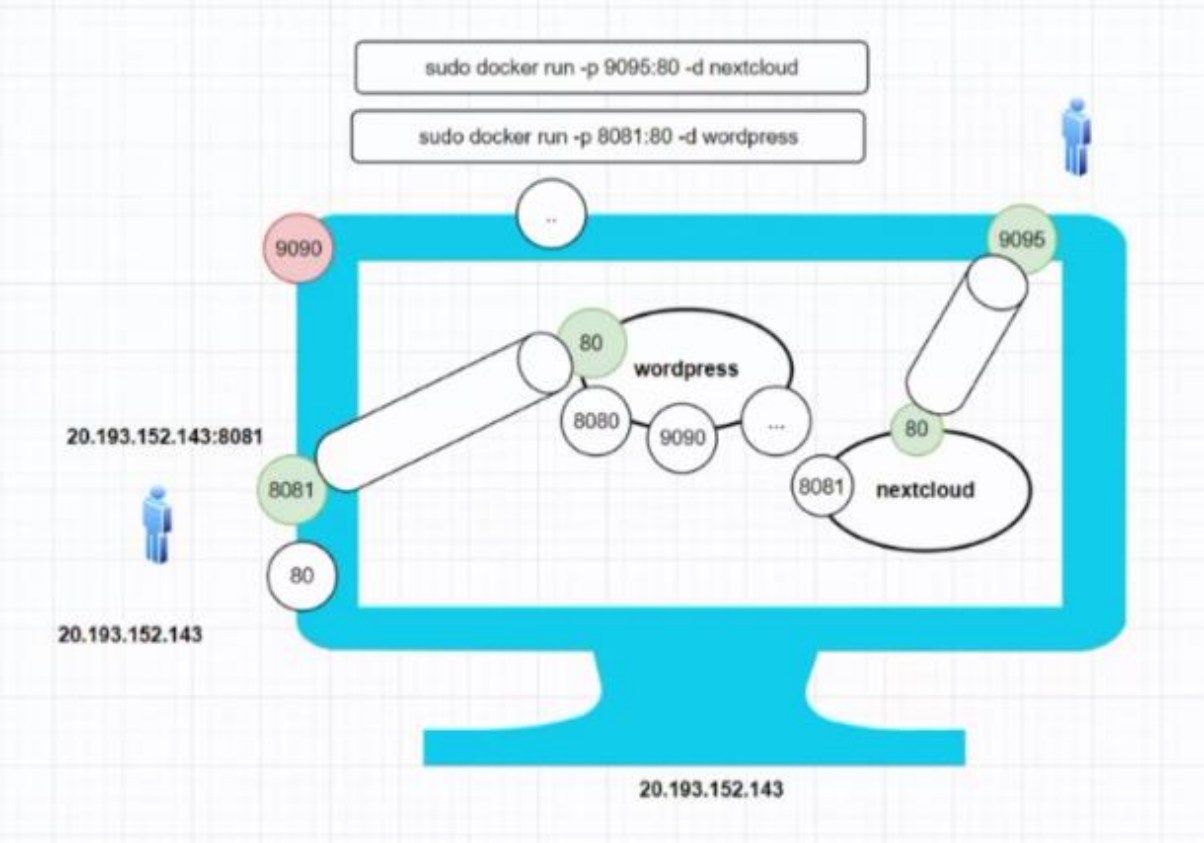


1) Create a VM on portal

2) Install docker onto it

3) Install nginx image into it from docker hub

4) **sudo docker run -p 8080:80 -d nginx –** By this command, nginx image will be pulled by docker and installed onto vm as it was not in system

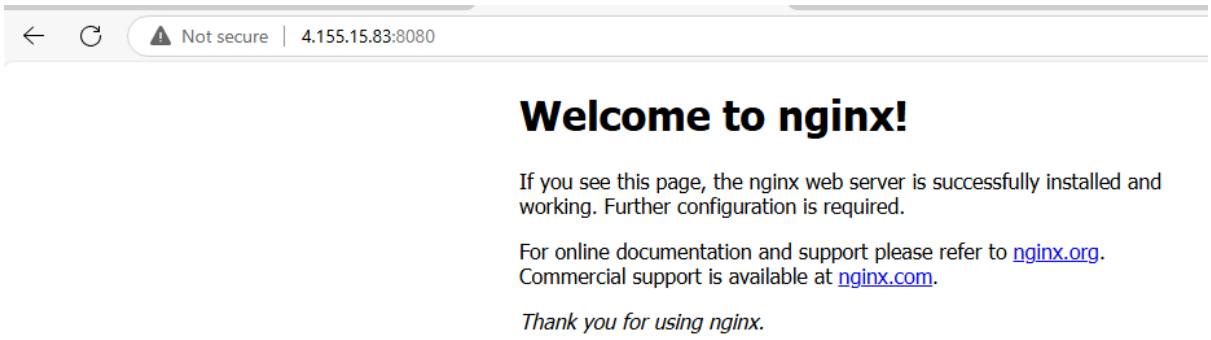
sudo systemctl status nginx

```
azureuser@vm50:~$ sudo docker run -p 8080:80 -d nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
a480a496ba95: Pull complete
f3ace1b8ce45: Pull complete
11d6fdd0e8a7: Pull complete
f1091da6fd5c: Pull complete
40eea07b53d8: Pull complete
6476794e50f4: Pull complete
70850b3ec6b2: Pull complete
Digest: sha256:28402db69fec7c17e179ea87882667f1e054391138f77ffaf0c3eb388efc3ffb
Status: Downloaded newer image for nginx:latest
7723b93afcf3e3528eeddd4ad9bda268b8286221f05b4a03c629eeeef0bc38f6
azureuser@vm50:~$
```

5) Now we have to open port 8080 of vm in nsg

6) Run public ip of vm:port8080 in browser

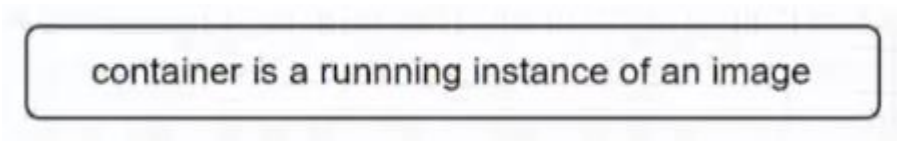
4.155.15.83:8080

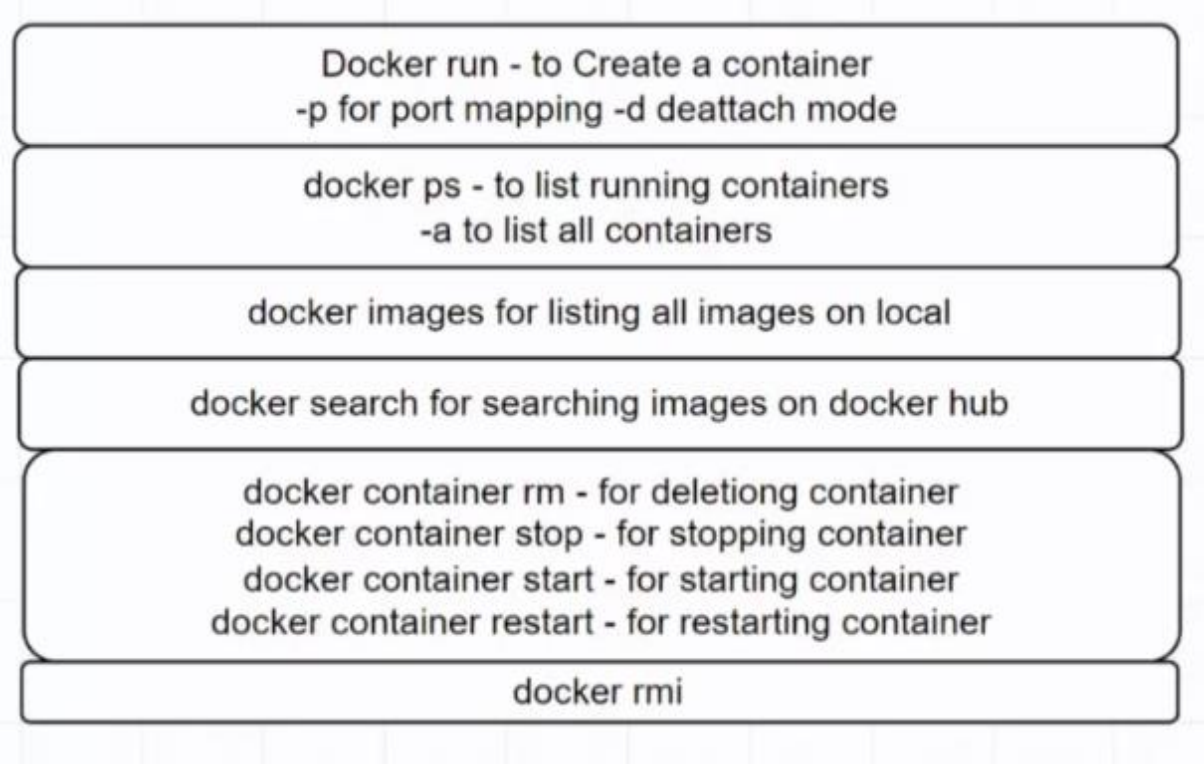


7) **sudo docker search python**

```
azureuser@vm50:~$ sudo docker search python
NAME                      DESCRIPTION                                     STARS     OFFICIAL   AUTOMATED
python                    Python is an interpreted, interactive, objec…   9852      [OK]
circleci/python           Python is an interpreted, interactive, objec…   90
cimg/python                                                               21
bitnami/python            Bitnami container image for Python              29                   [OK]
okteto/python                                                             0
paketobuildpacks/python                                                   0
ubuntu/python             A chiselled Ubuntu rock with the Python runt…   17
intel/python                                                              0
chainguard/python         Build, ship and run secure software with Cha…   3
opensuse/python           openSUSE base image with python                 0                    [OK]
corpusops/python          https://github.com/corpusops/docker-images/     1
stagex/python             High-level scripting language                   0
metabrainz/python                                                         0
jitesoft/python           Python & Pip on alpine.                         0
vulhub/python                                                             1
jumpserver/python         Python is an interpreted, interactive, objec…   0
clarinpl/python                                                           0
tensorchord/python        Base image for envd                             0
fnndsc/python                                                             0
linuxserver/python                                                        0
koxudaxi/python           Dockerfiles for CPython of lysnikolaou's tag…   0
zavolab/python            Python with some basic packages installed. A…   0                    [OK]
dtcenter/python           Necessary Python3 packages for plotting GRIB…   1
openquantumsafe/python    Quantum-safe/liboqs crypto with python API       0
openeuler/python                                                          0
azureuser@vm50:~$
```

8)





9) docker exec - If we want to enter into running container

docker exec 7723b93afcf3 ls (docker exec <container id> ls)

```
root@vm50:/home/azureuser#  docker exec 7723b93afcf3 ls
bin
boot
dev
docker-entrypoint.d
docker-entrypoint.sh
etc
home
lib
lib64
media
mnt
opt
proc
root
run
sbin
srv
sys
tmp
usr
var
root@vm50:/home/azureuser#
```

10) docker exec --help

```
root@vm50:/home/azureuser# docker exec --help

Usage:  docker exec [OPTIONS] CONTAINER COMMAND [ARG...]

Execute a command in a running container

Aliases:
  docker container exec, docker exec

Options:
  -d, --detach               Detached mode: run command in the background
      --detach-keys string   Override the key sequence for detaching a container
  -e, --env list             Set environment variables
      --env-file list        Read in a file of environment variables
  -i, --interactive          Keep STDIN open even if not attached
      --privileged           Give extended privileges to the command
  -t, --tty                  Allocate a pseudo-TTY
  -u, --user string          Username or UID (format: "<name|uid>[:<group|gid>]")
  -w, --workdir string       Working directory inside the container
root@vm50:/home/azureuser#
```

11)

docker exec -i -t fb561c36d244 bash – Gives bash terminal to enter into container

ls

```
root@vm50:/home/azureuser# docker exec -i -t 7723b93afcf3 bash
root@7723b93afcf3:/# ls
bin  boot  dev  docker-entrypoint.d  docker-entrypoint.sh  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
root@7723b93afcf3:/#
```

12)

cd /usr/share/nginx/html/

13) Now install nano as it doesnot have it

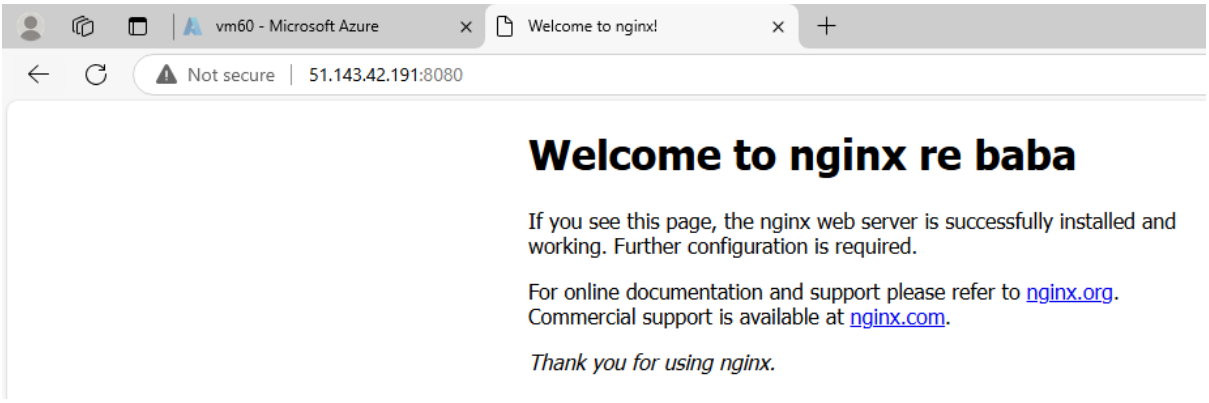
apt update

apt install nano

ls

```
root@0e8183869fa7:/usr/share/nginx/html# ls
50x.html  index.html
```

14) **nano index.html**



15) **docker exec -i -t 6761c162953f sh –** Request for shell terminal also in nginx container

ls

```
root@vm60:/home/azureuser# docker exec -i -t 0e8183869fa7 sh
# ls
bin  boot  dev  docker-entrypoint.d  docker-entrypoint.sh  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
```

16) **docker logs 0e8183869fa7**

```
root@vm60:/home/azureuser# docker logs 0e8183869fa7
/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
2024/10/24 10:50:49 [notice] 1#1: using the "epoll" event method
2024/10/24 10:50:49 [notice] 1#1: nginx/1.27.2
2024/10/24 10:50:49 [notice] 1#1: built by gcc 12.2.0 (Debian 12.2.0-14)
2024/10/24 10:50:49 [notice] 1#1: OS: Linux 6.8.0-1016-azure
2024/10/24 10:50:49 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1024:524288
```

17) We can run many containers using one image just change host port and run

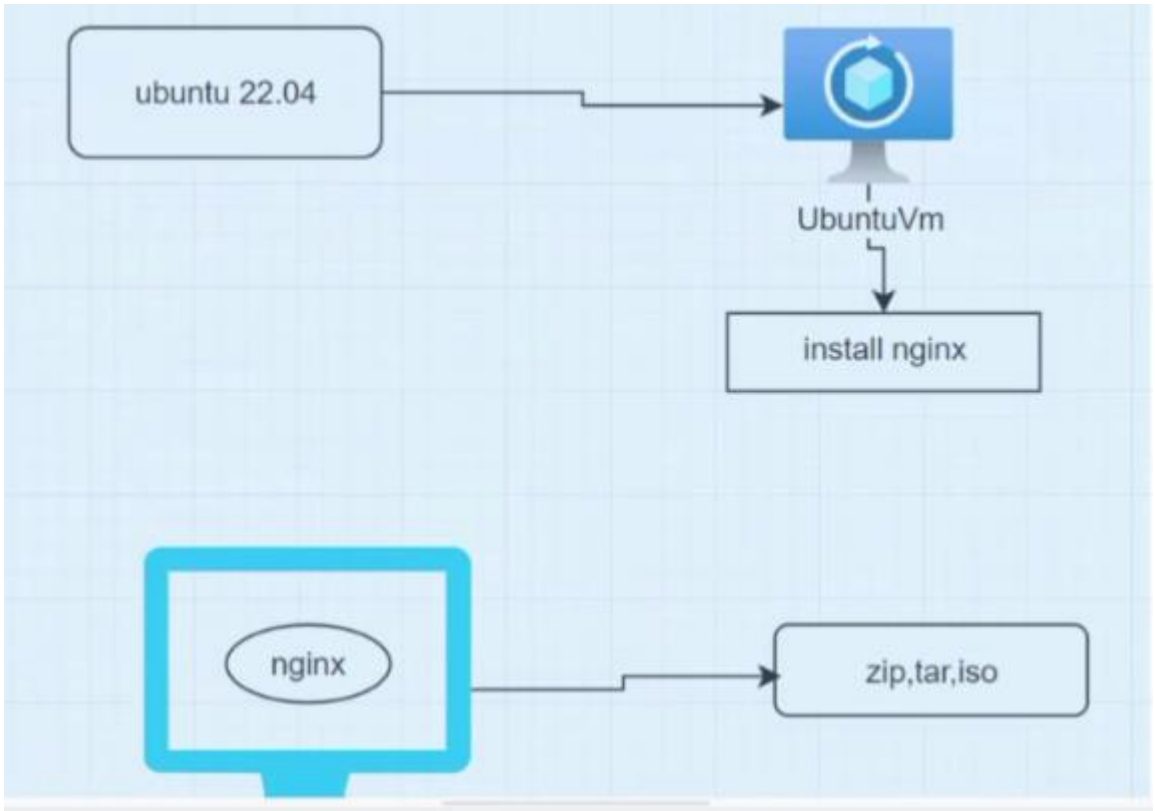
```
PS C:\DevOps Insiders\Batch15\azure-devsecops-batch-15\CodeSamples\Docker> docker run -p 8081:80 -d nginx
ef03127bdc8573596ae7b22dc2b4a8d263a15fef8fd76f2a40e8b1b1bc00b772
PS C:\DevOps Insiders\Batch15\azure-devsecops-batch-15\CodeSamples\Docker> docker run -p 8082:80 -d nginx
cad7550aeb7629469cb02732f7e0288dc03ea7c4a6d78821bde5b0a334ca02ae
PS C:\DevOps Insiders\Batch15\azure-devsecops-batch-15\CodeSamples\Docker> docker run -p 8083:80 -d nginx
6dccf6d563000cb9ff4ac3d1c4bb75be44fc7d86acc36cfc24ed3500627f7108
PS C:\DevOps Insiders\Batch15\azure-devsecops-batch-15\CodeSamples\Docker> docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS          PORTS
6dccf6d56300   nginx     "/docker-entrypoint.…"   2 seconds ago    Up 1 second     0.0.0.0:8083->80/
rkle
cad7550aeb76   nginx     "/docker-entrypoint.…"   6 seconds ago    Up 5 seconds    0.0.0.0:8082->80/
miere
ef03127bdc85   nginx     "/docker-entrypoint.…"   10 seconds ago   Up 9 seconds    0.0.0.0:8081->80/
l
6f0940aa01d8   nginx     "/docker-entrypoint.…"   23 minutes ago   Up 5 minutes    0.0.0.0:8080->80/
zakhani
PS C:\DevOps Insiders\Batch15\azure-devsecops-batch-15\CodeSamples\Docker>
```

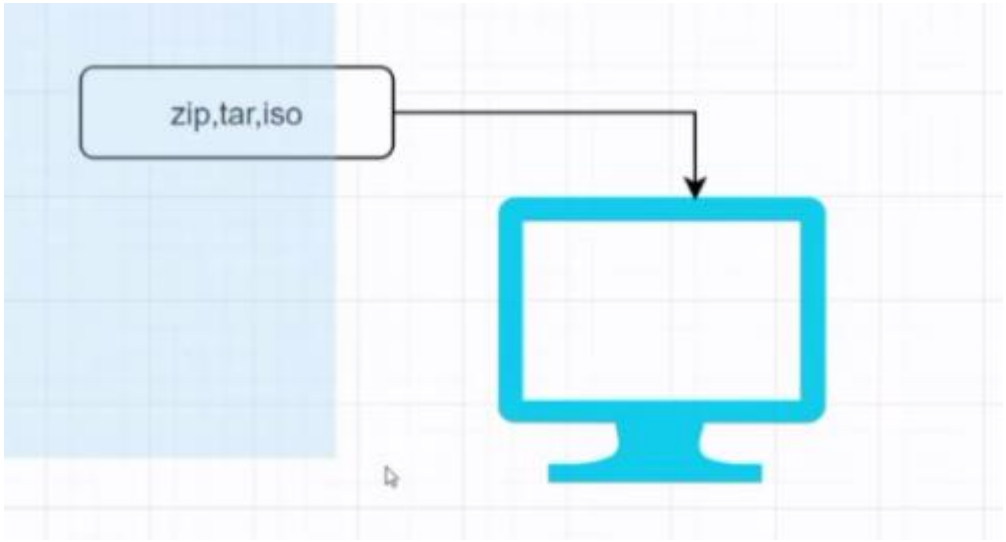
++

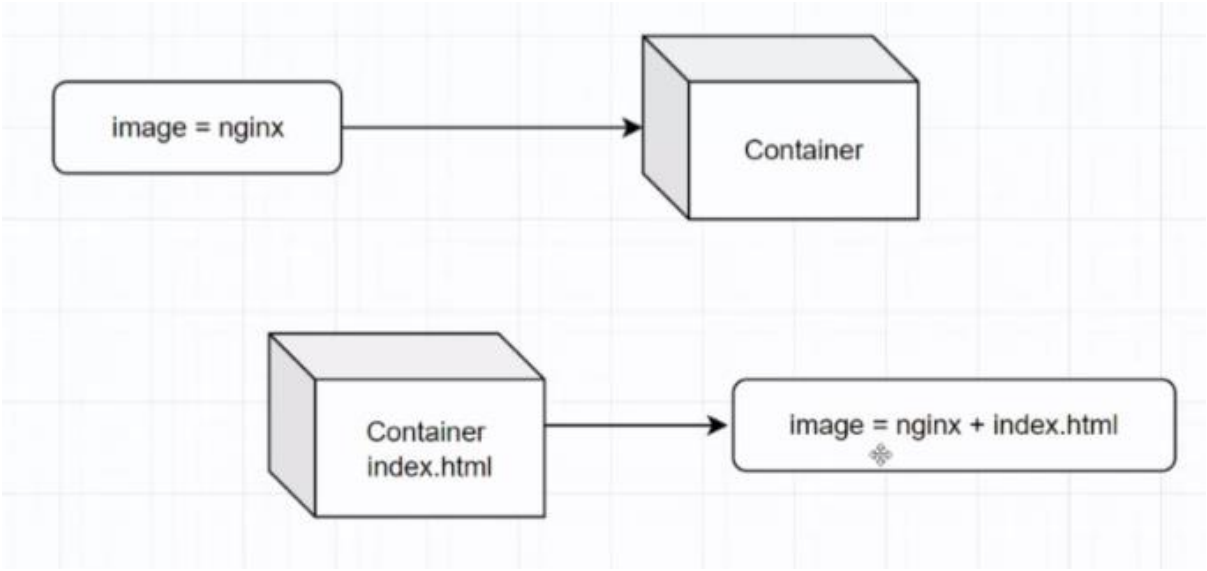
++

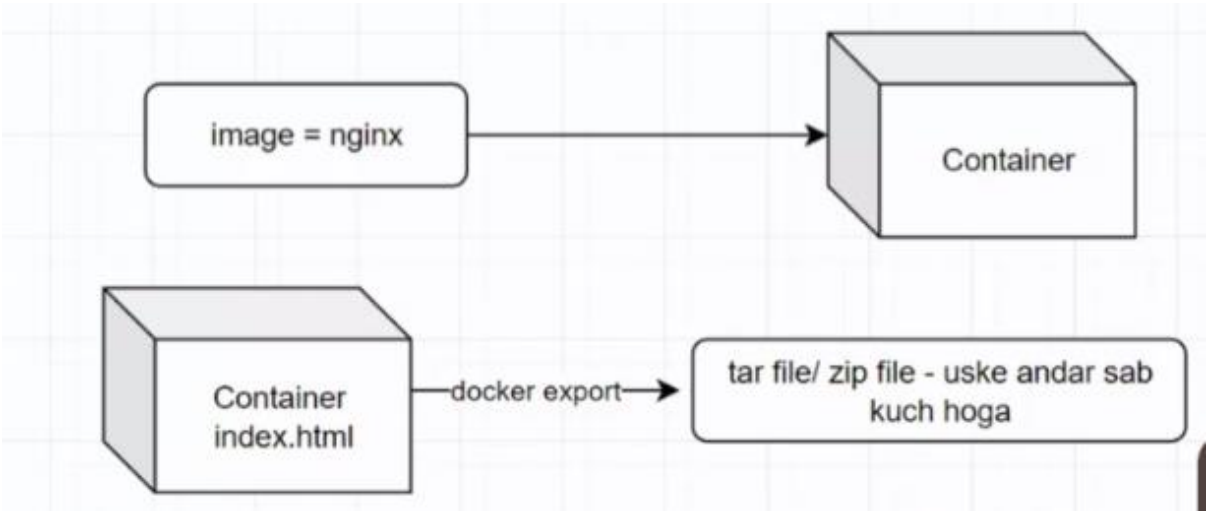
AGENDA – CREATE CUSTOM IMAGE AND CONTAINER FROM IT

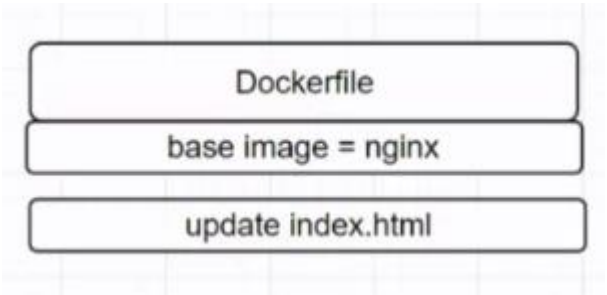
1)


ubuntu 22.04
UbuntuVm
install nginx
nginx
zip,tar,iso


zip,tar,iso







2) SEARCH – Docker file reference

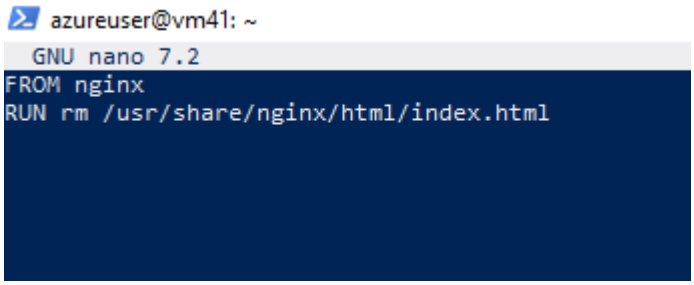
3) touch Dockerfile

```
azureuser@vmbaba:~$ touch Dockerfile
azureuser@vmbaba:~$ ls
Dockerfile  snap
azureuser@vmbaba:~$ nano Dockerfile
azureuser@vmbaba:~$
```

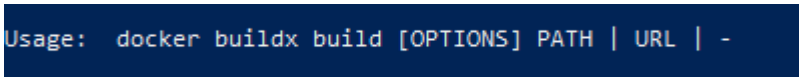
4) nano Dockerfile

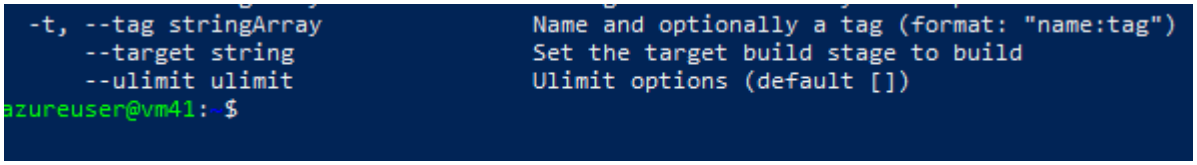
Ctrl+s

Ctrl+x



3) docker build –help





docker buildx build -t closenginx . – run to create closenginx named image

The command you provided is for building a Docker image using Buildx, which is an extended version of the Docker build command that supports multi-platform builds and advanced features.

Here's a breakdown of the command:

- `docker buildx`: This invokes the Buildx tool.

- `build`: This is the command to build an image.

- `-t closenginx`: This option tags the image with the name `closenginx`.

- `.`: This specifies the build context, which is the current directory (where the Dockerfile is located).

```
azureuser@vm41:~$ sudo docker buildx build -t closenginx .
[+] Building 9.7s (6/6) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 89B
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load metadata for docker.io/library/nginx:latest
 => [1/2] FROM docker.io/library/nginx@sha256:28402db69fec7c17e179ea87882667f1e054391138f77ffaf0c3eb388efc3ffb
 => => resolve docker.io/library/nginx@sha256:28402db69fec7c17e179ea87882667f1e054391138f77ffaf0c3eb388efc3ffb
 => => sha256:a480a496ba95a197d587aa1d9e0f545ca7dbd40495a4715342228db62b67c4ba 29.13MB / 29.13MB
 => => sha256:11d6fdd0e8a78c038b5c013368f76279d21e5ee239f18a1e20a3593414fa1095 629B / 629B
 => => sha256:28402db69fec7c17e179ea87882667f1e054391138f77ffaf0c3eb388efc3ffb 10.27kB / 10.27kB
 => => sha256:367678a80c0be120f67f3adfccc2f408bd2c1319ed98c1975ac88e750d0efe26 2.29kB / 2.29kB
 => => sha256:3b25b682ea82b2db3cc4fd48db818be788ee3f902ac7378090cf2624ec2442df 8.71kB / 8.71kB
 => => sha256:f3ace1b8ce45351f711f841b07ecc15383939db71555b947a9ffef6fb168ab18 43.80MB / 43.80MB
 => => sha256:f1091da6fd5cd13c1004024fdc5661a0456be67716d81671d8d2e7f81c0dbc2e 955B / 955B
 => => sha256:40eea07b53d8dc814d92f772a7b2be5c1c3914b05e3edcb5f2489e805885a0a3 404B / 404B
 => => sha256:6476794e50f4265ce2cab9c2ef2444dae937d28280a742899c8770fbca18bfed 1.21kB / 1.21kB
 => => extracting sha256:a480a496ba95a197d587aa1d9e0f545ca7dbd40495a4715342228db62b67c4ba
 => => sha256:70850b3ec6b2d92e9ccdff63bbd5d1aa0dec25087cb2507165f7538ffc7029df 1.40kB / 1.40kB
 => => extracting sha256:f3ace1b8ce45351f711f841b07ecc15383939db71555b947a9ffef6fb168ab18
 => => extracting sha256:11d6fdd0e8a78c038b5c013368f76279d21e5ee239f18a1e20a3593414fa1095
 => => extracting sha256:f1091da6fd5cd13c1004024fdc5661a0456be67716d81671d8d2e7f81c0dbc2e
 => => extracting sha256:40eea07b53d8dc814d92f772a7b2be5c1c3914b05e3edcb5f2489e805885a0a3
 => => extracting sha256:6476794e50f4265ce2cab9c2ef2444dae937d28280a742899c8770fbca18bfed
 => => extracting sha256:70850b3ec6b2d92e9ccdff63bbd5d1aa0dec25087cb2507165f7538ffc7029df
 => [2/2] RUN rm /usr/share/nginx/html/index.html
 => exporting to image
 => => exporting layers
 => => writing image sha256:6c5014d80ed61b34efa4af80ccdae3553ae6772fa7796c935e224691dad3824a
 => => naming to docker.io/library/closenginx
azureuser@vm41:~$ docker build --help
```

4) docker images – to check whether image is made or not

```
root@vm41:/home/azureuser# docker images
REPOSITORY    TAG       IMAGE ID       CREATED          SIZE
closenginx    latest    6c5014d80ed6   6 minutes ago    192MB
root@vm41:/home/azureuser#
```

++

AGENDA – Create container from image – closenginx

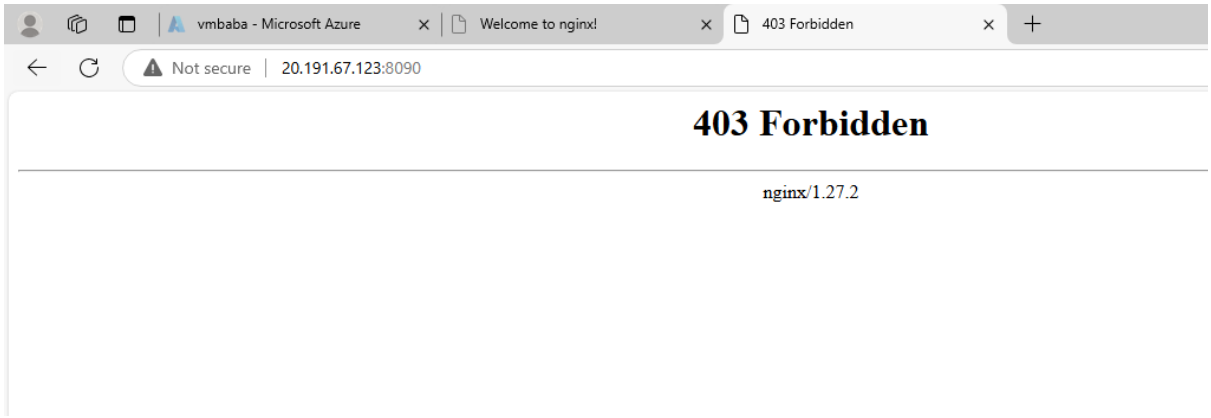
1) **docker run -p 8090:80 -d closenginx –** run to create container using image closenginx

```
root@vm41:/home/azureuser# docker run -p 8090:80 -d closenginx
50f8ca8a78e00d4e9896bcf42a485e199368473dbf0a5807d1ec6e44cb105531
```

2) **docker ps** – check container created

```
root@vm41:/home/azureuser# docker ps -a
CONTAINER ID   IMAGE        COMMAND                  CREATED         STATUS         PORTS                                       NAMES
50f8ca8a78e0   closenginx   "/docker-entrypoint.…"   8 seconds ago   Up 6 seconds   0.0.0.0:8090->80/tcp, :::8090->80/tcp   crazy_murdock
root@vm41:/home/azureuser#
```

3) Now since in Dockerfile we had used rm command to remove index.html file so if we run ip of vm:8090 port in browser it will not show anything as below

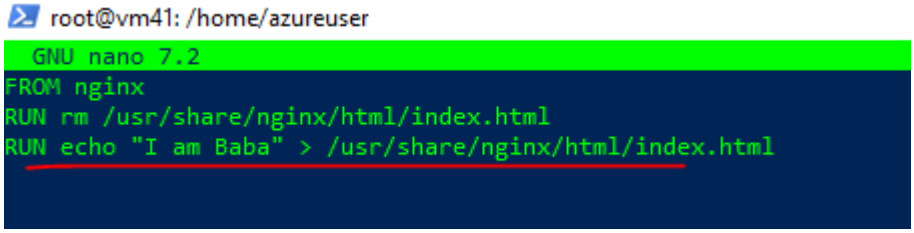


++

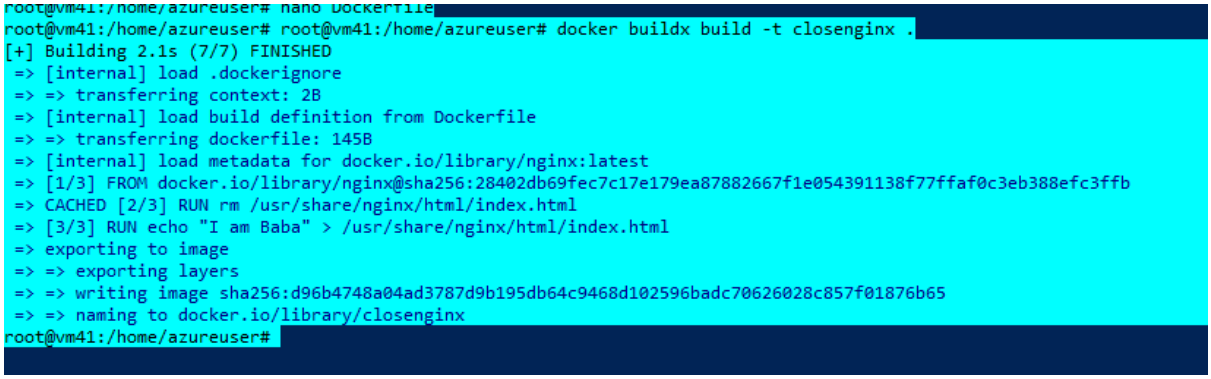
AGAIN CREATING IMAGE AND CREATING CONTAINER AS ABOVE

3) **nano Dockerfile**

RUN echo "I am Baba" > /usr/share/nginx/html/index.html – Now index.html file will be created in Dockerfile and will show "I am Baba"

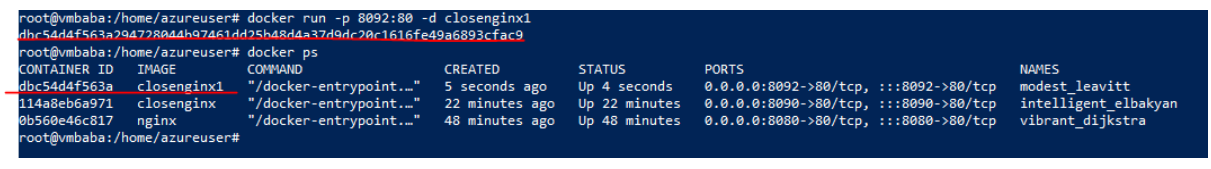


4) **docker buildx build -t closenginx1 . -** – run to create closenginx1 named image



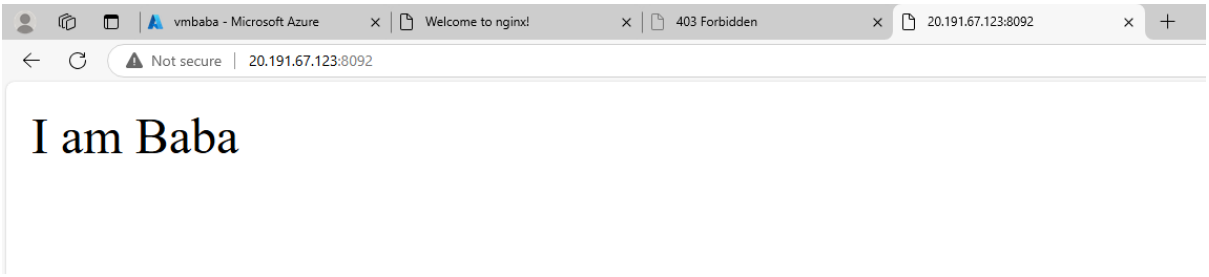
5) **docker run -p 8092:80 -d closenginx1 -** run to create container using image closenginx1

docker ps



6) Open nsg port 8092

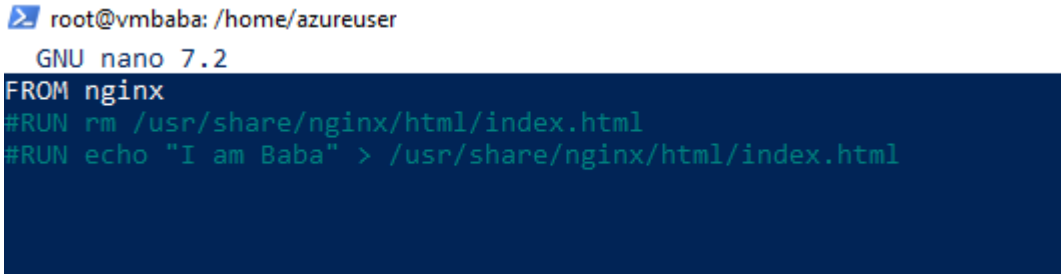
5) run in browser - [20.191.67.123:8092](20.191.67.123:8092)



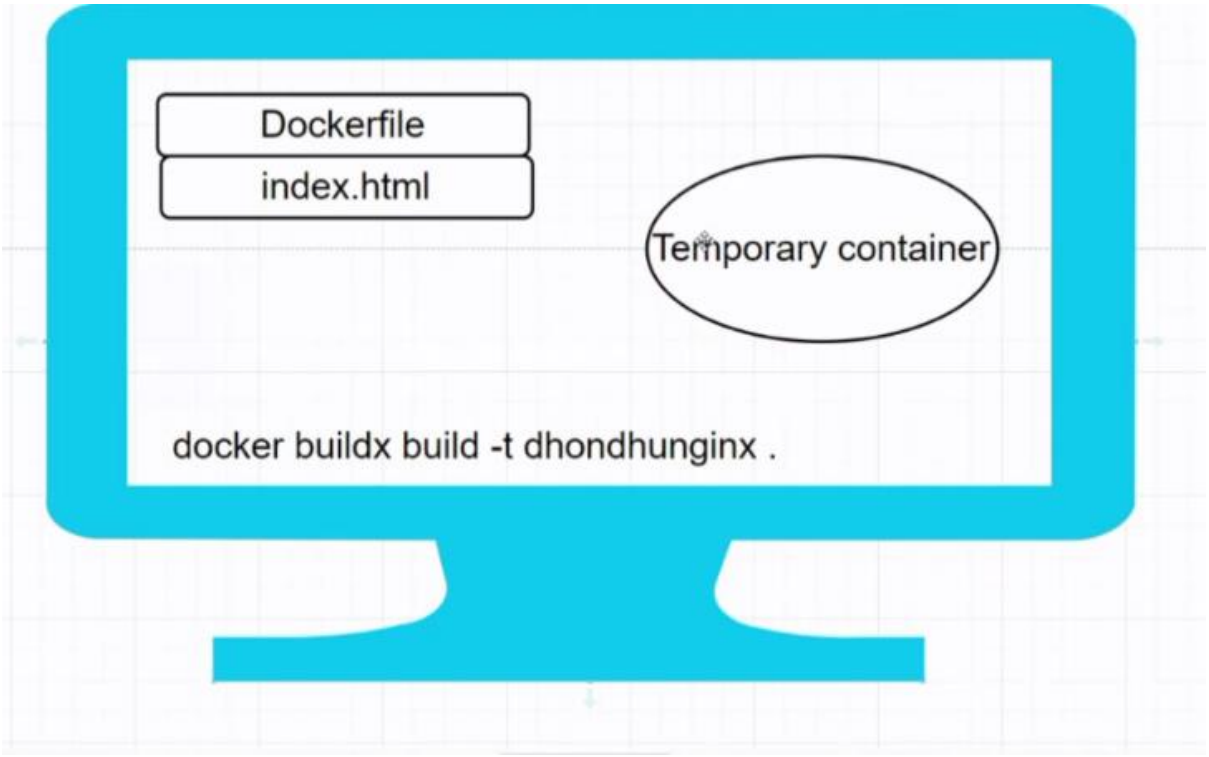
++

AGENDA – Created index.html file need to be copied in Temporary conatiner

1) Comment run commands in Dockerfile



2)



3) In docker file reference

COPY

COPY has two forms. The latter form is required for paths containing whitespace.

```
COPY [OPTIONS] <src> ... <dest>
COPY [OPTIONS] ["<src>", ... "<dest>"]
```

4) Check whether index.html file is inside our container or not so follow below steps

```
root@vmbaba:/home/azureuser# docker ps
CONTAINER ID   IMAGE         COMMAND                  CREATED             STATUS             PORTS                                       NAMES
dbc54d4f563a   closenginx1   "/docker-entrypoint.…"   24 minutes ago      Up 24 minutes      0.0.0.0:8092->80/tcp, :::8092->80/tcp       modest_leavitt
114a8eb6a971   closenginx    "/docker-entrypoint.…"   46 minutes ago      Up 46 minutes      0.0.0.0:8090->80/tcp, :::8090->80/tcp       intelligent_elbakyan
0b560e46c817   nginx         "/docker-entrypoint.…"   About an hour ago   Up About an hour   0.0.0.0:8080->80/tcp, :::8080->80/tcp       vibrant_dijkstra
root@vmbaba:/home/azureuser# docker exec dbc54d4f563a ls
bin
boot
dev
docker-entrypoint.d
docker-entrypoint.sh
etc
home
lib
lib64
media
mnt
opt
proc
root
run
sbin
srv
sys
tmp
usr
var
root@vmbaba:/home/azureuser# docker exec -i -t dbc54d4f563a sh
# ls
bin  boot  dev  docker-entrypoint.d  docker-entrypoint.sh  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
# cd usr
# ls
bin  games  include  lib  lib64  libexec  local  sbin  share  src
# cd share
# ls
X11           bash-completion  common-licenses  dict      dpkg        gcc   java      libgcrypt20  man         misc   pam-configs  polkit-1  util-linux  zsh
base-files    bug              debconf          doc       fontconfig  gdb   keyrings  lintian      maven-repo  nginx  perl5        tabset    xml
base-passwd   ca-certificates  debianutils      doc-base  fonts       info  libc-bin  locale       menu        pam    pixmaps      terminfo  zoneinfo
# cd nginx
# ls
html
#
```

5) **cd /**

find / -name "index.html" 2>/dev/null - To find index.html, you can use the find command:

COPY /usr/share/doc/adduser/examples/adduser.local.conf.examples/skel.other/index.html /usr/share/nginx/html/ - put this in Dockerfile

6) Make changes in docker file as below i.e. copying index.html file from our vm into temporary container

```
root@vmbaba: /home/azureuser
  GNU nano 7.2                                                    Dockerfile
FROM nginx
#RUN rm /usr/share/nginx/html/index.html
#RUN echo "I am Baba" > /usr/share/nginx/html/index.html
COPY /usr/share/doc/adduser/examples/adduser.local.conf.examples/skel.other/index.html /usr/share/nginx/html/
```

7) **docker buildx build -t chatgptnginx . -** – run to create **chatgptnginx** named image

```
root@vmbaba:/home/azureuser# docker images
REPOSITORY      TAG       IMAGE ID       CREATED         SIZE
chatgptnginx    latest    44d1435f1f21   3 hours ago     192MB
closenginx1     latest    9ff70d51c919   4 hours ago     192MB
closenginx      latest    efc06fe209bc   4 hours ago     192MB
nginx           latest    3b25b682ea82   3 weeks ago     192MB
```

8) **docker run -p 8093:80 -d chatgptnginx** – run to create container using image chatgptnginx

```
root@vmbaba:/home/azureuser# docker run -p 8093:80 -d chatgptnginx
bedbd3a2c008b9b8e6d96721e97ac33f6bd626bb43ee13f34c9287d23613ab29
root@vmbaba:/home/azureuser# docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS                                   NAMES
bedbd3a2c008   chatgptnginx   "/docker-entrypoint.…"   9 seconds ago    Up 8 seconds    0.0.0.0:8093->80/tcp, :::8093->80/tcp   inspiring_rosalind
dbc54d4f563a   closenginx1    "/docker-entrypoint.…"   4 hours ago      Up 4 hours      0.0.0.0:8092->80/tcp, :::8092->80/tcp   modest_leavitt
114a8eb6a971   closenginx     "/docker-entrypoint.…"   4 hours ago      Up 4 hours      0.0.0.0:8090->80/tcp, :::8090->80/tcp   intelligent_elbakyan
0b560e46c817   nginx          "/docker-entrypoint.…"   5 hours ago      Up 5 hours      0.0.0.0:8080->80/tcp, :::8080->80/tcp   vibrant_dijkstra
root@vmbaba:/home/azureuser#
```

++

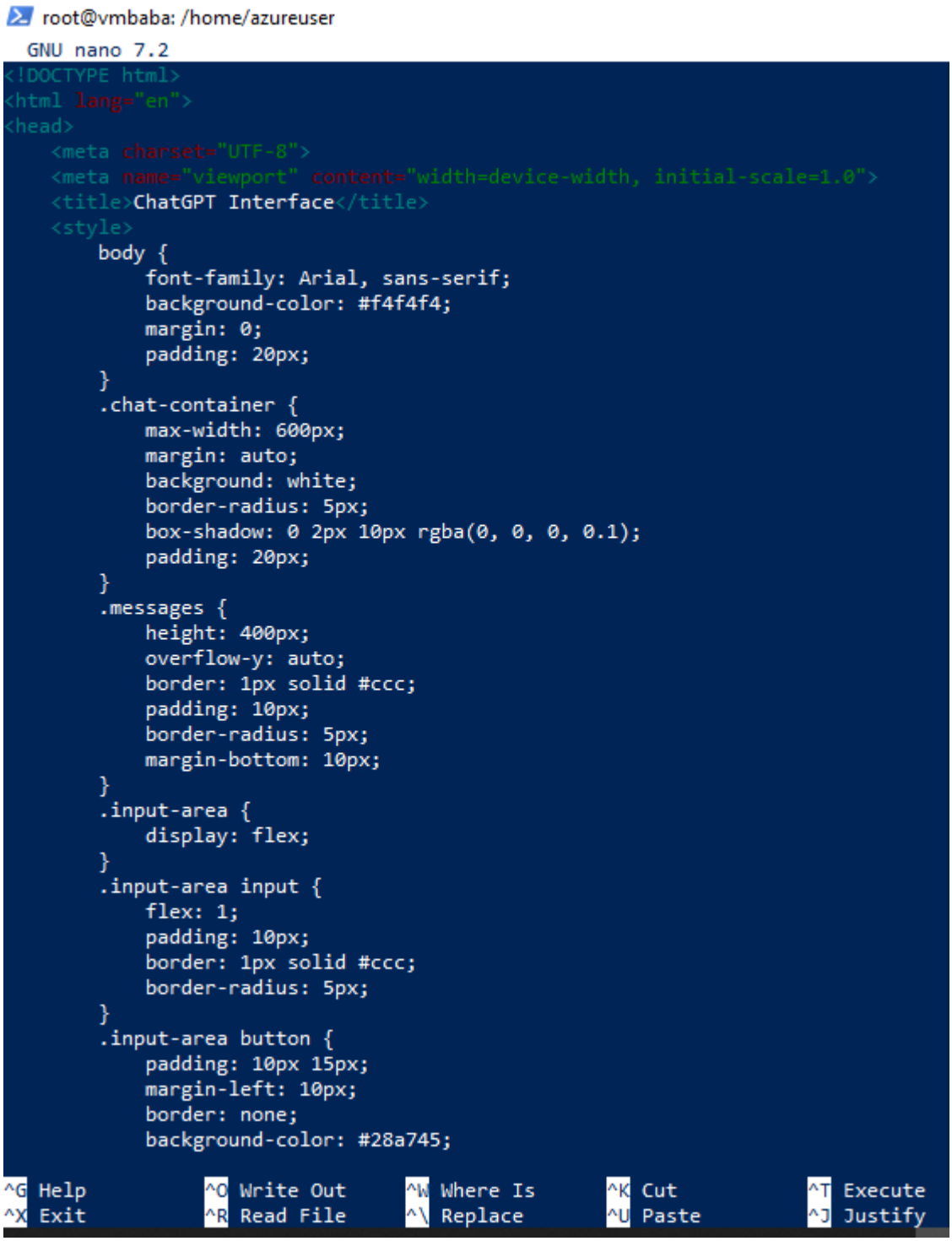
YAHA MAINE SIR SE HATKE KAR DIYA HAI

1) cd /

2) cd /usr/share/nginx/html

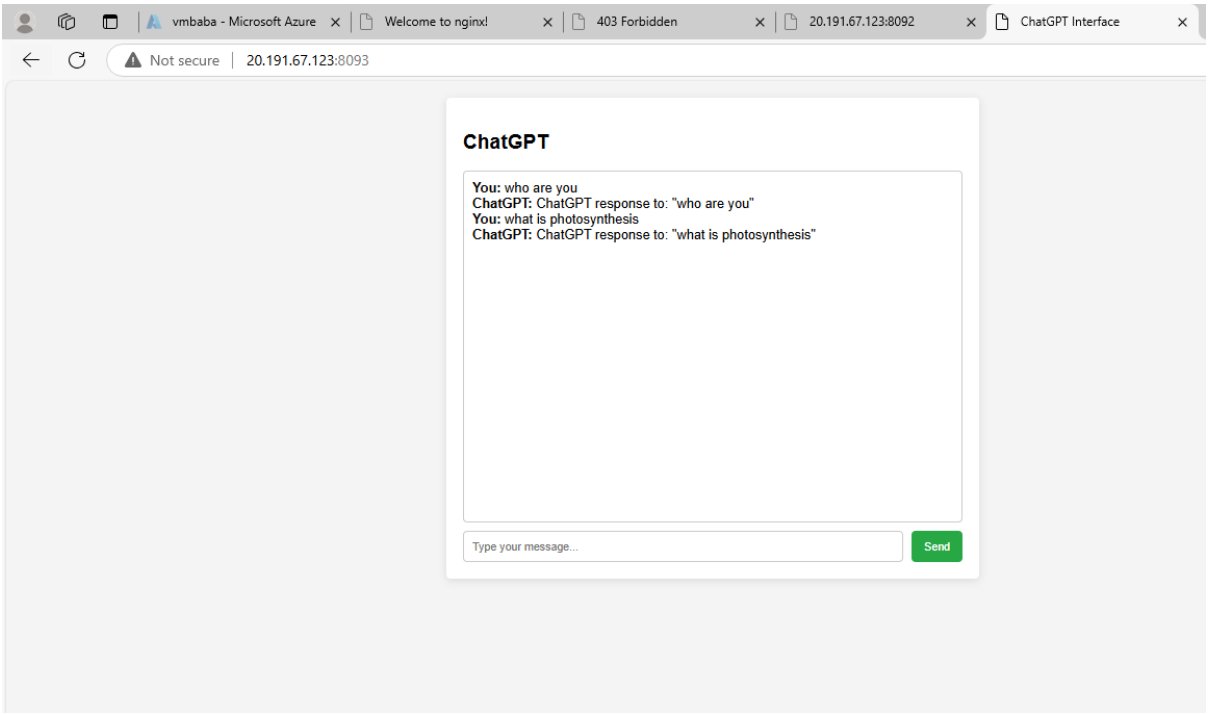
3) nano index.html

4) Go to chatgpt and find write index.html file for chatgpt



5) Put code in index.html file and save it

6) run ip and port in browser



++

AGENA – ADD COMMAND

1) In add command, in source we can use url also and destination will be same

---

ADD

ADD has two forms. The latter form is required for paths containing whitespace.

```
ADD [OPTIONS] <src> ... <dest>
ADD [OPTIONS] ["<src>", ... "<dest>"]
```

The available `[OPTIONS]` are:

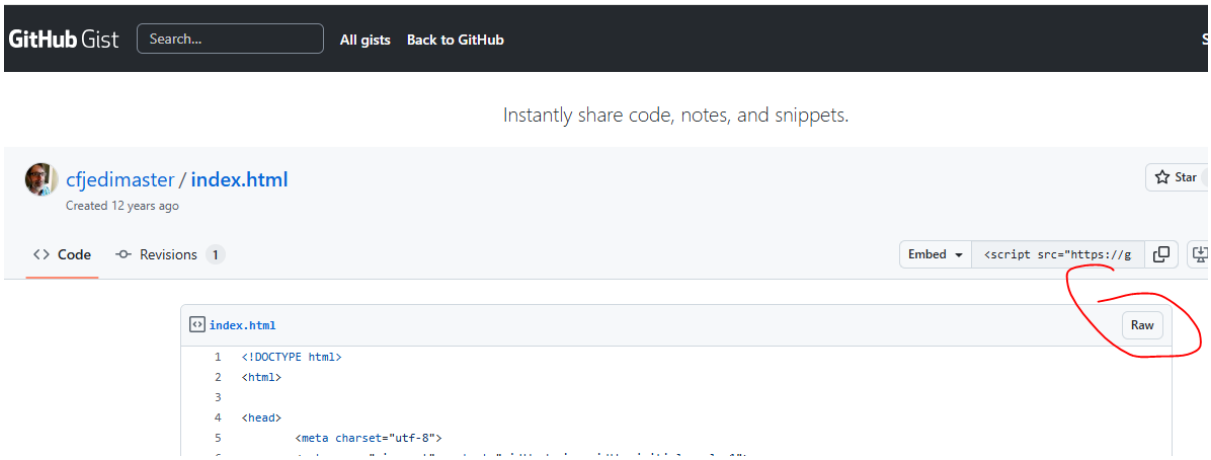
2) SEARCH - github index.html

GitHub
https://gist.github.com › cfjedimaster

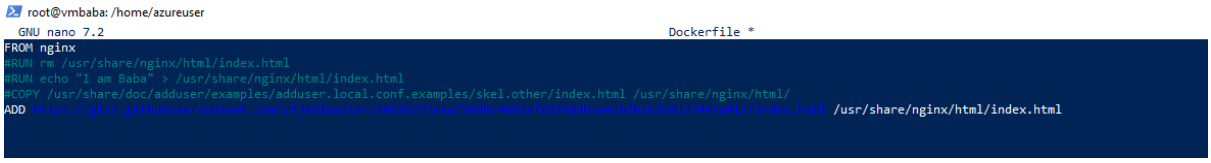
index.html

GitHub Gist: instantly share code, notes, and snippets.

Reddit · r/github

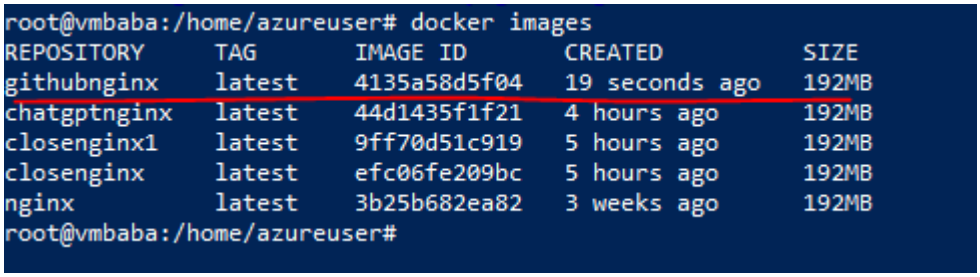


3) Open Dockerfile and add as below



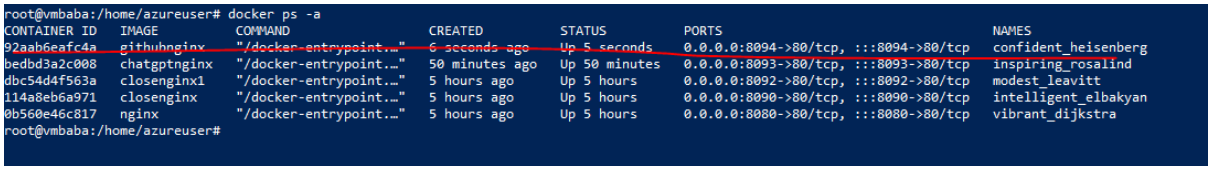
4) **docker buildx build -t githubnginx . -** – run to create/build **githubnginx** named image

docker images



5) **docker run -p 8094:80 -d githubnginx** – run to create container using image **githubnginx**

Docker ps -a



6) So not ran so we will edit our Dockerfile as below due to some permission issue

--chmod	1.2

7) Now edit Dockerfile as below

```
root@vmbaba: /home/azureuser
  GNU nano 7.2                                                    Dockerfile *
FROM nginx
#RUN rm /usr/share/nginx/html/index.html
#RUN echo "I am Baba" > /usr/share/nginx/html/index.html
#COPY /usr/share/doc/adduser/examples/adduser.local.conf.examples/skel.other/index.html /usr/share/nginx/html/
ADD --chmod=777 https://gist.githubusercontent.com/cfjedimaster/2809027/raw/50dbc4081af05768dbca4cb2bcb3b8127447a417/index.html /usr/share/nginx/html/index.html
```

8) **docker buildx build -t githubnginx1 . -** – run to create/build **githubnginx1** named image

docker images

```
root@vmbaba:/home/azureuser# docker images
REPOSITORY     TAG       IMAGE ID       CREATED          SIZE
githubnginx1   latest    75e11dcec83    10 seconds ago   192MB
githubnginx    latest    4135a58d5f04   24 minutes ago   192MB
chatgptnginx   latest    44d1435f1f21   4 hours ago      192MB
closenginx1    latest    9ff70d51c919   5 hours ago      192MB
closenginx     latest    efc06fe209bc   5 hours ago      192MB
nginx          latest    3b25b682ea82   3 weeks ago      192MB
root@vmbaba:/home/azureuser#
```

9) **docker run -p 8095:80 -d githubnginx1** – run to create container using image **githubnginx1**

docker ps -a

```
root@vmbaba:/home/azureuser# docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED             STATUS             PORTS                                       NAMES
7279040176b0   githubnginx1   "/docker-entrypoint.…"   5 seconds ago       Up 4 seconds       0.0.0.0:8095->80/tcp, :::8095->80/tcp       flamboyant_antonelli
92aab6eafc4a   githubnginx    "/docker-entrypoint.…"   24 minutes ago      Up 24 minutes      0.0.0.0:8094->80/tcp, :::8094->80/tcp       confident_heisenberg
bedbd3a2c008   chatgptnginx   "/docker-entrypoint.…"   About an hour ago   Up About an hour   0.0.0.0:8093->80/tcp, :::8093->80/tcp       inspiring_rosalind
dbc54d4f563a   closenginx1    "/docker-entrypoint.…"   5 hours ago         Up 5 hours         0.0.0.0:8092->80/tcp, :::8092->80/tcp       modest_leavitt
114a8eb6a971   closenginx     "/docker-entrypoint.…"   5 hours ago         Up 5 hours         0.0.0.0:8090->80/tcp, :::8090->80/tcp       intelligent_elbakyan
0b560e46c817   nginx          "/docker-entrypoint.…"   6 hours ago         Up 6 hours         0.0.0.0:8080->80/tcp, :::8080->80/tcp       vibrant_dijkstra
root@vmbaba:/home/azureuser#
```

10) Now open port and run in browser

11) Now try to explore other commands in docker reference