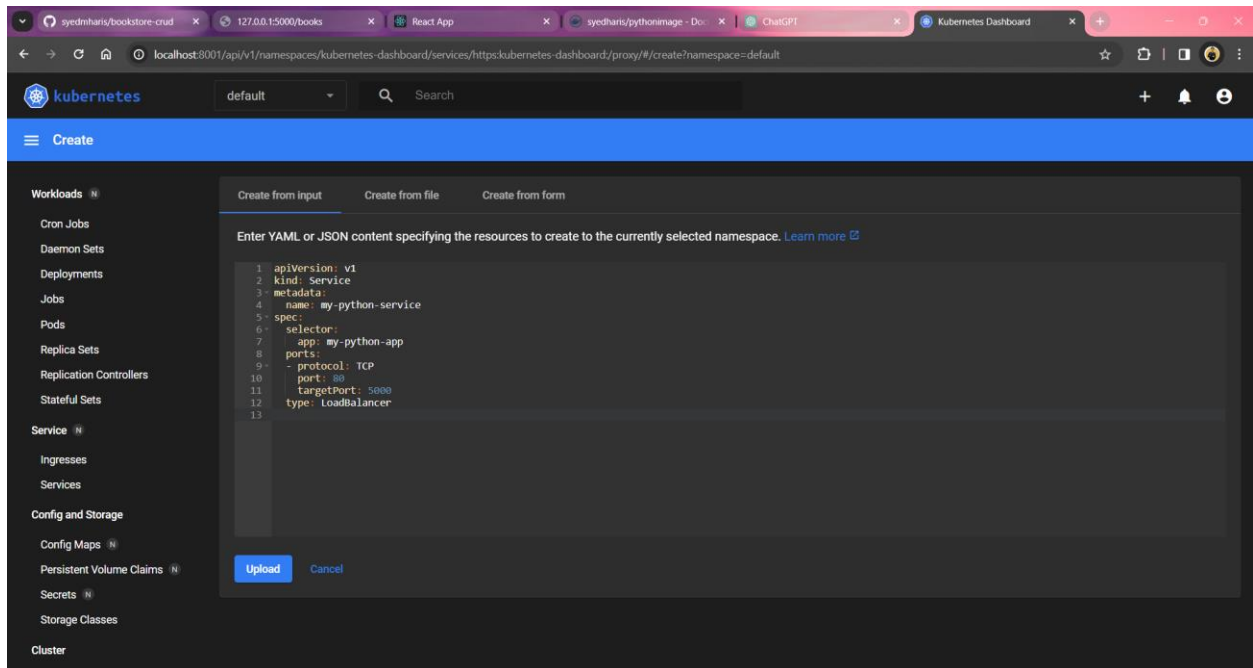
## SYED MUHAMMAD HARIS (20B-100-SE)

```
127.0.0.1:5000/books

[
  {
    "_id": "659a5a66de57c3fd7c665e3",
    "author": "Author Name",
    "isbn": "123-4567890123",
    "title": "Example Book"
  },
  {
    "_id": "659c7109ba06683a6c40de7",
    "author": "Author Name",
    "isbn": "123-4567890123",
    "title": "Example Book"
  },
  {
    "_id": "659ce8a19ba06683a6c40de8",
    "author": "Stephen Hawking",
    "isbn": "978-0533985366",
    "title": "The Grand Design"
  },
  {
    "_id": "659ce8cc9ba06683a6c40de9",
    "author": "Yuval Noah Harari",
    "isbn": "978-0062316097",
    "title": "Sapiens: A Brief History of Humankind"
  },
  {
    "_id": "659ce8d59ba06683a6c40dea",
    "author": "George Orwell",
    "isbn": "978-0451524935",
    "title": "1984"
  },
  {
    "_id": "659ce8e39ba06683a6c40deb",
    "author": "Harper Lee",
    "isbn": "978-0060935467",
    "title": "To Kill a Mockingbird"
  },
  {
    "_id": "659ce8f29ba06683a6c40dec",
    "author": "F. Scott Fitzgerald",
    "isbn": "978-0743273565",
    "title": "The Great Gatsby"
  },
  {
    "_id": "659ce9039ba06683a6c40ded",
    "author": "Jane Austen",
    "isbn": "978-0141439518",
    "title": "Pride and Prejudice"
  },
  {
    "_id": "659ce90b9ba06683a6c40dee",
    "author": "Author Name",
    "isbn": "123-4567890123",
    "title": "Example Book"
  }
]
```



## SYED MUHAMMAD HARIS (20B-100-SE)



The image shows two screenshots from a web browser. The top screenshot displays the Kubernetes dashboard at `localhost:8001/api/v1/namespaces/kubernetes-dashboard/services/https:kubernetes-dashboard:/proxy/#/service?namespace=default`. The dashboard shows a list of services in the default namespace:

Name	Labels	Type	Cluster IP	Internal Endpoints	External Endpoints	Created
flask-app-service	-	LoadBalancer	10.101.144.40	flask-app-service:8000 TCP flask-app-service:32189 TCP	localhost:8000	4 minutes ago
kubernetes	component: apiserver provider: kubernetes	ClusterIP	10.96.0.1	kubernetes:443 TCP kubernetes:0 TCP	-	5 hours

The bottom screenshot shows a REST client at `localhost:8000/books` displaying a JSON array of book data:

```
[
  {
    "_id": "659ce7109ba60683a6c40de7",
    "author": "Author Name",
    "isbn": "123-4567890123",
    "title": "Example Book"
  },
  {
    "_id": "659ce8a19ba60683a6c40de8",
    "author": "Stephen Hawking",
    "isbn": "978-0553805376",
    "title": "The Grand Design"
  },
  {
    "_id": "659ce8cc9ba60683a6c40de9",
    "author": "Yuval Noah Harari",
    "isbn": "978-0062316097",
    "title": "Sapiens: A Brief History of Humankind"
  },
  {
    "_id": "659ce8d59ba60683a6c40dea",
    "author": "George Orwell",
    "isbn": "978-0451524935",
    "title": "1984"
  },
  {
    "_id": "659ce8e39ba60683a6c40deb",
    "author": "Harper Lee",
    "isbn": "978-0060935467",
    "title": "To Kill a Mockingbird"
  },
  {
    "_id": "659ce8f19ba60683a6c40dec",
    "author": "J.R.R. Tolkien",
    "isbn": "978-0309095155",
    "title": "The Hobbit"
  }
]
```

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Folio5	Moiz	none
Folio4	Musadiq	316-000-5080
Folio3	Haris	316-000-5080
Lolita	Vladimir Nabokov	978-0679723165
Madame Bovary	Gustave Flaubert	978-0140449129
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Beloved	Toni Morrison	978-1400033416
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