

WEEK_5

Task 1 : Working with Docker CLI Commands:

Basic Docker Commands

1.docker --version

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

Try the new cross-platform PowerShell https://aka.ms/powershell

PS C:\Users\kmit> docker --version
Docker version 27.3.1, build ce12230
PS C:\Users\kmit> docker version
Client:
 Version:      27.3.1
 API version:  1.47
 Go version:   go1.22.7
 Git commit:   ce12230
 Built:        Fri Sep 20 11:42:27 2024
 OS/Arch:      windows/amd64
 Context:      desktop-linux

Server: Docker Desktop 4.36.0 (175267)
Engine:
 Version:      27.3.1
 API version:  1.47 (minimum version 1.24)
 Go version:   go1.22.7
 Git commit:   41ca978
 Built:        Fri Sep 20 11:41:11 2024
 OS/Arch:      linux/amd64
 Experimental: false
 containerd:
 Version:      1.7.21
 GitCommit:    472731909fa34bd7bc9c087e4c27943f9835f111
 runc:
 Version:      1.1.13
 GitCommit:    v1.1.13-0-g58aa920
 docker-init:
 Version:      0.19.0
 GitCommit:    de40ad0
PS C:\Users\kmit> docker images
```

2.docker images

```
GitCommit:    de40ad0
PS C:\Users\kmit> docker images
REPOSITORY    TAG                IMAGE ID           CREATED          SIZE
ashrith13/wordpress   latest            79dd7ea093b2      9 months ago    993MB
wordpress      latest            79dd7ea093b2      9 months ago    993MB
ubuntu         latest            80dd3c3b9c6c      9 months ago    117MB
ashrith13/wordpressimage latest            80dd3c3b9c6c      9 months ago    117MB
jasonrivers/nagios    latest            2a7c2b20d118      9 months ago    1.36GB
docker/desktop-kubernetes kubernetes-v1.30.5-cni-v1.4.0-critools-v1.29.0-cri-dockerd-v0.3.11-1-debian 7a7b02256c8d      10 months ago    625MB
registry.k8s.io/kube-apiserver v1.30.5          7746ea55a074      11 months ago    153MB
registry.k8s.io/kube-controller-manager v1.30.5          bbd15d267294      11 months ago    146MB
registry.k8s.io/kube-scheduler v1.30.5          62c91750a3c9      11 months ago    84.0MB
registry.k8s.io/kube-proxy v1.30.5          fa20f91151b9      11 months ago    118MB
gcr.io/k8s-minikube/kicbase <none>            81d728859520      11 months ago    1.81GB
gcr.io/k8s-minikube/kicbase v0.0.45          c7c9bc3bc515      11 months ago    1.81GB
registry.k8s.io/coredns/coredns v1.11.3          9caab9f02389      12 months ago    85.1MB
registry.k8s.io/etcd     3.5.12-0         44a8e24dc0ba      18 months ago    211MB
mysql             5.7              4bc6bc903a6d      20 months ago    689MB
docker/desktop-vpnkit-controller dc331cb22850be0cdd97c84a9cfecaf44a1afb6e 7ecf507ea070      2 years ago      47MB
registry.k8s.io/pause    3.9              7031c1b28338      2 years ago      1.07MB
docker/desktop-storage-provisioner v2.0             115d77efefe2      4 years ago      59.2MB
registry.k8s.io/etcd     3.5.15-0         a6dc63e6e8cf      55 years ago     56.9MB
```

3.docker ps

```
PS C:\Users\kmit> docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
6c6d80953636	jasontiviers/nagios:latest	"usr/local/bin/star..."	7 months ago	Exited (4) 7 months ago		nagios123
7a071f0141d	00d5c3b9cdc	"/bin/bash"	7 months ago	Exited (0) 7 months ago		exciting_wilbur
0033c0p04c	00d5c3b9cdc	"/bin/bash"	7 months ago	Exited (0) 7 months ago		friendly_poltras
740300f9d04	00d5c3b9cdc	"/bin/bash"	7 months ago	Exited (255) 8 minutes ago		idmuntu
7c014b05a793	wordpress:latest	"docker-entrypoint.s..."	7 months ago	Exited (255) 8 minutes ago	0.0.0.0:8885->88/tcp	wordpress
5376a0a931e	mysql:5.7	"docker-entrypoint.s..."	7 months ago	Exited (255) 8 minutes ago	3306/tcp, 33060/tcp	wordpress_db
51ce2edc11a8	gcr.io/k8s-minikube/micbase:v0.0.45	"usr/local/bin/entr..."	7 months ago	Exited (255) 7 months ago	127.0.0.1:55000->22/tcp, 127.0.0.1:55001->2376/tcp, 127.0.0.1:55002->5000/tcp	minikube

4.ls

```
See 'docker run --help'.
PS C:\Users\kmit> ls
```

Directory: C:\Users\kmit

Mode	LastWriteTime	Length	Name
d-----	24-12-2024	10:29	.aws
d-----	24-12-2024	10:29	.azure
d-----	16-12-2024	16:04	.cache
d-----	19-08-2025	10:20	.docker
d-----	16-12-2024	16:04	.eclipse
d-----	19-06-2024	10:34	.ipython
d-----	24-12-2024	12:15	.jupyter
d-----	24-12-2024	11:18	.kube
d-----	16-01-2025	12:43	.m2
d-----	24-12-2024	16:23	.minikube
d-----	16-12-2024	15:53	.ms-ad
d-----	18-01-2024	13:11	.p2
d-----	19-12-2024	19:11	.th-client
d-----	28-12-2024	16:14	.VirtualBox
d-----	16-12-2024	15:21	.vscode
d-r----	17-12-2024	04:04	3D Objects
d-r----	17-12-2024	04:04	Contacts
d-r----	19-08-2025	10:21	Desktop
d-r----	17-01-2025	12:22	Documents
d-r----	19-08-2025	10:21	Downloads
d-----	17-01-2025	13:21	eclipse-workspace
d-r----	17-12-2024	04:04	Favorites
d-r----	17-12-2024	04:04	Links
d-r----	17-12-2024	04:04	Music
d-r----	16-12-2024	15:48	OneDrive
d-r----	28-12-2024	14:10	Pictures
d-r----	17-12-2024	04:04	Saved Games
d-r----	17-12-2024	04:05	Searches
d-----	16-01-2025	12:57	SEexternal
d-r----	03-01-2025	09:42	Videos
-a----	16-01-2025	13:04	255 .bash_history
-a----	16-01-2025	12:48	74 .gitconfig
-a----	02-01-2025	10:21	0 .node_repl_history
-a----	17-12-2024	10:54	0 wsl

Docker CLI Commands with redis

Step 1: Pull the redis Image

docker pull redis

```
PS C:\Users\kmit> docker pull redis
Using default tag: latest
latest: Pulling from library/redis
63edde0222ea: Download complete
311d9cf20af5: Download complete
b1badc6e5066: Download complete
6f34ca96de3f: Download complete
4f4fb700ef54: Already exists
f22261c94fe4: Download complete
e51f60c71d8e: Download complete
Digest: sha256:cc2dfb8f5151da2684b4a09bd04b567f92d07591d91980eb3eca21df07e12760
Status: Downloaded newer image for redis:latest
docker.io/library/redis:latest
PS C:\Users\kmit> docker run --name my-redis -d redis
```

Step 2: Run a Redis Container

docker run --name my-redis -d redis

```
see 'docker run --help'.
PS C:\Users\kmit> docker run --name my-redis -d redis
3734c2f902a1f6ff794c224eb00dc689402efa34788969a0b164c27f752db9ce
```

Step 3: Check Running Containers

docker ps

```
PS C:\Users\kmit> docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
734c2f902a1   redis    "docker-entrypoint.s..." About a minute Up About a minute 6379/tcp     my-redis
```

Step 4: Access Redis

docker exec -it my-redis redis-cli

```
PS C:\Users\kmit> docker exec -it my-redis redis-cli
127.0.0.1:6379> SET name "SE_LAB"
OK
127.0.0.1:6379> GET name
"SE_LAB"
127.0.0.1:6379> docker stop my-redis
(error) ERR unknown command 'docker', with args beginning with: 'stop' 'my-redis'
127.0.0.1:6379> "SE_LAB"
(error) ERR unknown command 'SE_LAB', with args beginning with:
127.0.0.1:6379> 127.0.0.1:6379> docker stop my-redis
(error) ERR unknown command '127.0.0.1:6379>', with args beginning with: 'docker' 'stop' 'my-redis'
127.0.0.1:6379> (error) ERR unknown command 'docker', with args beginning with: 'stop' 'my-redis'
invalid argument(s)
127.0.0.1:6379> docker stop my-redis
(error) ERR unknown command 'docker', with args beginning with: 'stop' 'my-redis'
127.0.0.1:6379> stop my-redis
(error) ERR unknown command 'stop', with args beginning with: 'my-redis'
127.0.0.1:6379> exit
```

Step 5: Stop the Redis Container

docker stop my-redis

```
PS C:\Users\kmit> docker stop my-redis
my-redis
PS C:\Users\kmit> docker start my-redis
my-redis
```

Step 6: Restart the Redis Container

```
PS C:\Users\kmit> docker start my-redis
my-redis
PS C:\Users\kmit> docker rm my-redis
```

docker start my-redis

Step 7: Remove the Redis Container

docker rm my-redis

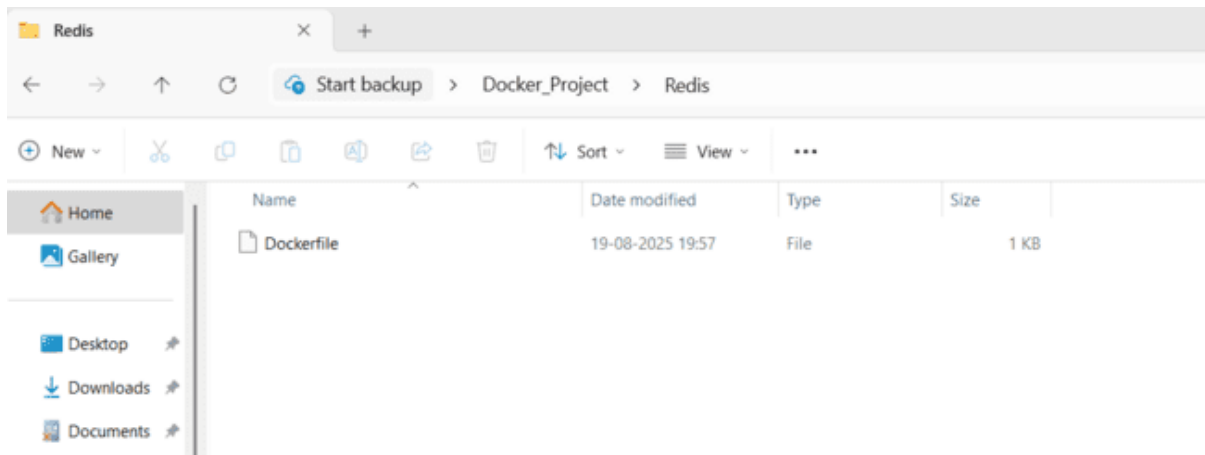
Step 8: Remove the Redis Image

docker rmi redis

```
PS C:\Users\kmit> docker stop my-redis
my-redis
PS C:\Users\kmit> docker rm my-redis
my-redis
PS C:\Users\kmit> docker rmi redis
Untagged: redis:latest
Deleted: sha256:cc2dfb8f5151da2684b4a09bd04b567f92d07591d91980eb3eca21df07e12760
PS C:\Users\kmit>
```

Task 2: Working with Docker file

Step 1: Set Up Your Folder



Step 2: Write the Docker file

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis
$ notepad Dockerfile

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis
$ cat Dockerfile
FROM redis:latest
CMD ["redis-server"]
```

Docker Commands (Step-by-step):

1. docker build -t redisnew

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker build -t redisnew .
[+] Building 16.2s (6/6) FINISHED                                docker:desktop-linux
=> [internal] load build definition from Dockerfile              0.1s
=> => transferring dockerfile: 76B                               0.0s
=> [internal] load metadata for docker.io/library/redis:latest  5.8s
=> [auth] library/redis:pull token for registry-1.docker.io    0.0s
=> [internal] load .dockerignore                                  0.1s
=> => transferring context: 2B                                     0.0s
=> [1/1] FROM docker.io/library/redis:latest@sha256:cc2dfb8f5151da2684b 5.7s
=> => resolve docker.io/library/redis:latest@sha256:cc2dfb8f5151da2684b 0.1s
=> => sha256:311d9cf20af57b45fca01f6e264cac4a6e2e213067a559 876B / 876B 1.0s
=> => sha256:4f4fb700ef54461cfa02571ae0db9a0dc1e0cdb5577484a6 32B / 32B 1.3s
=> => sha256:e51f60c71d8e10e0555ce03c32fd4407a9dd7090df 1.10kB / 1.10kB 1.6s
=> => sha256:63edde0222ea5d1f451341c589856bd7a648df0d06 2.12kB / 2.12kB 1.5s
=> => sha256:6f34ca96de3ff70793fb163e4f3b823438504df5004d00b4 97B / 97B 0.8s
=> => sha256:f22261c94fe4aaa2fc0818ade274d1b988a83d48 24.19MB / 24.19MB 3.7s
=> => sha256:b1badc6e50664185acfaa0ca255d8076061c2a9d 28.23MB / 28.23MB 3.8s
=> exporting to image                                           9.4s
=> => exporting layers                                           0.0s
=> => exporting manifest sha256:5ad876ccc1c46b2046e6706fee0f5953519cd22 0.0s
=> => exporting config sha256:f5b47042e2a5a960bc6bac4a2ef05fb1e2ae054f3 0.0s
=> => exporting attestation manifest sha256:0d7c05bf334762ba3ce8c8c03e4 0.1s
=> => exporting manifest list sha256:2e2a048d9a45f61db66d22c65d1adbd204 0.0s
=> => naming to docker.io/library/redisnew:latest              0.0s
=> => unpacking to docker.io/library/redisnew:latest           9.1s
```

2. docker run --name myredisnew -d redisnew

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis
$ docker run --name myredisnew -d redisnew
0c244d708cc6d422ac82b7b66fa6bd7c67fb54cc5bf2ddfa46af53d407736082
```

3. docker ps

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker ps
```

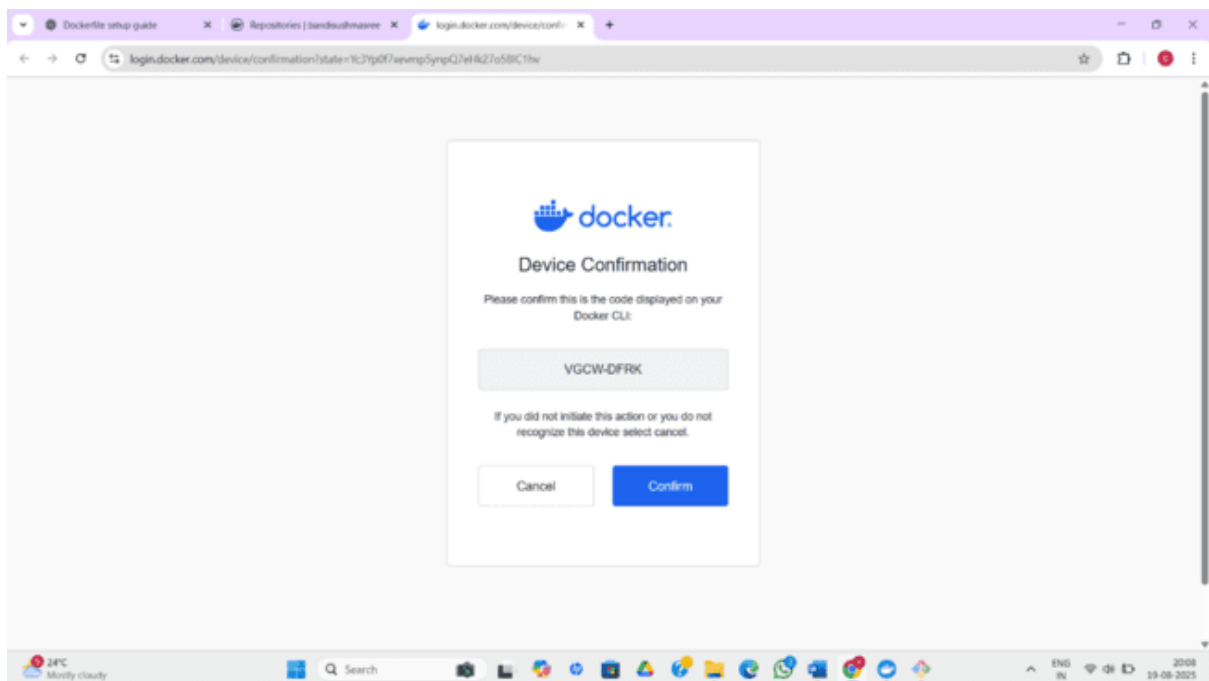
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAME
0c244d708cc6	redisnew	"docker-entrypoint.s..."	31 seconds ago	Up 30 seconds	6379/tcp	myredisnew

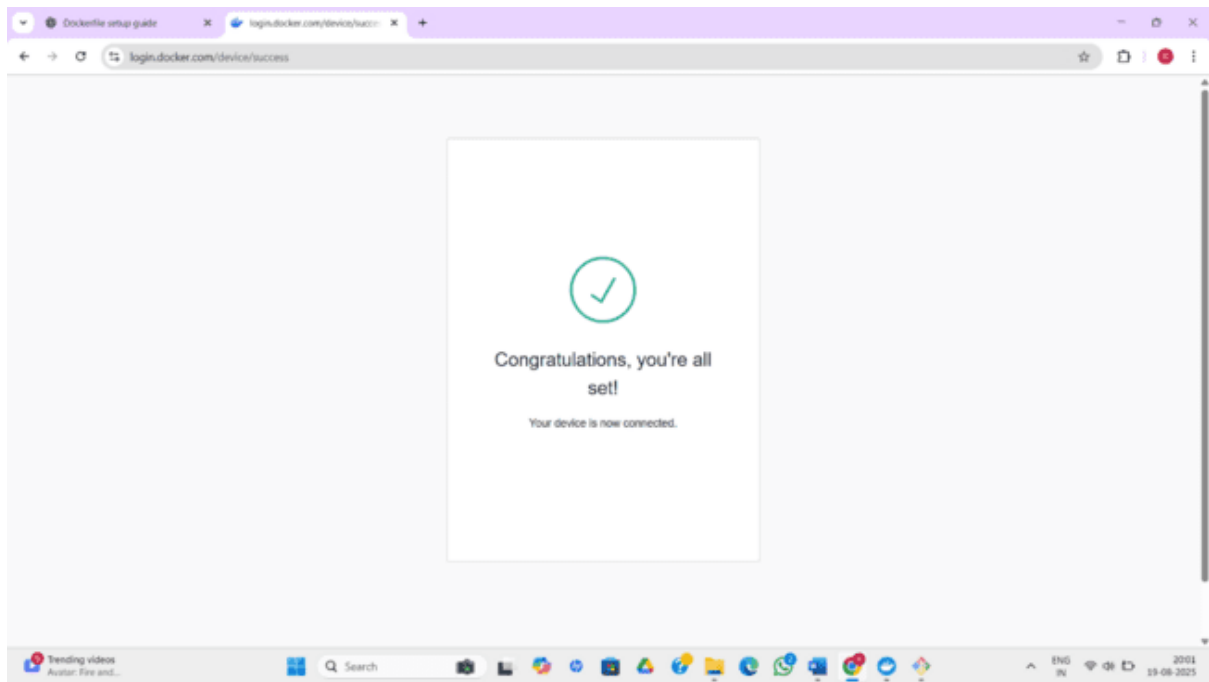
4. docker stop myredisnew

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis
$ docker stop myredisnew
myredisnew
```

5. docker login

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis
$ docker login
Authenticating with existing credentials...
Login Succeeded
```





6. docker ps -a

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker ps -a
```

CONTAINER ID	IMAGE	PORTS	NAMES	COMMAND	CREATED	STATUS
5a7fd86f8509	azeemafirdous/redis1:latest	6379/tcp	myredis	"docker-entrypoint.s..."	54 seconds ago	Up 52 second
86ad0197200e	ubuntu		infallible_shtern	"/bin/bash"	2 months ago	Exited (255)
fb062c4f516f	osubuntu		hopeful_fermi	"/bin/bash"	4 months ago	Exited (255)
ec09dbd96497	osubuntu		eager_gould	"/bin/bash"	4 months ago	Exited (255)
22b013398083	osubuntu		quirky_swartz	"/bin/bash"	4 months ago	Exited (255)
38b5181c67af	osubuntu		magical_bartik	"/bin/bash"	5 months ago	Exited (255)
622489b66819	osubuntu		keen_pasteur	"/bin/bash"	5 months ago	Exited (255)
f12afb237620	ubuntu		cranky_nash	"/bin/bash"	5 months ago	Exited (127)
cc3e9c20869d	osubuntu		pedantic_kepler	"/bin/bash"	5 months ago	Exited (127)
4d66ec4905dd	ubuntu		quizzical_lederberg	"/bin/bash"	5 months ago	Exited (130)
1dc97087fd82	osubuntu		affectionate_brahmagupta	"/bin/bash"	5 months ago	Exited (255)
87f3adca5517	osubuntu		elated_lumiere	"/bin/bash"	5 months ago	Exited (255)
1bf02eee38db	osubuntu			"/bin/bash"	5 months ago	Exited (255)

7. docker commit

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker commit 0c244d708cc6 azeemafirdous/redis1
sha256:e39ec005579e3e7d42dc46e573716a2eb10e25e280de35160515d9a7fed4dd16
```

8. docker images

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
azeemafirdous/redis1	latest	e39ec005579e	14 seconds ago	200MB
redisnew	latest	2e2a048d9a45	5 days ago	200MB
hello-world	latest	a0dfb02aac21	2 weeks ago	20.3kB
osubuntu	latest	6829fddf8f64	5 months ago	515MB
ubuntu	latest	72297848456d	6 months ago	117MB

9. docker push

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker push azeemafirdous/redis1:1.0
The push refers to repository [docker.io/azeemafirdous/redis1]
tag does not exist: azeemafirdous/redis1:1.0

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker push azeemafirdous/redis1:latest
The push refers to repository [docker.io/azeemafirdous/redis1]
f22261c94fe4: Pushed
63edde0222ea: Pushed
311d9cf20af5: Pushed
b1badc6e5066: Pushed
e51f60c71d8e: Pushed
6f34ca96de3f: Pushed
4f4fb700ef54: Pushed
latest: digest: sha256:e39ec005579e3e7d42dc46e573716a2eb10e25e280de35160515d9a7fed4dd16 size: 1821
```

10. docker rm

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker rm 0c244d708cc6
0c244d708cc6
```

11. docker rmi

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker rmi azeemafirdous/redis1
Untagged: azeemafirdous/redis1:latest
Deleted: sha256:e39ec005579e3e7d42dc46e573716a2eb10e25e280de35160515d9a7fed4dd16
```

12. docker ps -a


```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker ps -a

```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NA
MES						
86ad0197200e	ubuntu	"/bin/bash"	2 months ago	Exited (255) 5 days ago		in
fallible_shtern						
fb062c4f516f	osubuntu	"/bin/bash"	4 months ago	Exited (255) 2 months ago		ho
peful_fermi						
ec09dbd96497	osubuntu	"/bin/bash"	4 months ago	Exited (255) 2 months ago		ea
ger_gould						
22b013398083	osubuntu	"/bin/bash"	4 months ago	Exited (255) 2 months ago		qu
irky_swartz						
38b5181c67af	osubuntu	"/bin/bash"	5 months ago	Exited (255) 4 months ago		ma
gical_bartik						
622489b66819	osubuntu	"/bin/bash"	5 months ago	Exited (255) 4 months ago		ke
en_pasteur						
f12afb237620	ubuntu	"/bin/bash"	5 months ago	Exited (127) 5 months ago		cr
anky_nash						
cc3e9c20869d	osubuntu	"/bin/bash"	5 months ago	Exited (127) 5 months ago		pe
dantic_kepler						
4d66ec4905dd	ubuntu	"/bin/bash"	5 months ago	Exited (130) 5 months ago		qu
izzical_lederberg						
1dc97087fd82	osubuntu	"/bin/bash"	5 months ago	Exited (255) 5 months ago		af
fectionate_brahmagupta						
87f3adca5517	osubuntu	"/bin/bash"	5 months ago	Exited (255) 5 months ago		el
ated_lumiere						
1bf02eee38db	osubuntu	"/bin/bash"	5 months ago	Exited (255) 5 months ago		ec
static_lovelace						

13. docker logout

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker logout
Removing login credentials for https://index.docker.io/v1/

```

14. docker pull

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker pull azeemafirdous/redis1:latest
latest: Pulling from azeemafirdous/redis1
Digest: sha256:e39ec005579e3e7d42dc46e573716a2eb10e25e280de35160515d9a7fed4dd16
Status: Downloaded newer image for azeemafirdous/redis1:latest
docker.io/azeemafirdous/redis1:latest

```

15. docker run --name myredis -d

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker run --name myredis -d azeemafirdous/redis1:latest
5a7fd86f8509db32a2c662bdfc4978c23aaa41efb3bbef9406c3ebb38066e4b6

```

16. docker exec -it myredis redis-cli

17. SET name

18. GET name

19. exit

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker exec -it myredis redis-cli
127.0.0.1:6379> SET name "Azeema firdouss"
OK
127.0.0.1:6379> GET name
"Azeema firdouss"
127.0.0.1:6379> exit

```

20. docker ps -a

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker ps -a
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS
5a7fd86f8509   azeemafirdous/redis1:latest        "docker-entrypoint.s..." 54 seconds ago Up 52 second
s              6379/tcp                            myredis
86ad0197200e   ubuntu                              "/bin/bash"              2 months ago   Exited (255)
5 days ago
fb062c4f516f   osubuntu                            "/bin/bash"              4 months ago   Exited (255)
2 months ago
ec09dbd96497   osubuntu                            "/bin/bash"              4 months ago   Exited (255)
2 months ago
22b013398083   osubuntu                            "/bin/bash"              4 months ago   Exited (255)
2 months ago
38b5181c67af   osubuntu                            "/bin/bash"              5 months ago   Exited (255)
4 months ago
622489b66819   osubuntu                            "/bin/bash"              5 months ago   Exited (255)
4 months ago
f12afb237620   ubuntu                              "/bin/bash"              5 months ago   Exited (127)
5 months ago
cc3e9c20869d   osubuntu                            "/bin/bash"              5 months ago   Exited (127)
5 months ago
4d66ec4905dd   ubuntu                              "/bin/bash"              5 months ago   Exited (130)
5 months ago
1dc97087fd82   osubuntu                            "/bin/bash"              5 months ago   Exited (255)
5 months ago
87f3adca5517   osubuntu                            "/bin/bash"              5 months ago   Exited (255)
5 months ago
1bf02eee38db   osubuntu                            "/bin/bash"              5 months ago   Exited (255)

```

21. docker stop myredis

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker stop myredis
myredis

```

22. docker rm

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker rm 5a7fd86f8509
5a7fd86f8509

```

23. docker images

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker images
REPOSITORY      TAG       IMAGE ID       CREATED        SIZE
azeemafirdous/redis1   latest    e39ec005579e   9 minutes ago  200MB
redisnew          latest    2e2a048d9a45   5 days ago     200MB
hello-world       latest    a0dfb02aac21   2 weeks ago    20.3kB
osubuntu          latest    6829fddf8f64   5 months ago   515MB
ubuntu           latest    72297848456d   6 months ago   117MB

```

24. docker rmi

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker rmi azeemafirdous/redis1:latest
Untagged: azeemafirdous/redis1:latest
Deleted: sha256:e39ec005579e3e7d42dc46e573716a2eb10e25e280de35160515d9a7fed4dd16

```

25. Remove Login Credentials (Optional)

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker logout
Removing login credentials for https://index.docker.io/v1/

```

Task 3: 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?

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
b5a712e78f2a   redisnew  "docker-entrypoint.s..." 5 seconds ago  Up 4 seconds  6379/tcp     myredisnew

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
b5a712e78f2a   redisnew  "docker-entrypoint.s..." 23 seconds ago  Up 21 seconds  6379/tcp     myredisnew
86ad0197200e   ubuntu   "/bin/bash"             2 months ago   Exited (255)  5 days ago
fb062c4f516f   osubuntu "/bin/bash"             4 months ago   Exited (255)  2 months ago
hopeful_fermi
ec09dbd96497   osubuntu "/bin/bash"             4 months ago   Exited (255)  2 months ago
eager_gould
22b013398083   osubuntu "/bin/bash"             4 months ago   Exited (255)  2 months ago
quirky_swartz
38b5181c67af   osubuntu "/bin/bash"             5 months ago   Exited (255)  4 months ago
magical_bartik
622489b66819   osubuntu "/bin/bash"             5 months ago   Exited (255)  4 months ago
keen_pasteur
f12afb237620   ubuntu   "/bin/bash"             5 months ago   Exited (127)  5 months ago
cranky_nash
```

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?

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
c3741b707ce6: Download complete
a2da0c0f2353: Download complete
716cdf61af59: Download complete
14e422fd20a0: Download complete
14a859b5ba24: Download complete
e5d9bb0b85cc: Download complete
Digest: sha256:33e0bbc7ca9ecf108140af6288c7c9d1ecc77548cbfd3952fd8466a75edefe57
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker run -d --name web_app -p 8080:80 nginx
8bd39bb919079a4723935b0b5d779753e17bf0cf4d820bfffabe7b49fd64f6dca

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
8bd39bb91907   nginx     "/docker-entrypoint.s..." 8 seconds ago  Up 5 seconds  0.0.0.0:8080->80/tcp     web_app
b5a712e78f2a   redisnew  "docker-entrypoint.s..." About a minute ago  Up About a minute  6379/tcp     myredisnew

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker stop web_app
web_app
```

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?

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker build -t myapi .
[+] Building 4.4s (5/5) FINISHED                                docker:desktop-linux
=> [internal] load build definition from Dockerfile              0.1s
=> => transferring dockerfile: 768                               0.0s
=> [internal] load metadata for docker.io/library/redis:latest  3.6s
=> [internal] load .dockerignore                                 0.0s
=> => transferring context: 2B                                     0.0s
=> CACHED [1/1] FROM docker.io/library/redis:latest@sha256:cc2dfb8f5151da2684b4a09bd04b567f92d075 0.1s
=> => resolve docker.io/library/redis:latest@sha256:cc2dfb8f5151da2684b4a09bd04b567f92d07591d9198 0.1s
=> exporting to image                                           0.3s
=> => exporting layers                                           0.0s
=> => exporting manifest sha256:5ad876ccc1c46b2046e6706fee0f5953519cd22b7fcb76fdb897544851ab4985 0.0s
=> => exporting config sha256:f5b47042e2a5a960bc6bac4a2ef05fb1e2ae054f3d355efcf15c67b865c05647 0.0s
=> => exporting attestation manifest sha256:6e8081bd0dbd0f1beb6fa35fe297e091ad761d6100169c709c20f 0.1s
=> => exporting manifest list sha256:64825fb4d70a25b9ad01bdbf44036b122f04e26ab705295a7c73e2c36854 0.0s
=> => naming to docker.io/library/myapi:latest                  0.0s
=> => unpacking to docker.io/library/myapi:latest               0.0s

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
redisnew            latest         2e2a048d9a45   5 days ago     200MB
myapi               latest         64825fb4d70a   5 days ago     200MB
nginx               latest         33e0bbc7ca9e   10 days ago    279MB
hello-world         latest         a0dfb02aac21   2 weeks ago    20.3kB
osubuntu            latest         6829fddf8f64   5 months ago   515MB
ubuntu              latest         72297848456d   6 months ago   117MB
```

4. You want to run your web_app container and expose its internal port 5000 on host port 8080.

Which command should you use?

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker run -d -p 8080:5000 --name web_apps myapi
f38c2abbbba91faa701a02c23a6f2f6132f0ab37230aeb32002de649bc944f2a
```

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?

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker exec -it web_app /bin/bash
Error response from daemon: container 8bd39bb919079a4723935b0b5d779753e17bf0cf4d820bffabe7b49fd64f6dca is not running
```

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

```
azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker images
REPOSITORY          TAG             IMAGE ID        CREATED         SIZE
redisnew            latest         2e2a048d9a45   5 days ago     200MB
old_api             latest         e02c31e25a9d   5 days ago     200MB
myapi               latest         64825fb4d70a   5 days ago     200MB
nginx               latest         33e0bbc7ca9e   10 days ago    279MB
hello-world         latest         a0dfb02aac21   2 weeks ago    20.3kB
osubuntu            latest         6829fddf8f64   5 months ago   515MB
ubuntu              latest         72297848456d   6 months ago   117MB

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker rmi old_api
Untagged: old_api:latest
Deleted: sha256:e02c31e25a9df7dbf1abee126d84a24219c9be6d92cd9e88e46dcecd0d20faa46
```

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


```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker logs web_app
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2025/08/24 06:09:05 [notice] 1#1: using the "epoll" event method
2025/08/24 06:09:05 [notice] 1#1: nginx/1.29.1
2025/08/24 06:09:05 [notice] 1#1: built by gcc 12.2.0 (Debian 12.2.0-14+deb12u1)
2025/08/24 06:09:05 [notice] 1#1: OS: Linux 5.15.167.4-microsoft-standard-WSL2
2025/08/24 06:09:05 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2025/08/24 06:09:05 [notice] 1#1: start worker processes
2025/08/24 06:09:05 [notice] 1#1: start worker process 29
2025/08/24 06:09:05 [notice] 1#1: start worker process 30
2025/08/24 06:09:05 [notice] 1#1: start worker process 31
2025/08/24 06:09:05 [notice] 1#1: start worker process 32
2025/08/24 06:09:05 [notice] 1#1: start worker process 33
2025/08/24 06:09:05 [notice] 1#1: start worker process 34
2025/08/24 06:09:05 [notice] 1#1: start worker process 35
2025/08/24 06:09:05 [notice] 1#1: start worker process 36
2025/08/24 06:09:05 [notice] 1#1: start worker process 37

```

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker logs ubuntu

```

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker logs 5ec370e73792
root@5ec370e73792:/# apt update
Get:1 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:2 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [34.0 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:5 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [909 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble/restricted amd64 Packages [117 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble/main amd64 Packages [1808 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [1062 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [841 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages [19.3 MB]
43% [11 Packages 4332 kB/19.3 MB 22%]
50% [11 Packages 6718 kB/19.3 MB 35%]
55% [11 Packages 8460 kB/19.3 MB 44%]
57% [11 Packages 9121 kB/19.3 MB 47%]
62% [11 Packages 10.9 MB/19.3 MB 56%]
65% [11 Packages 12.2 MB/19.3 MB 63%]

```

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

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker run -d --name ubuntu_bg ubuntu sleep 1000
b971a50e8cdfefbcea199d48723f4bf8b7c7cdebeb5e78b0633a620981e95ba4f

```

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

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker ps

```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
37ade3a69024	myapi:latest	"docker-entrypoint.s..."	About a minute ago	Up About a minute	6379/tcp
b971a50e8cdf	ubuntu	"sleep 1000"	3 minutes ago	Up 3 minutes	
f38c2abbb91	myapi	"docker-entrypoint.s..."	11 minutes ago	Up 11 minutes	6379/tcp,

```

0.0.0.0:8080->5000/tcp
CONTAINER ID   NAME      CPU %     MEM USAGE / LIMIT     MEM %     NET I/O     BLOCK I/O     PIDS
8e0059dd6e07   myapi2    0.51%     9.379MiB / 7.585GiB    0.12%     746B / 0B   0B / 0B       7
37ade3a69024   myapi     0.61%     9.496MiB / 7.585GiB    0.12%     746B / 0B   0B / 0B       7
f38c2abbb91    web_apps  0.54%     11.7MiB / 7.585GiB     0.15%     746B / 0B   0B / 0B       7
b5a712e78f2a   myredisnew 0.64%     11.54MiB / 7.585GiB    0.15%     1.05kB / 0B 0B / 0B       7

```

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


```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker tag myapi:latest
"docker tag" requires exactly 2 arguments.
See 'docker tag --help'.

Usage:  docker tag SOURCE_IMAGE[:TAG] TARGET_IMAGE[:TAG]

Create a tag TARGET_IMAGE that refers to SOURCE_IMAGE

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker tag myapi:latest myapi:v1

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ |

```

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

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker save -o myapi_image.tar myapi:latest

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ |

```

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

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker run -d --restart=always --name myapi3 myapi:latest
6058c961159161ad39ade000d760403a63d339616519c09f8256ad195486a6a9

```

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?

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker stats

```

CONTAINER ID	NAME	CPU %	MEM USAGE / LIMIT	MEM %	NET I/O	BLOCK I/O	PIDS
6058c9611591	myapi3	0.51%	9.379MiB / 7.585GiB	0.12%	746B / 0B	0B / 0B	7
8e0059dd6e07	myapi2	0.46%	9.379MiB / 7.585GiB	0.12%	746B / 0B	0B / 0B	7
37ade3a69024	myapi	0.52%	9.496MiB / 7.585GiB	0.12%	746B / 0B	0B / 0B	7
f38c2abbba91	web_apps	0.38%	11.71MiB / 7.585GiB	0.15%	746B / 0B	0B / 0B	7
b5a712e78f2a	myredisnew	0.50%	11.42MiB / 7.585GiB	0.15%	1.05kB / 0B	0B / 0B	7

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

```

FROM node:18

WORKDIR /app
COPY . .

RUN npm install
COPY entrypoint.sh /entrypoint.sh
RUN chmod +x /entrypoint.sh

ENTRYPOINT ["/entrypoint.sh"]
CMD ["npm", "start"]

```

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

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
Digest: sha256:33e0bbc7ca9ecf108140af6288c7c9d1ecc77548cbfd3952fd8466a75edefe57
Status: Image is up to date for nginx:latest
docker.io/library/nginx:latest

```

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker run -d --name web_app -p 8081:80 nginx
9ef404bc40a142c0cc59675658459fa059e039bec75f01e5cf74b5bd03cc10aa

```

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker ps

```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
9ef404bc40a1	nginx	"/docker-entrypoint..."	11 seconds ago	Up 10 seconds	0.0.0.0:8081->80/tcp

```

web_app

```

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker stop web_app
web_app

```

```

azeem@LAPTOP-MUVD4INQ MINGW64 ~/OneDrive/Desktop/Docker_Project/Redis (main)
$ docker build -t myapi .
[+] Building 1.6s (1/2)
=> [internal] load build definition from Dockerfile
=> transferring dockerfile: 76B

```