

# Docker Introduction

# 1. Download and Install

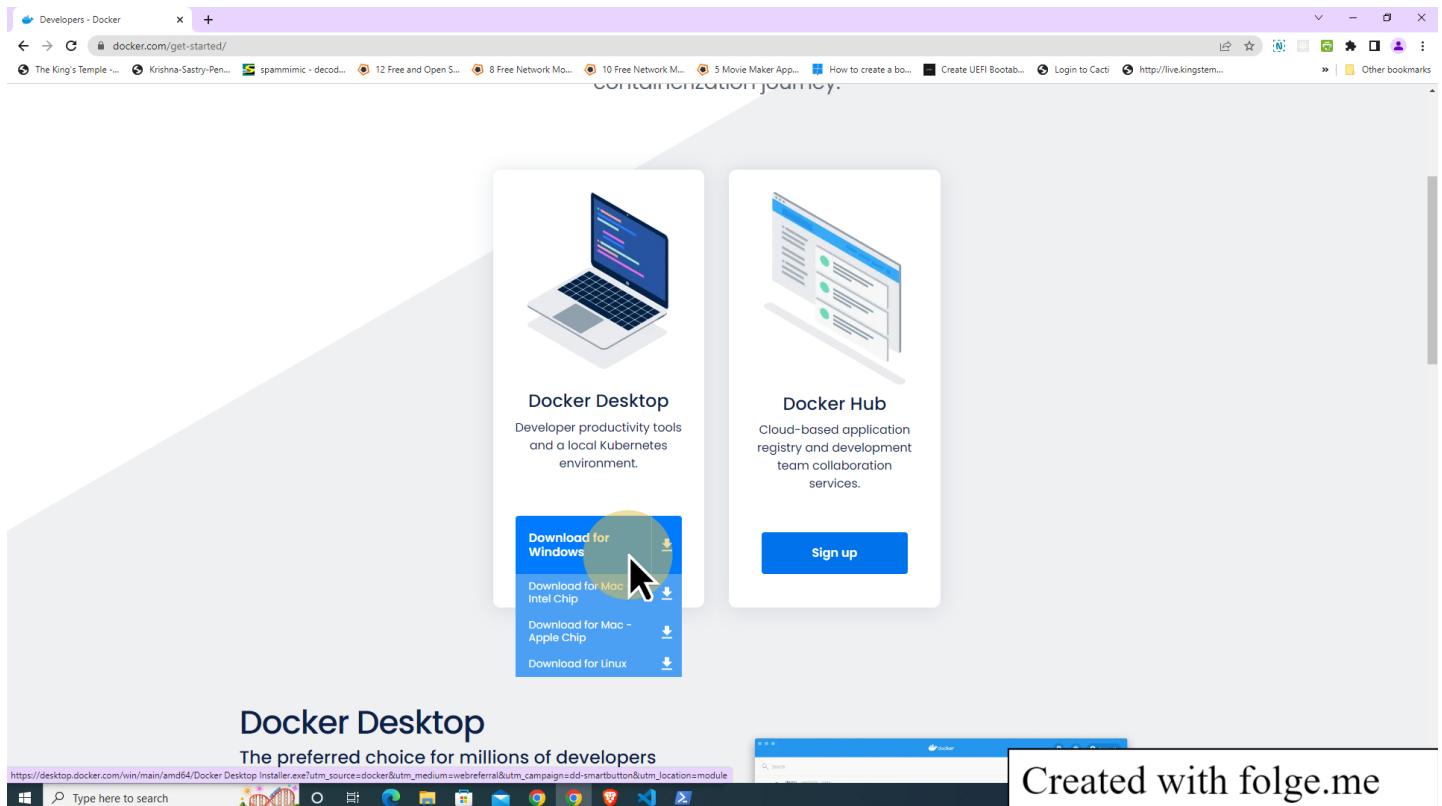
Download docker from:

<https://www.docker.com/get-started/>

Install in your system.

For Mac : <https://docs.docker.com/desktop/install/mac-install/>

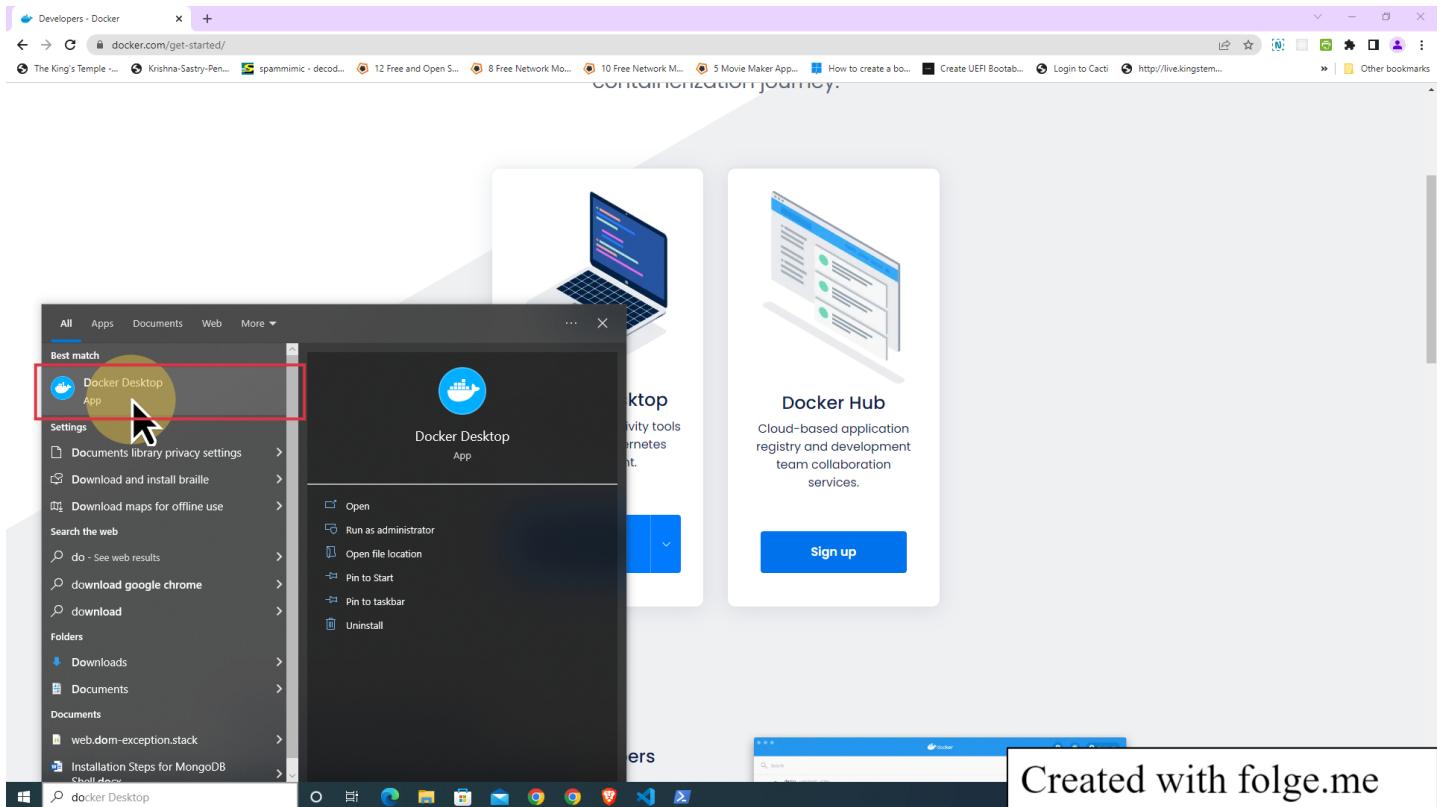
For Windows : <https://docs.docker.com/desktop/install/windows-install/>



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## 2. Open docker desktop

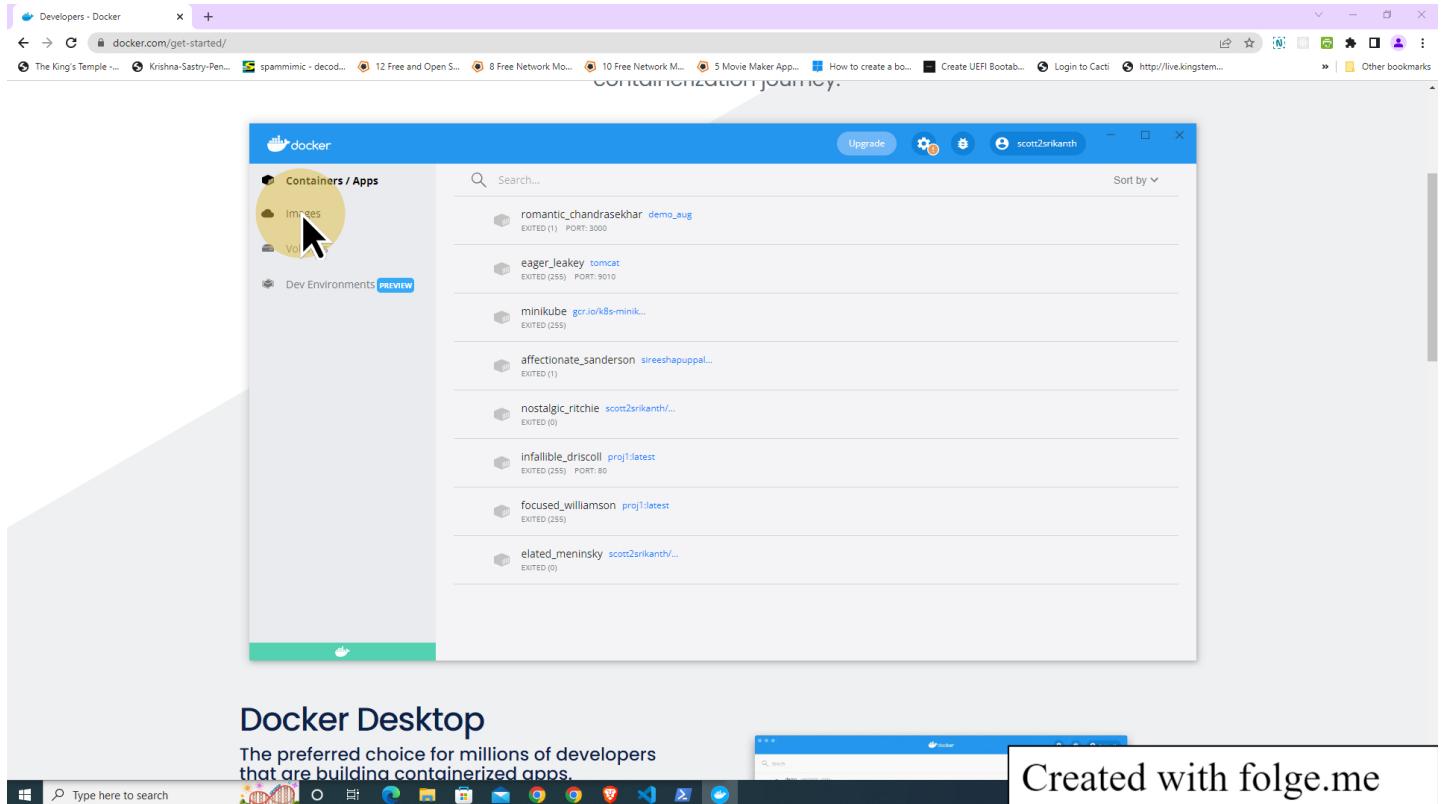
Start > type in search "Docker desktop"



## 2.1 Docker desktop

Docker runs in the background.

Note : If you are doing new install the images will be empty.

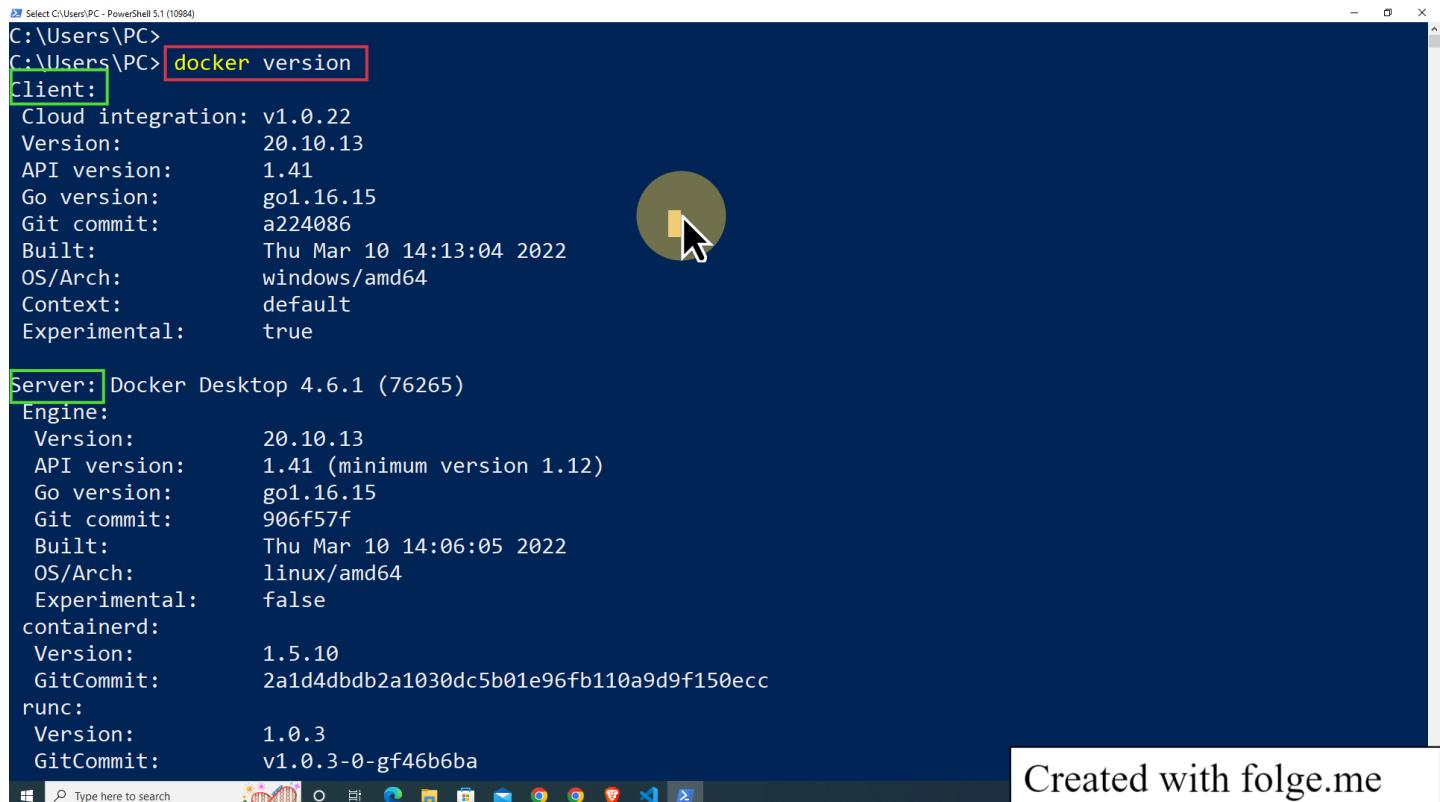


## 2.2 Check the version of docker desktop

To check docker version

In terminal type :

```
docker version
```



```
C:\Users\PC>
C:\Users\PC> docker version
Client:
  Cloud integration: v1.0.22
  Version:          20.10.13
  API version:      1.41
  Go version:       go1.16.15
  Git commit:       a224086
  Built:            Thu Mar 10 14:13:04 2022
  OS/Arch:          windows/amd64
  Context:          default
  Experimental:    true

Server: Docker Desktop 4.6.1 (76265)
Engine:
  Version:          20.10.13
  API version:      1.41 (minimum version 1.12)
  Go version:       go1.16.15
  Git commit:       906f57f
  Built:            Thu Mar 10 14:06:05 2022
  OS/Arch:          linux/amd64
  Experimental:    false
containerd:
  Version:          1.5.10
  GitCommit:        2a1d4dbdb2a1030dc5b01e96fb110a9d9f150ecc
runc:
  Version:          1.0.3
  GitCommit:        v1.0.3-0-gf46b6ba
```

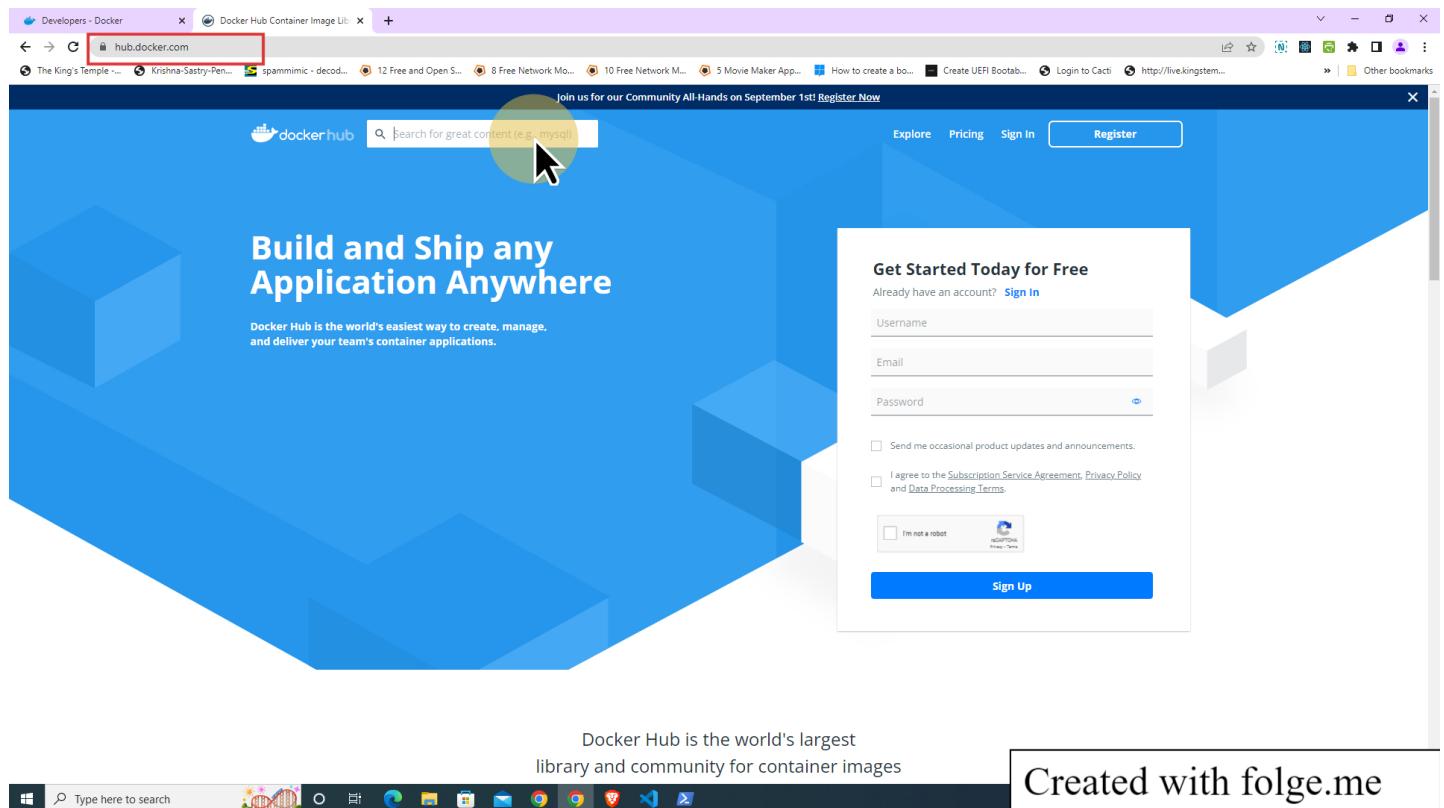
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## 3. Use case : Nginx with docker

## 3.1 Open docker hub

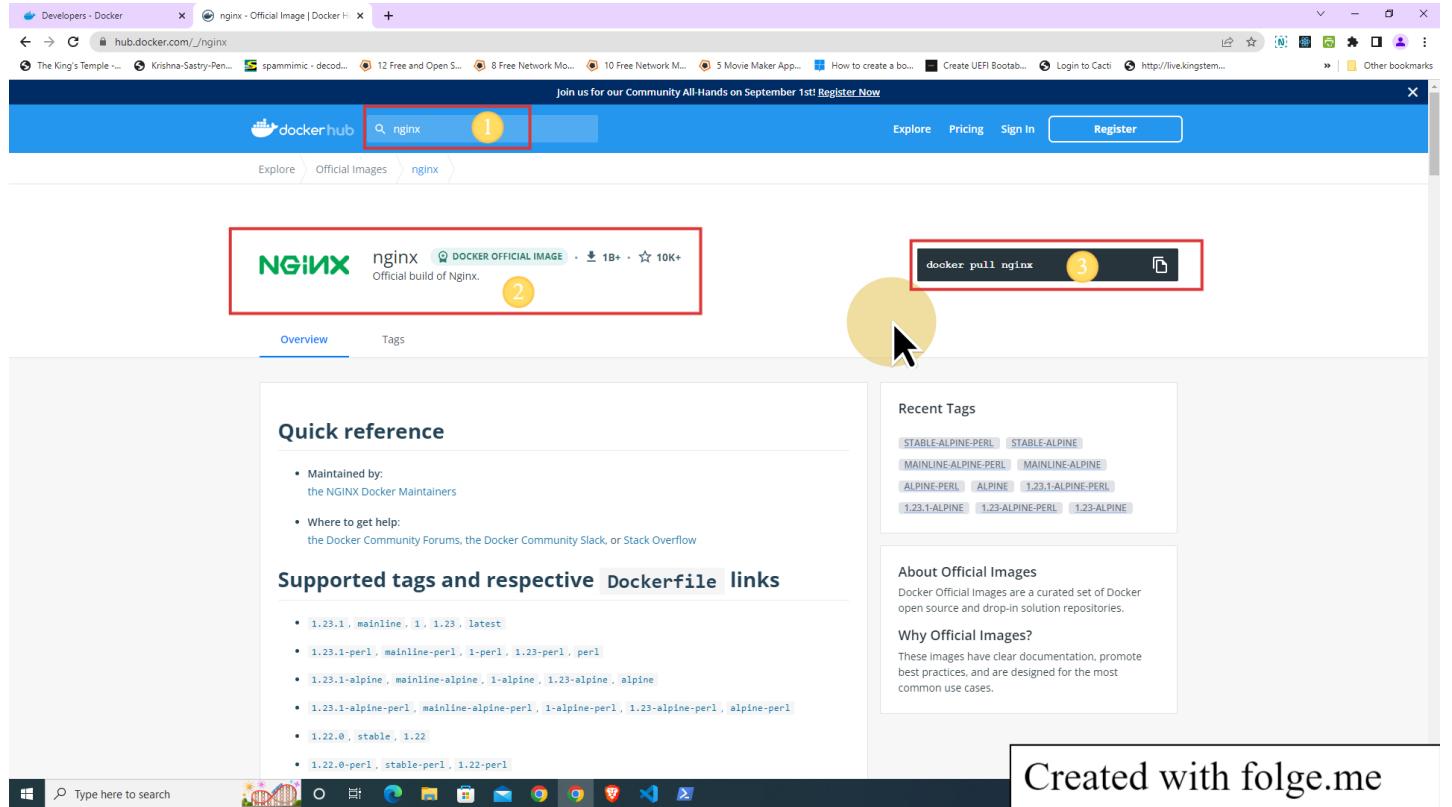
Navigate to

<https://hub.docker.com/>



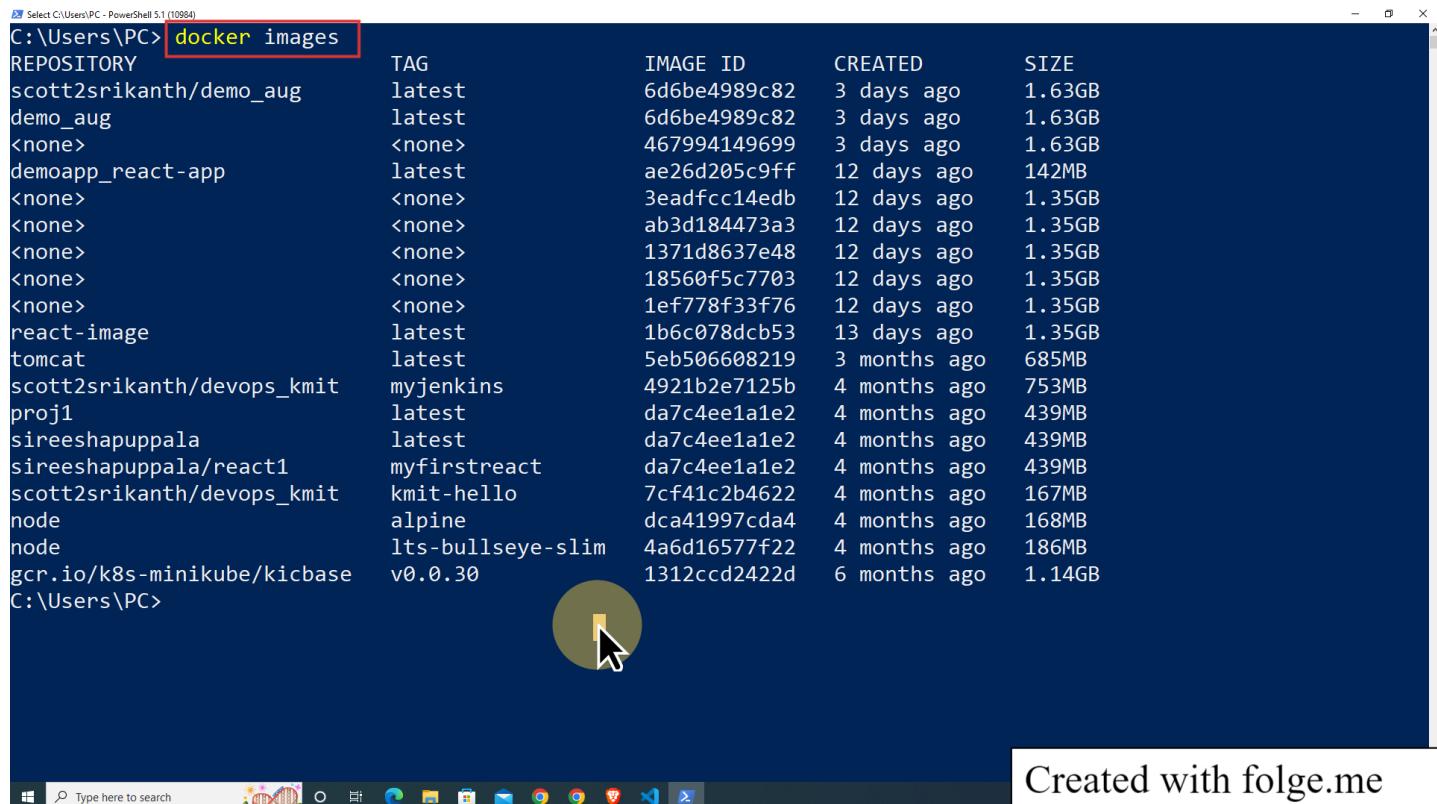
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## 3.2 Search for nginx docker image



### 3.3 Check docker images

```
>docker images
```

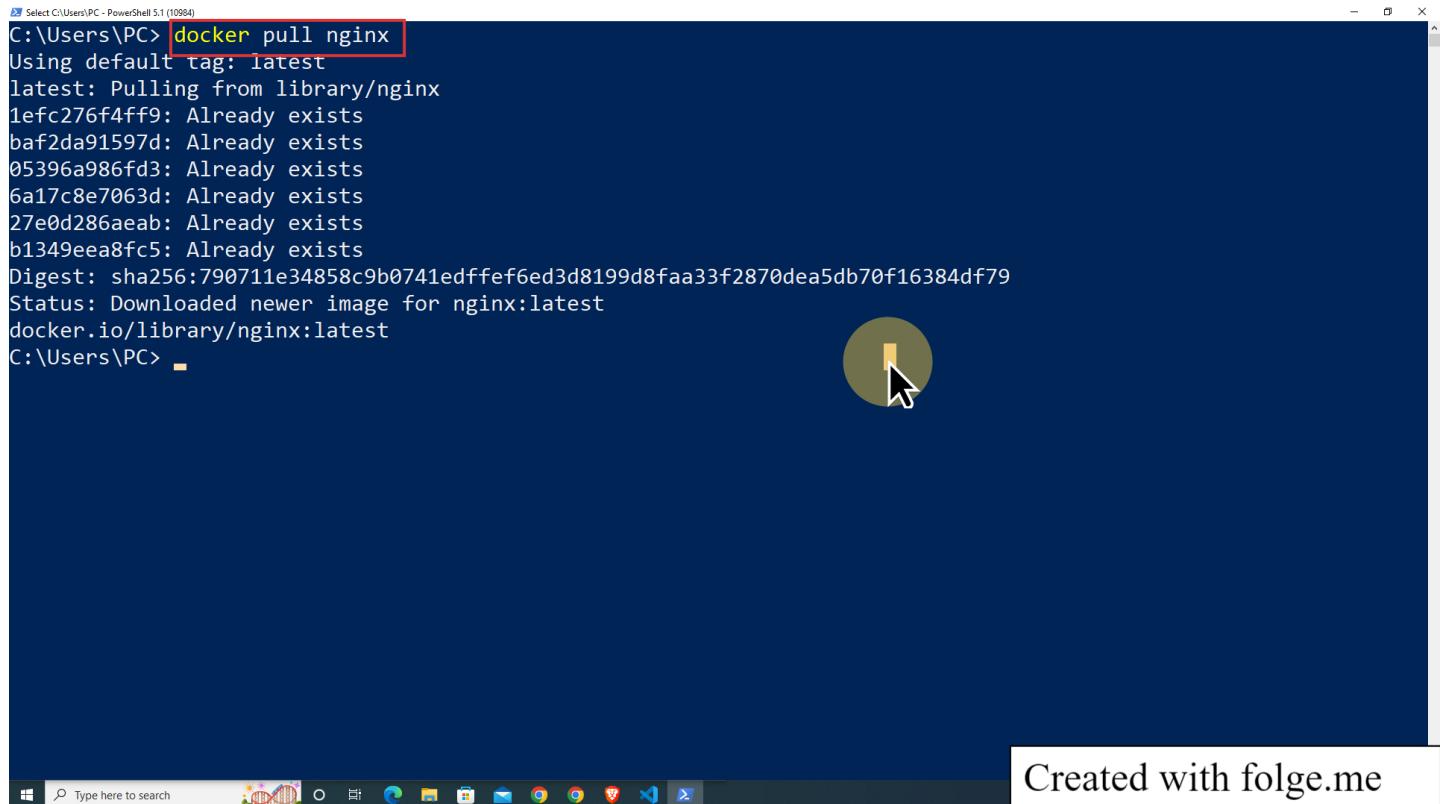


```
C:\Users\PC> docker images
REPOSITORY          TAG      IMAGE ID      CREATED        SIZE
scott2srikanth/demo_aug    latest   6d6be4989c82  3 days ago   1.63GB
demo_aug           latest   6d6be4989c82  3 days ago   1.63GB
<none>              <none>  467994149699  3 days ago   1.63GB
demoapp_react-app    latest   ae26d205c9ff  12 days ago  142MB
<none>              <none>  3eadfcc14edb  12 days ago  1.35GB
<none>              <none>  ab3d184473a3  12 days ago  1.35GB
<none>              <none>  1371d8637e48  12 days ago  1.35GB
<none>              <none>  18560f5c7703  12 days ago  1.35GB
<none>              <none>  1ef778f33f76  12 days ago  1.35GB
react-image         latest   1b6c078dc53   13 days ago  1.35GB
tomcat              latest   5eb506608219  3 months ago  685MB
scott2srikanth/devops_kmit  myjenkins  4921b2e7125b  4 months ago  753MB
proj1               latest   da7c4ee1a1e2   4 months ago  439MB
sireeshapuppala     latest   da7c4ee1a1e2   4 months ago  439MB
sireeshapuppala/react1  myfirstreact  da7c4ee1a1e2   4 months ago  439MB
scott2srikanth/devops_kmit  kmit-hello  7cf41c2b4622  4 months ago  167MB
node                alpine    dca41997cda4   4 months ago  168MB
node                lts-bullseye-slim  4a6d16577f22  4 months ago  186MB
gcr.io/k8s-minikube/kicbase v0.0.30   1312cccd2422d  6 months ago  1.14GB
C:\Users\PC>
```

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## 3.4 Pull the docker image

```
>docker pull nginx
```



```
C:\Users\PC> docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
1efc276f4ff9: Already exists
baf2da91597d: Already exists
05396a986fd3: Already exists
6a17c8e7063d: Already exists
27e0d286aeab: Already exists
b1349eea8fc5: Already exists
Digest: sha256:790711e34858c9b0741edffff6ed3d8199d8faa33f2870dea5db70f16384df79
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
C:\Users\PC>
```

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## 3.5 Nginx docker image pulled to local system

```

Select C:\Users\PC - PowerShell 5.1 (10984)
27e0d286aeab: Already exists
b1349eea8fc5: Already exists
Digest: sha256:790711e34858c9b0741edffef6ed3d8199d8faa33f2870dea5db70f16384df79
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
C:\Users\PC> docker images
REPOSITORY          TAG      IMAGE ID      CREATED       SIZE
demo_aug            latest   6d6be4989c82  3 days ago   1.63GB
scott2srikanth/demo_aug    latest   6d6be4989c82  3 days ago   1.63GB
<none>              <none>   467994149699  3 days ago   1.63GB
demoapp_react-app  latest   ae26d205c9ff  12 days ago  142MB
<none>              <none>   3eadfcc14edb  12 days ago  1.35GB
<none>              <none>   ab3d184473a3  12 days ago  1.35GB
<none>              <none>   1371d8637e48  12 days ago  1.35GB
<none>              <none>   18560f5c7703  12 days ago  1.35GB
<none>              <none>   1ef778f33f76  12 days ago  1.35GB
react-image         latest   1b6c078dc53   13 days ago  1.35GB
nginx              latest   b692a91e4e15  2 weeks ago  142MB
tomcat             latest   5eb506608219  3 months ago  685MB
scott2srikanth/devops_kmit  myjenkins  4921b2e7125b  4 months ago  753MB
proj1               latest   da7c4ee1a1e2   4 months ago  439MB
sireeshapuppala    latest   da7c4ee1a1e2   4 months ago  439MB
sireeshapuppala/react1  myfirstreact  da7c4ee1a1e2   4 months ago  439MB
scott2srikanth/devops_kmit  kmit-hello   7cf41c2b4622  4 months ago  167MB
node                alpine    dca41997cda4   4 months ago  168MB
node                lts-bullseye-slim  4a6d16577f22  4 months ago  186MB
gcr.io/k8s-minikube/kicbase v0.0.30   1312cccd2422d  6 months ago  1.14GB
C:\Users\PC>

```

Image pulled from  
docker hub

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## 3.6 Run the docker image

Command to run image

docker run

-d Detached mode

-p port number | inbound : outbound

```
>docker run -d -p 80:80 nginx:latest
```

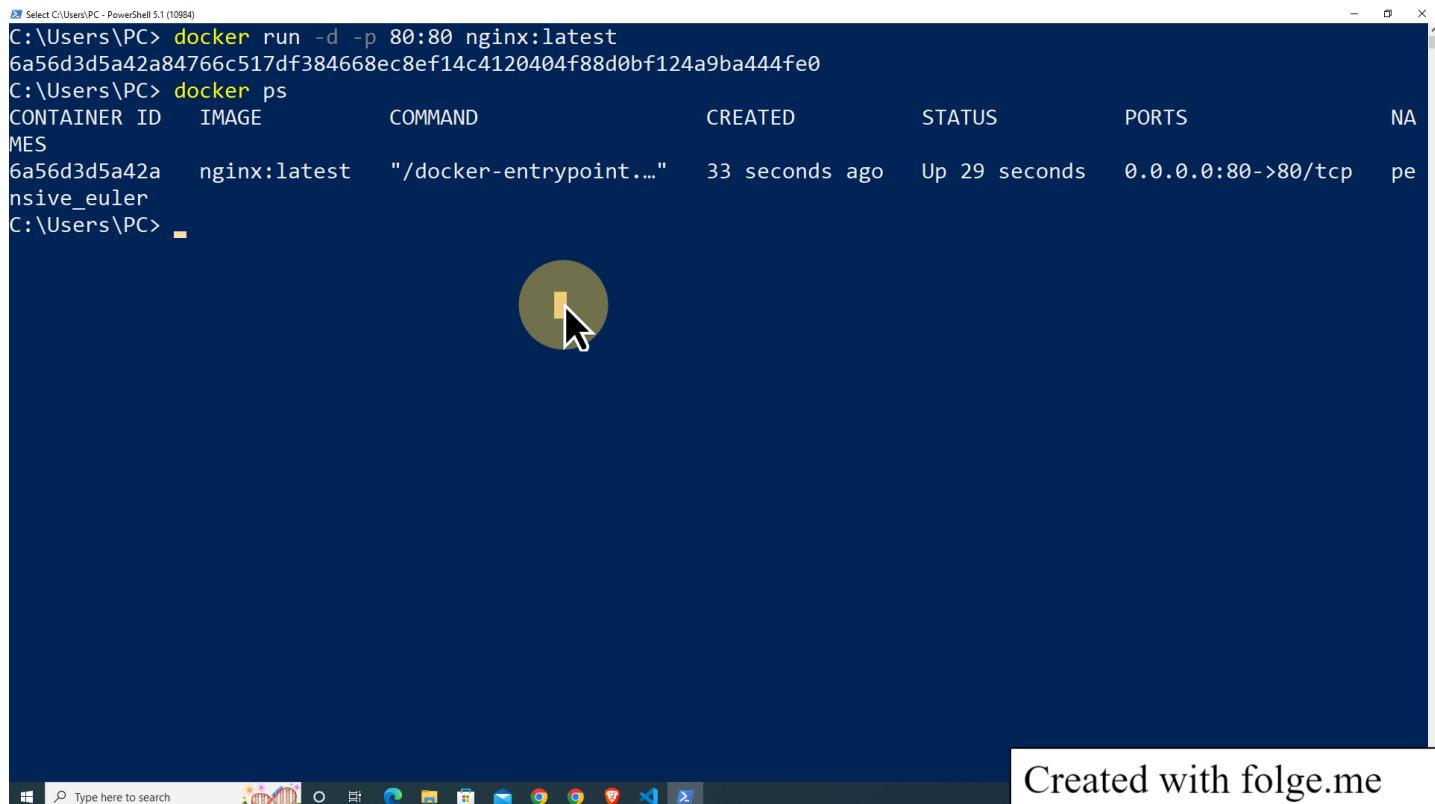
```
C:\Users\PC> docker run -d -p 80:80 nginx:latest
6a56d3d5a42a84766c517df384668ec8ef14c4120404f88d0bf124a9ba444fe0
C:\Users\PC>
```



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### 3.7 Check the docker nginx is running.

```
>docker ps
```



The screenshot shows a Windows PowerShell window titled "Select C:\Users\PC - PowerShell 5.1 (10984)". The command `docker run -d -p 80:80 nginx:latest` was run, resulting in container ID `6a56d3d5a42a84766c517df384668ec8ef14c4120404f88d0bf124a9ba444fe0`. Then, the command `docker ps` was run, displaying the following table:

| CONTAINER ID | IMAGE        | COMMAND                  | CREATED        | STATUS        | PORTS              | NA                |
|--------------|--------------|--------------------------|----------------|---------------|--------------------|-------------------|
| 6a56d3d5a42a | nginx:latest | "/docker-entrypoint...." | 33 seconds ago | Up 29 seconds | 0.0.0.0:80->80/tcp | pe<br>nsive_euler |

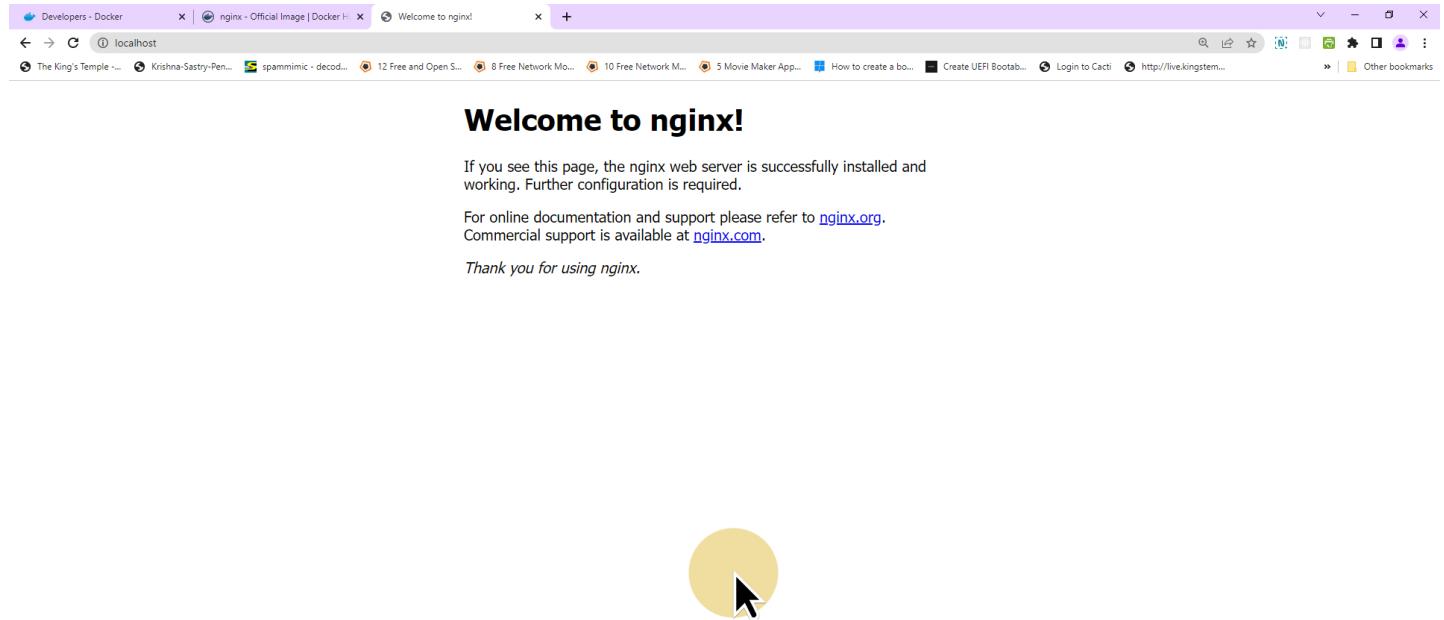
A yellow circle with a cursor icon is overlaid on the bottom left of the terminal window. The taskbar at the bottom shows various icons including File Explorer, Task View, and Start.

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## 3.8 Open the nginx server in browser

Navigate to :

http://localhost or http://localhost:80



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### 3.9 Edit the index .html page

Command :

- 1 docker exec
- 2 -it Interactive terminal
- 3 Image ID/ Image name
- 4 bash location

```
> docker exec -it 6a56d3d5a42a /bin/bash
```

C:\Users\PC> docker run -d -p 80:80 nginx:latest  
6a56d3d5a42a84766c517df384668ec8ef14c4120404f88d0bf124a9ba444fe0  
C:\Users\PC> docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
6a56d3d5a42a nginx:latest "/docker-entrypoint...." 33 seconds ago Up 29 seconds 0.0.0.0:80->80/tcp pe  
nsive\_euler  
C:\Users\PC> docker exec -it nginx:latest /bin/bash  
Error: No such container: nginx:latest  
C:\Users\PC> docker exec -it 6a56d3d5a42a /bin/bash  
root@6a56d3d5a42a:~\*

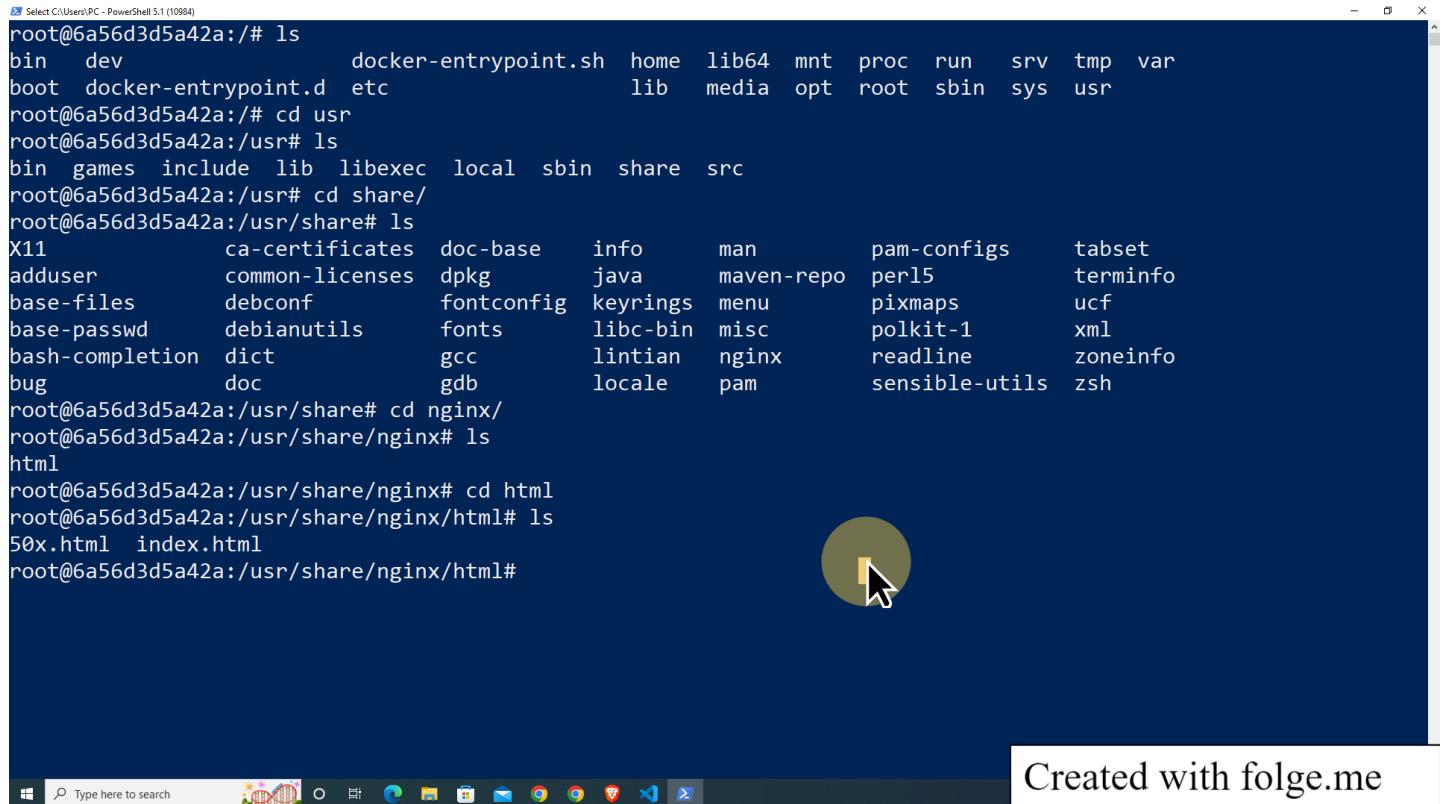
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## 3.10 Inside docker container

root access

Let navigate to the index.html location.

```
cd /usr/share/nginx/html
```

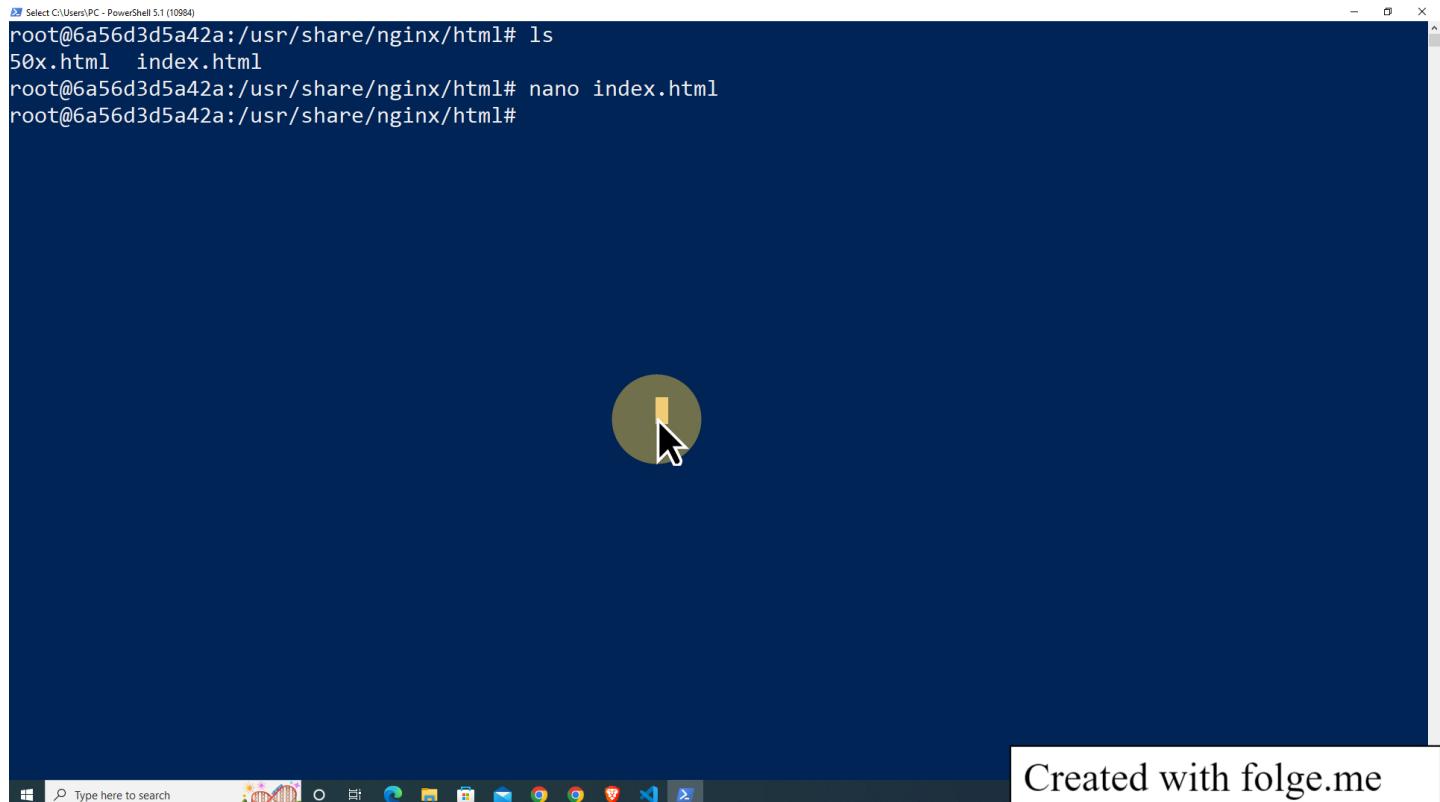


```
Select C:\Users\PC - PowerShell 5.1 (10984)
root@6a56d3d5a42a:/# ls
bin dev docker-entrypoint.sh home lib64 mnt proc run srv tmp var
boot docker-entrypoint.d etc lib media opt root sbin sys usr
root@6a56d3d5a42a:/# cd usr
root@6a56d3d5a42a:/usr# ls
bin games include lib libexec local sbin share src
root@6a56d3d5a42a:/usr# cd share/
root@6a56d3d5a42a:/usr/share# ls
X11 ca-certificates doc-base info man pam-configs tabset
adduser common-licenses dpkg java maven-repo perl5 terminfo
base-files debconf fontconfig keyrings menu pixmaps ucf
base-passwd debianutils fonts libc-bin misc polkit-1 xml
bash-completion dict gcc lintian nginx readline zoneinfo
bug doc gdb locale pam sensible-utils zsh
root@6a56d3d5a42a:/usr/share# cd nginx/
root@6a56d3d5a42a:/usr/share/nginx# ls
html
root@6a56d3d5a42a:/usr/share/nginx# cd html
root@6a56d3d5a42a:/usr/share/nginx/html# ls
50x.html index.html
root@6a56d3d5a42a:/usr/share/nginx/html#
```

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### 3.11 Edit index.html with nano or vim

```
#nano index.html
```



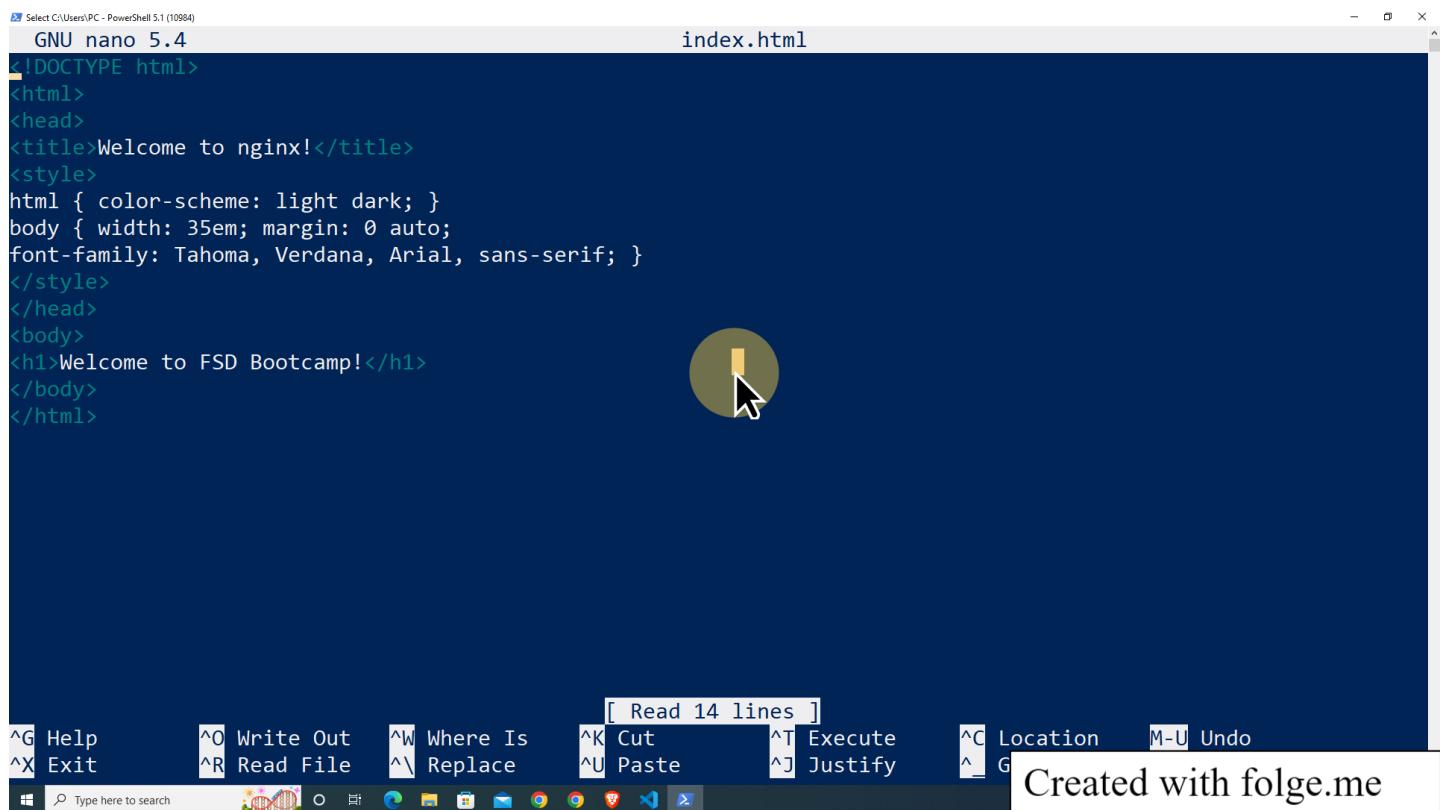
Screenshot of a Windows desktop environment showing a PowerShell window titled "Select C:\Users\PC - PowerShell 5.1 (10984)". The window displays the following terminal session:

```
root@6a56d3d5a42a:/usr/share/nginx/html# ls
50x.html  index.html
root@6a56d3d5a42a:/usr/share/nginx/html# nano index.html
root@6a56d3d5a42a:/usr/share/nginx/html#
```

The PowerShell window has a dark blue background. A circular cursor icon with a yellow arrow is positioned in the center of the screen. At the bottom of the image, the Windows taskbar is visible, showing the Start button, a search bar, and several pinned icons for applications like File Explorer, Edge, and File History.

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## 3.12 Nano editor



```
GNU nano 5.4 index.html
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to FSD Bootcamp!</h1>
</body>
</html>
```

[ Read 14 lines ]

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo  
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^\_ G

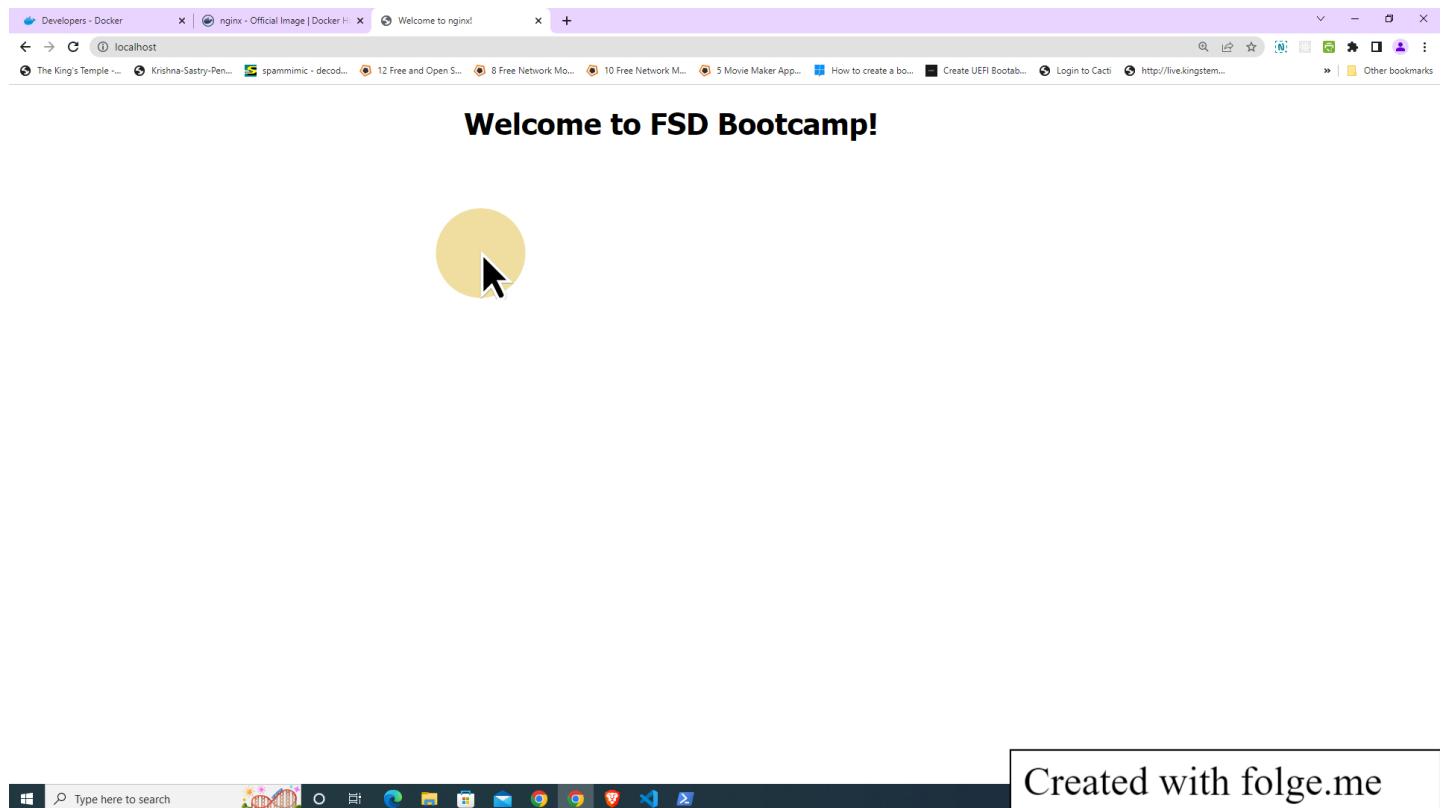
Type here to search

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## 3.13 Updated index.html

Navigate to the browser and refresh or

<http://localhost>



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## 3.14 Terminate container

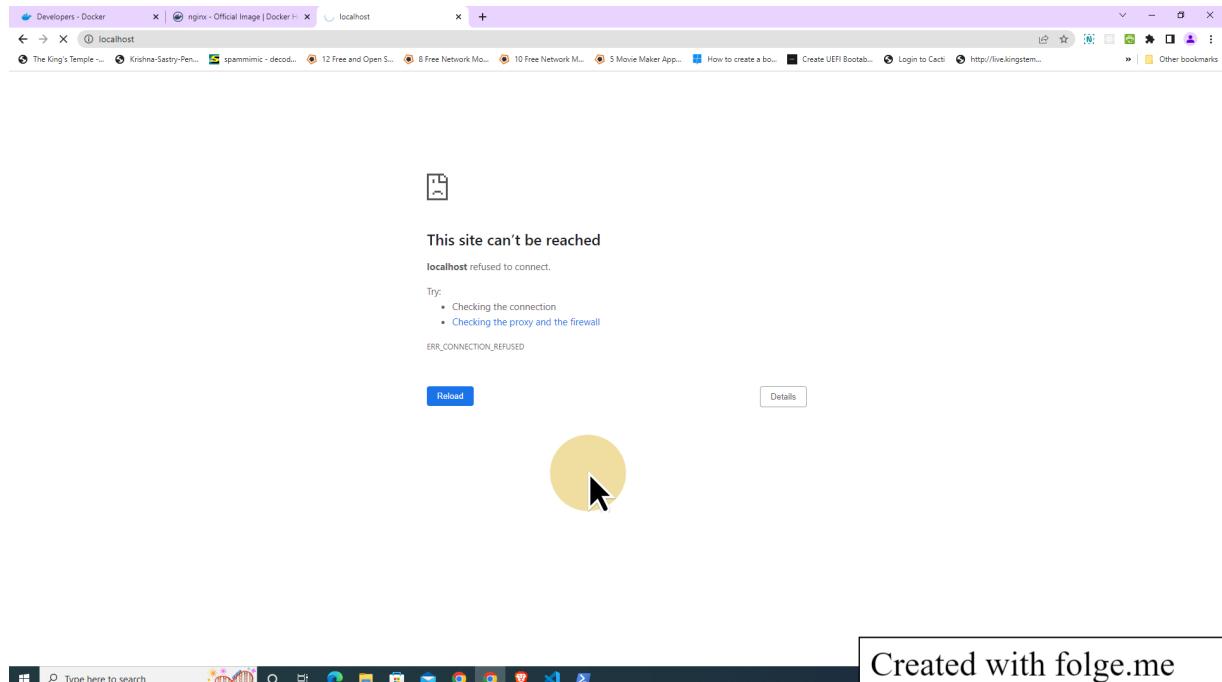
```

Select C:\Users\PC - PowerShell 5.1 (10984)
root@6a56d3d5a42a:/usr/share/nginx/html# ls
50x.html index.html
root@6a56d3d5a42a:/usr/share/nginx/html# nano index.html
root@6a56d3d5a42a:/usr/share/nginx/html# nano index.html
root@6a56d3d5a42a:/usr/share/nginx/html# exit 1
exit
C:\Users\PC> docker ps 2
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS
MES
6a56d3d5a42a        nginx:latest       "/dock...er-entrypoint..."   25 minutes ago    Up 25 minutes    0.0.0.0:80->80/tcp   pe
nsive_euler
C:\Users\PC> docker stop 6a56d3d5a42a 3
6a56d3d5a42a
C:\Users\PC> docker rm 6a56d3d5a42a 4
6a56d3d5a42a
C:\Users\PC>

```

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## 3.15 Server stopped



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