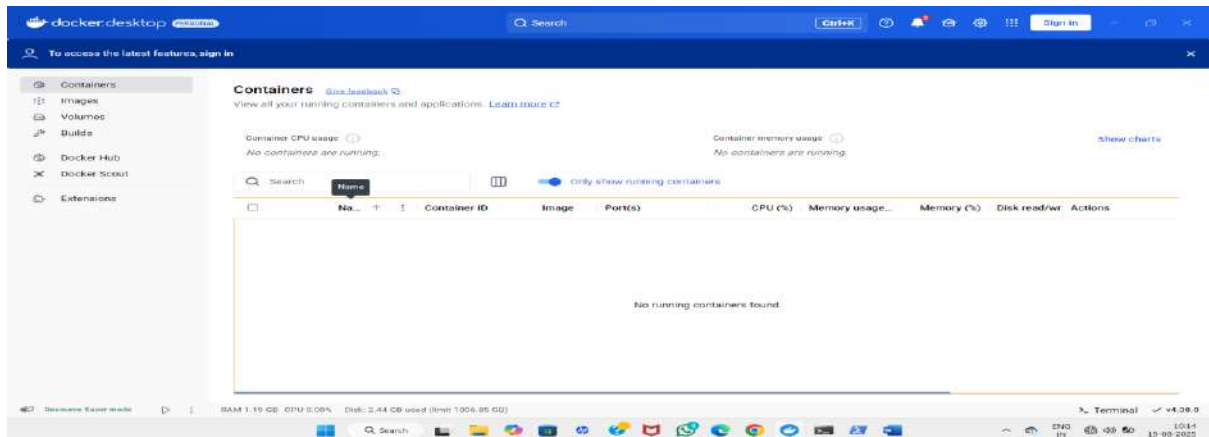


SE LAB WEEK 5 -> DOCKER

TASK 1



```
C:\Users\Abhishek Bhan>wsl -v
WSL version: 2.5.10.0
Kernel version: 6.6.87.2-1
WSLg version: 1.0.66
MSRDC version: 1.2.6074
Direct3D version: 1.611.1-81528511
DXCore version: 10.0.26100.1-240331-1435.ge-release
Windows version: 10.0.26100.4946
```

[Docker Hub](#) / openjdk

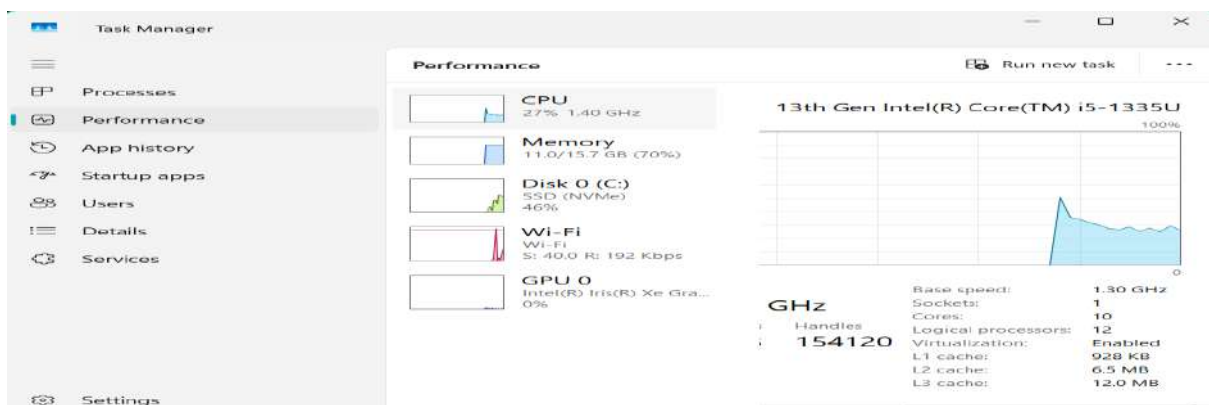
< **openjdk** Docker Official Image

Pre-release / non-production builds of OpenJDK

☆ 4.1K ⬇ 1B+

Simple Tags

- [26-ea-11-jdk-oraclelinux9](#) , [26-ea-11-oraclelinux9](#) , [26-ea-jdk-oraclelinux9](#) , [26-ea-oraclelinux9](#) , [26-jdk-oraclelinux9](#) , [26-oraclelinux9](#) , [26-ea-11-jdk-oracle](#) , [26-ea-11-oracle](#) , [26-ea-jdk-oracle](#) , [26-jdk-oracle](#) , [26-oracle](#)
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```
PS C:\WINDOWS\system32> docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
alpine	latest	aded1e1a5b37	6 months ago	7.83MB
ubuntu	latest	a04dc4851cbc	6 months ago	78.1MB
docker/welcome-to-docker	latest	c1f619b6477e	21 months ago	18.6MB

```
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> docker run ubuntu
```

```
PS C:\WINDOWS\system32> docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
alpine	latest	aded1e1a5b37	6 months ago	7.83MB
ubuntu	latest	a04dc4851cbc	6 months ago	78.1MB
docker/welcome-to-docker	latest	c1f619b6477e	21 months ago	18.6MB

```
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	STATUS	PORTS
ffbee07e082b	ubuntu	"/bin/bash"	Exited (0) About a minute ago	
2c9ad1596b42	ubuntu	"/bin/bash"	Exited (0) 4 months ago	
5dafb8945832	alpine	"sh"	Exited (255) 4 months ago	
becc134248e9	ubuntu	"/bin/bash"	Exited (255) 6 months ago	
8cfbea1dc438	docker/welcome-to-docker:latest	"/docker-entrypoint..."	Exited (255) 6 months ago	0.0.0.0:8088->80/tcp

```
PS C:\WINDOWS\system32>
```

```
PS C:\> docker pull ubuntu
```

```
Using default tag: latest
```

```
latest: Pulling from library/ubuntu
```

```
Digest: sha256:7c06e91f61fa88c08cc74f7e1b7c69ae24910d745357e0dfe1d2c0322aaf20f9
```

```
Status: Image is up to date for ubuntu:latest
```

```
docker.io/library/ubuntu:latest
```

```
PS C:\> docker run -ti -d ubuntu
```

```
546d197e901cf53bcd37537a66061d2de9a9cfe8fa6e14dfd6ae663b1cbd47b7
```

```
PS C:\> docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
546d197e901c	ubuntu	"/bin/bash"	12 seconds ago	Up 11 seconds		funny_turing
f885859c30ba	myredisimage	"docker-entrypoint.s..."	About a minute ago	Up About a minute	6379/tcp	hello-world
615c62f40428	myredisimage	"docker-entrypoint.s..."	49 minutes ago	Exited (0) 42 minutes ago		selab5

```
PS C:\> docker exec -it 546d197e901c bash
```

```
root@546d197e901c:/# echo
```

```
root@546d197e901c:/# exit
```

```
exit
```

```
PS C:\> docker stop 546d197e901c
```

```
546d197e901c
```

```
PS C:\> docker commit 546d197e901c abhishekg93/ubuntu
```

```
sha256:e89e412a2e6de244d092d4b1f501491018e7955498acac8f29c260d9917c3388
```

```
PS C:\>
```

```
PS C:\> docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
abhishekg93/ubuntu  latest             e89e412a2e6d       About a minute ago 78.1MB
abhishekg93/nnredis  latest             279da59943ca       44 minutes ago    137MB
myredisimage         latest             f5b47042e2a5       14 hours ago      137MB
ubuntu               latest             e0f16e6366fe       2 weeks ago       78.1MB
```

```
PS C:\> docker pull python
Using default tag: latest
latest: Pulling from library/python
Digest: sha256:3b2f1b9c9948e9dc96e1a2f4668ba9870ff43ab834f91155697476142b3bc299
Status: Image is up to date for python:latest
docker.io/library/python:latest
```

```
PS C:\redit> python add.py
10
20
Sum: 30
```

TASK 2

```
Dockerfile
1 FROM ubuntu:latest
2 RUN apt-get update && apt-get install -y curl
3 CMD ["echo", "Hello from Docker!"]
4 |
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Redit> code
PS C:\Redit> docker build -t myredisimage .
[+] Building 22.5s (0/5) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 76B
=> [internal] load metadata for docker.io/library/redis:latest
=> [internal] load .dockerignore
=> => transferring context: 2B
[1/3] FROM docker.io/library/redis:latest@sha256:cc2d4b8f5151da2888bba9b0d04b6e7f92d97591d91988eb3eca21d407e12760
=> => resolve docker.io/library/redis:latest@sha256:cc2d4b8f5151da2888bba9b0d04b6e7f92d97591d91988eb3eca21d407e12760
=> sha256:b1badc6e5060d185acfaa8ca25d8070861c2a9d881c6caaad281ae11af086ce 28.23MB / 28.23MB
=> sha256:cc2d4b8f5151da2888bba9b0d04b6e7f92d97591d91988eb3eca21d407e12760 10.22kB / 10.22kB
=> sha256:a298ca6b7231f655f76edd7fbb67282aeb73e4b897462629c0108362080c3a6 2.29kB / 2.29kB
=> sha256:311d9cf28af57b45fca01f6e254cac4a6e2e213967a55923eb4d38a3c8b5c2f36 876B / 876B
=> sha256:9d1fca3a8a8969d6b4f4b76a7f6a8a992133c5196e1d379c57a783654f1 6.33kB / 6.33kB
=> sha256:441b708ef04451ca02071a8db9a9dc1edcbb5277404a6d7f6c68c38dccc1 32B / 32B
=> sha256:f22261c94f4aaa2fc0818ade274d1b988a83d4bbf2af24ce719b4f9c97ad8cb 24.19MB / 24.19MB
=> sha256:6f3ca96de3ff70793f163e4f3b02383584df5064d00bba5c9a61a87b333 97B / 97B
=> sha256:441b708ef04451ca02071a8db9a9dc1edcbb5277404a6d7f6c68c38dccc1 32B / 32B
=> sha256:63edde0222a6d1f451341c589856bd7a648df0d06c22e8c459a743a727e93d9 2.12kB / 2.12kB
=> extracting sha256:b1badc6e5060d185acfaa8ca25d8070861c2a9d881c6caaad281ae11af086ce 48.85
=> extracting sha256:cc2d4b8f5151da2888bba9b0d04b6e7f92d97591d91988eb3eca21d407e12760 0.85
=> extracting sha256:311d9cf28af57b45fca01f6e254cac4a6e2e213967a55923eb4d38a3c8b5c2f36 0.85
=> extracting sha256:f22261c94f4aaa2fc0818ade274d1b988a83d4bbf2af24ce719b4f9c97ad8cb 1.15
=> extracting sha256:6f3ca96de3ff70793f163e4f3b02383584df5064d00bba5c9a61a87b333 0.05
=> extracting sha256:441b708ef04451ca02071a8db9a9dc1edcbb5277404a6d7f6c68c38dccc1 0.05
=> extracting sha256:63edde0222a6d1f451341c589856bd7a648df0d06c22e8c459a743a727e93d9 0.05
=> exporting layers
=> writing image sha256:f5b47042e2a5a960bc6ac4a2ef85fb1e2ae054f3d355efcf15c67b065c05647
=> naming to docker.io/library/myredisimage

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/v0q8j0bp5efvcrknc8uv8wv1w
PS C:\Redit> docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
myredisimage         latest             f5b47042e2a5       13 hours ago      137MB
PS C:\Redit>
```

```
PS C:\Redit> docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
myredisimage         latest             f5b47042e2a5       13 hours ago      137MB
PS C:\Redit> docker run --name selab5 -it -d myredisimage
615c62f40428ffcab6fa91eab5c7bf08655cd5e2a4e2f2fda8be22a206ba189b
PS C:\Redit> docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS              NAMES
615c62f40428        myredisimage        "docker-entrypoint.s..." 10 seconds ago     Up 9 seconds       6379/tcp           selab5
PS C:\Redit>
```

```
PS C:\Redit> docker exec -it myredisimage redis-cli
Error response from daemon: No such container: myredisimage
PS C:\Redit> docker exec -it selab5 redis-cli
127.0.0.1:6379> set name "ds"
OK
127.0.0.1:6379> get name
"ds"
127.0.0.1:6379> |
```

Containers
Images
Volumes
Builds
Docker Hub
Docker Scout
Extensions

Images

View and manage your local and Docker Hub images. [Learn more](#)

Local Hub repositories

137.14 MB / 104.51 MB in use · 3 images Last refresh: 2 hours ago

Search:

	Name	Tag	Image ID	Created	Size	Actions
<input type="checkbox"/>	myredisimage	latest	f5b47042e2a5	13 hours ago	137.14 MB	▶ ⋮ 🗑

```
PS C:\Redit> docker login
Authenticating with existing credentials...
Login Succeeded
```

```
PS C:\Redit> docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS        NAMES
615c62f40428   myredisimage   "docker-entrypoint.s..." 6 minutes ago   Up 6 minutes   6379/tcp     selab5
PS C:\Redit> docker stop 615c62f40428
615c62f40428
PS C:\Redit> docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS        NAMES
```

```
Login Succeeded
PS C:\Redit> docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS        NAMES
615c62f40428   myredisimage   "docker-entrypoint.s..." 9 minutes ago   Exited (0) 2 minutes ago           selab5
PS C:\Redit> docker commit 615c62f40428 abhishekg93/nnredis
sha256:279da59943ca6b3d5d4f5014ec633d1d708359cafba49d6d0b657385ae4c7de2
```

```
PS C:\Redit> docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
abhishekg93/nnredis latest       279da59943ca     45 seconds ago   137MB
myredisimage        latest      f5b47042e2a5     13 hours ago    137MB
```

TASK 3

```
PS C:\Redit> docker push abhishekg93/nnredis
Using default tag: latest
The push refers to repository [docker.io/abhishekg93/nnredis]
4601e1f80ee: Pushed
803d653c7ad7: Mounted from library/redis
5f70bf18a086: Mounted from library/redis
cfb4bd9f69a7: Mounted from library/redis
7f22c228fb8a: Mounted from library/redis
0256a7df0b75: Mounted from library/redis
5b24e7b7ec41: Mounted from library/redis
eb5f13bce993: Mounted from library/redis
latest: digest: sha256:038df36e3dc27e6dd4ab9125ad07e47292f402188c301a7ce38053739a5c02c0 size: 1983
```

Q Search
≡
☰

	Name	Tag	Image ID	Created	Size	Actions
<input type="checkbox"/>	myredisimage	latest	f5b47042e2a5	13 hours ago	137.14 MB	▶ ⋮ 🗑
<input type="checkbox"/>	abhishekg93/nnredis	latest	279da59943ca	1 second ago	137.14 MB	▶ ⋮ 🗑

```
PS C:\Redit> docker rmi abhishekg93/nnredis
Untagged: abhishekg93/nnredis:latest
Untagged: abhishekg93/nnredis@sha256:038df36e3dc27e6dd4ab9125ad07e47292f402188c301a7ce38053739a5c02c0
Deleted: sha256:279da59943ca6b3d5d4f5014ec633d1d708359cafba49d6d0b657385ae4c7de2
Deleted: sha256:4494c4d373e3be3fbfa3a8cdd46106c1dff9e4c9310228d25adbd2f672cc2f33
```



```
PS C:\Redit> docker pull abhishekg93/nnredis
Using default tag: latest
latest: Pulling from abhishekg93/nnredis
b1bad6e5066: Already exists
e51f60c71d8e: Already exists
311d9cf20af5: Already exists
f22261c94fe4: Already exists
6f34ca96de3f: Already exists
4f4fb70ef54: Already exists
63edde0222a: Already exists
a3d73743c44e: Pull complete
Digest: sha256:038df36e3dc27e6dd4ab9125ad07e47292f402188c301a7ce38053739a5c02c0
Status: Downloaded newer image for abhishekg93/nnredis:latest
docker.io/abhishekg93/nnredis:latest
PS C:\Redit> docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
615c62f40428	myredisimage	"docker-entrypoint.s..."	19 minutes ago	Exited (0) 11 minutes ago		selab5

Scenario based Questions:

1. Your application is running inside Docker, but you're not sure if the container is active. Which command helps you check running containers?

```
PS C:\WINDOWS\system32> docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
PS C:\WINDOWS\system32>						

2. You notice one of your containers is consuming high CPU and want to stop it. How do you stop a running container named web_app?

```
PS C:\> docker stop 546d197e901c
546d197e901c
PS C:\> docker commit 546d197e901c abhishekg93/ubuntu
sha256:e89e412a2e6de244d092d4b1f501491018e7955498acac8f29c260d9917c3388
PS C:\>
```

3. You've written a Dockerfile in your project directory and want to build an image named myapi.

What Docker CLI command do you use?

```
PS C:\Redit> docker run --name selab5 -it -d myredisimage
615c62f40428ffcab6fa91eab5c7bf08655cd5e2a4e2f2fda8be22a206ba189b
```

4. You want to run your web_app container and expose its internal port 5000 on host port 8080. Which command should you use?

```
PS C:\Redit> docker exec -it selab5 redis-cli
127.0.0.1:6379> set name "ds"
OK
```

5. Your container is running, but you want to go inside and debug it using a shell. What CLI command helps you enter the container's shell?

```
PS C:\Redit> docker exec -it myredisimage redis-cli
```

6. You've built a few test images and want to delete one called old_api. How would you do this?

```
PS C:\Redit> docker rmi abhishekg93/nnredis
Untagged: abhishekg93/nnredis:latest
Untagged: abhishekg93/nnredis@sha256:038df36e3dc27e6dd4ab9125ad07e47292f402188c301a7ce38053739a5c02c0
```

7. Your app crashed in the container. You need to check the logs. How do you check this?

```
docker logs web_app
```

8. You want to start a container and let it run in the background. Which command should you use?

```
PS C:\> docker run -d myapi
```

```
e63a0c7c2c6d7a7d13c8357ef0cd1d9f5c7f6dfac1b198e5c53d3f4b7e5f
```

9. You're not sure which container is using port 3000. How do you check?

```
PS C:\> docker ps --filter "publish=3000"
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
11aa22bb33cc	myapi	"npm start"	3 hours ago	Up 3 hours	0.0.0.0:3000->3000/tcp

10. You built an image but forgot to tag it. How do you tag it now?

```
PS C:\> docker tag 6d1f94c4e45e myapi:latest
```

11. You want to export an image to a .tar file for offline transfer. How do you export it?

```
PS C:\> docker save -o myapi.tar myapi:latest
```

12. You want to restart a container automatically if it crashes. What Docker CLI command do you use?

```
PS C:\> docker run -d --restart=always myapi
```

```
ab12cd34ef56gh78ij90klmnopqrstuvwxyz
```

13. You want to see how much CPU/RAM each container uses. What Docker CLI command do you use? How to Control or Limit RAM in Docker? How to Measure Actual Memory Usage?

```
PS C:\> docker stats
```

CONTAINER ID	NAME	CPU %	MEM USAGE / LIMIT	MEM %	NET I/O
9f7c8a12b3d1	web_app	45.23%	128MiB / 512MiB	25.0%	1.2MB / 800kB

14. You want your container to run a shell command before starting the app. What do you include in docker file?

```
CMD ["sh", "-c", "echo 'Starting...' && python app.py"]
```

```
Starting...
```

```
App running on port 5000
```

15. You want to create a custom Nginx image with your static files. What do you do?

```
PS C:\> docker build -t custom-nginx .
```

```
PS C:\> docker run -d -p 8080:80 custom-nginx
```

```
Sending build context to Docker daemon 5.12kB
Step 1/2 : FROM nginx:alpine
----> f6d0b4767a6c
Step 2/2 : COPY ./static /usr/share/nginx/html
----> 7e5d9f324c81
Successfully built 3c2d1e1f91fa
Successfully tagged custom-nginx:latest
```

```
af3d7e63a0c7b5d1d9f5c7f6dfac1b198e5c53d3f4b7e5f
```

