Mastering Docker: Folder-to-Container Workflow, Volume Management, Container Synchronization, and Docker Compose

1. Syncing Docker Containers and Folders: A Seamless Connection

Step 1 : mkdir <directory name>
cd <directory>

```
root@ip-172-31-43-144:~# mkdir tamizh
mkdir: cannot create directory ‘tamizh’: File exists
root@ip-172-31-43-144:~# cd tamizh/
root@ip-172-31-43-144:~/tamizh#
```

Step 2 : docker run -itd --name foldersync -p "8010:80" -v" /root/tamizh:/usr/local/apache2/htdocs" httpd

```
root@ip-172-31-43-144:~/tamizh# "/root/developer:/usr/local/apache2/htdocs" http
d^C
root@ip-172-31-43-144:~/tamizh# docker run -itd --name foldersync -p "8010:80" -
v "/root/tamizh:/usr/local/apache2/htdocs" httpd
5c4aac806dc42cdf1619f9702f4f6907058a240ef24ed9f25fd5b774806dab25
root@ip-172-31-43-144:~/tamizh#
```

Step 3 : docker exec -it <containerid> /bin/bash (login)& apt update -y

```
root@ip-172-31-43-144:~/tamizh# docker images
REPOSITORY    TAG       IMAGE ID       CREATED       SIZE
httpd         latest    7860e7628717   5 days ago    168MB
root@ip-172-31-43-144:~/tamizh# docker exec -it 786/bin/bash & apt update -y

   foldersync
oot@ip-172-31-43-144:~/tamizh# docker exec -it 5c /bin/bash
oot@5c4aac806dc4:/usr/local/apache2#
```

Step 4 : apt install vim -y

```
root@5c4aac806dc4:/usr/local/apache2/htdocs# apt-get install vim
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libgpm2 libsodium23 vim-common vim-runtime xxd
Suggested packages:
  gpm ctags vim-doc vim-scripts
The following NEW packages will be installed:
  libgpm2 libsodium23 vim vim-common vim-runtime xxd
0 upgraded, 6 newly installed, 0 to remove and 1 not upgraded.
Need to get 8976 kB of archives.
After this operation, 41.9 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Step 5 : vi index.html

```
root@5c4aac806dc4:/usr/local/apache2/htdocs# vi index.html
```

exit container

```
hey, Iam Tamizh
~
~
~
~
root@ip-172-31-43-144: ~/tamizh
root@5c4aac806dc4:/usr/local/apache2/htdocs# vi index.html
root@5c4aac806dc4:/usr/local/apache2/htdocs# exit
```

step 6 : Now check for synced file in local server

```
root@5c4aac806dc4:/usr/local/apache2/htdocs# vi index.html
root@5c4aac806dc4:/usr/local/apache2/htdocs# exit
exit
root@ip-172-31-43-144:~/tamizh# ls
index.html
root@ip-172-31-43-144:~/tamizh# cat index.html
hey, Iam Tamizh
root@ip-172-31-43-144:~/tamizh#
```

"Volume-Container Synchronization in Docker"

Step 1 : docker volume ls (list volumes) docker volume create <volume name>

```
root@ip-172-31-43-144:~/tamizh# docker volume ls
DRIVER    VOLUME NAME
root@ip-172-31-43-144:~/tamizh# docker volume create tamizh
tamizh
root@ip-172-31-43-144:~/tamizh# docker inspect tamizh
[
    {
        "CreatedAt": "2023-09-12T09:34:42Z",
        "Driver": "local",
        "Labels": null,
        "Mountpoint": "/var/lib/docker/volumes/tamizh/_data",
        "Name": "tamizh",
        "Options": null,
        "Scope": "local"
    }
]
root@ip-172-31-43-144:~/tamizh#
```

Step 2 : cd <mount path upto _data> docker run -itd --name <cont name> -p "8020:80" --mount source= <volume>,destination=/usr/local/apache2/htdocs httpd

```
root@ip-172-31-43-144:~/tamizh# docker images
REPOSITORY   TAG       IMAGE ID       CREATED      SIZE
httpd        latest    7860e7628717   5 days ago   168MB
root@ip-172-31-43-144:~/tamizh#
root@ip-172-31-43-144:~/tamizh# docker run -itd --name personal -p "8030:80" --mount source=myvolume,destination=
/usr/local/apache2/htdocs httpd
2c964f84733bd5725edb0131c3ce3edd5020aa1b9f346f785b9211e353bfff67
root@ip-172-31-43-144:~/tamizh# docker images
REPOSITORY   TAG       IMAGE ID       CREATED      SIZE
httpd        latest    7860e7628717   5 days ago   168MB
root@ip-172-31-43-144:~/tamizh#
```

Step 3 : Login to any of the containe vi index.html (change text)

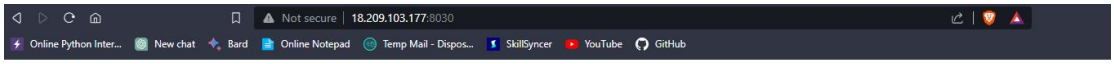
```
root@ip-172-31-43-144:~/tamizh# docker container ls
CONTAINER ID   IMAGE     COMMAND              CREATED          STATUS          PORTS                                   NAMES
86eea0c3aeaf   httpd     "httpd-foreground"   58 seconds ago   Up 57 seconds   0.0.0.0:8040->80/tcp, :::8040->80/tcp   home
2c964f84733b   httpd     "httpd-foreground"   2 minutes ago    Up 2 minutes    0.0.0.0:8030->80/tcp, :::8030->80/tcp   personal
7307202a5573   httpd     "httpd-foreground"   22 minutes ago   Up 22 minutes   0.0.0.0:8020->80/tcp, :::8020->80/tcp   vehicle
5c4aac806dc4   httpd     "httpd-foreground"   45 minutes ago   Up 45 minutes   0.0.0.0:8010->80/tcp, :::8010->80/tcp   foldersync
root@ip-172-31-43-144:~/tamizh# docker exec -it personal /bin/bash
root@2c964f84733b:/usr/local/apache2#
```

```
root@2c964f84733b:/usr/local/apache2# cd htdocs/
root@2c964f84733b:/usr/local/apache2/htdocs# ls
index.html
root@2c964f84733b:/usr/local/apache2/htdocs# vi index.html
```

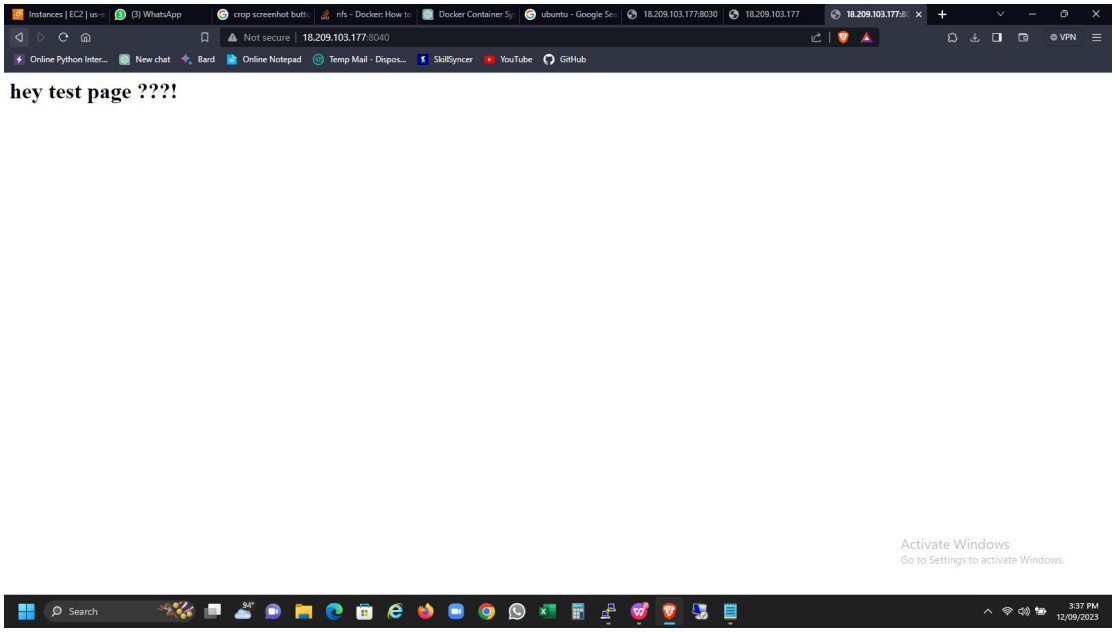
root@ip-172-31-43-144: ~/tamizh

```
<html><body><h1>hey test page ???!</h1></body></html>
~
~
~
~
```

change of html file reflected in three containers

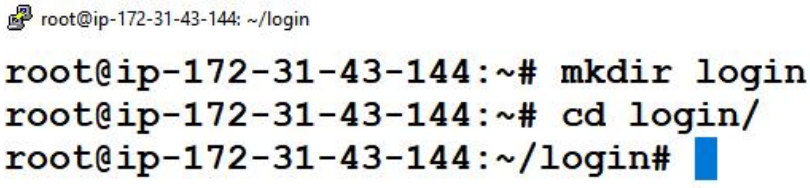


hey test page ???!



Container Login through Username & Password

Step 1 : mkdir < dir >
cd <dir> & vi Dockerfile



Docker file Script for user login

Vi Dockerfile

root@ip-172-31-43-144: ~/login

```
FROM ubuntu:16.04
MAINTAINER tamizh
RUN apt-get update
RUN apt-get install wget openssh-server -y
RUN sed -i 's/PermitRootLogin prohibit-password/PermitRootLogin yes/' /etc/ssh/sshd_config
RUN echo 'root:root123' | chpasswd
RUN mkdir /var/run/sshd
CMD ["/usr/sbin/sshd", "-D"]
EXPOSE 22

~
~
~
~
```

Step 2 : docker build -t <image name> .

root@ip-172-31-43-144: ~/login

```
root@ip-172-31-43-144:~/login# docker build -t login .
```

Step 3 :docker run -itd --name <cont name> -p “2323:22” <imagename>

root@ip-172-31-43-144: ~/container1

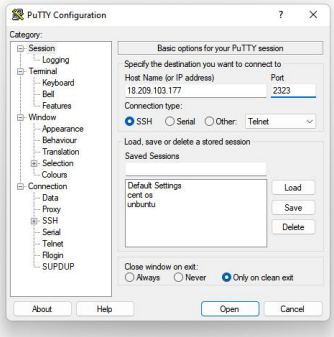
```
root@ip-172-31-43-144:~#
root@ip-172-31-43-144:~#
root@ip-172-31-43-144:~# ls
container1  get-docker.sh  login  snap  tamizh
root@ip-172-31-43-144:~# cd container1/
root@ip-172-31-43-144:~/container1# docker run -itd --name logadmin -p "2323:22" credentialsimage
39ee80c9756a78628e677eec2d291c6393a0dc5af51bf7c79d1fda4df178d2c4
root@ip-172-31-43-144:~/container1#
```

Step 4 : Login to container

hostname = < public ip >

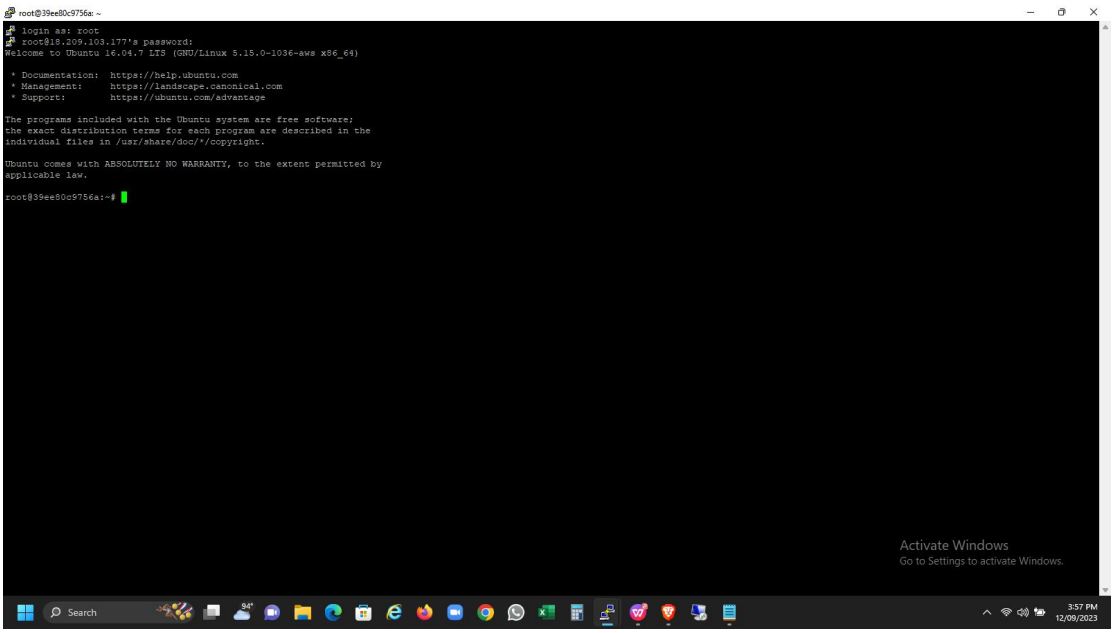
port no = <port no of container>

```
root@ip-172-31-43-144:~#
root@ip-172-31-43-144:~#
root@ip-172-31-43-144:~# ls
container1  get-docker.sh  login  snap  tamizh
root@ip-172-31-43-144:~# cd container1/
root@ip-172-31-43-144:~/container1# docker run -itd --name logadmin -p "2323:22" credentialsimage
39ee80c9756a78628e677eec2d291c6393a0dc5af51bf7c79d1fda4df178d2c4
root@ip-172-31-43-144:~/container1#
```



Step 5 : Enter username & Password

Successfully logged into our container



Docker Compose

Step 1 : cd /usr/local/bin & curl -L "https://github.com/docker/compose/releases/latest/download/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker

Step 2 : chmod +x /usr/local/bin/docker-compose
cd compose
vi docker-compose

```
root@ip-172-31-43-144:/usr/local/bin# chmod +x /usr/local/bin/docker-compose
```

```
root@ip-172-31-43-144:/usr/local/bin# docker-compose --version
docker-compose version 1.29.2, build 5becea4c
root@ip-172-31-43-144:/usr/local/bin#
root@ip-172-31-43-144:/usr/local/bin#
```

Step 3 : add the below script --> in docker-compose.yml

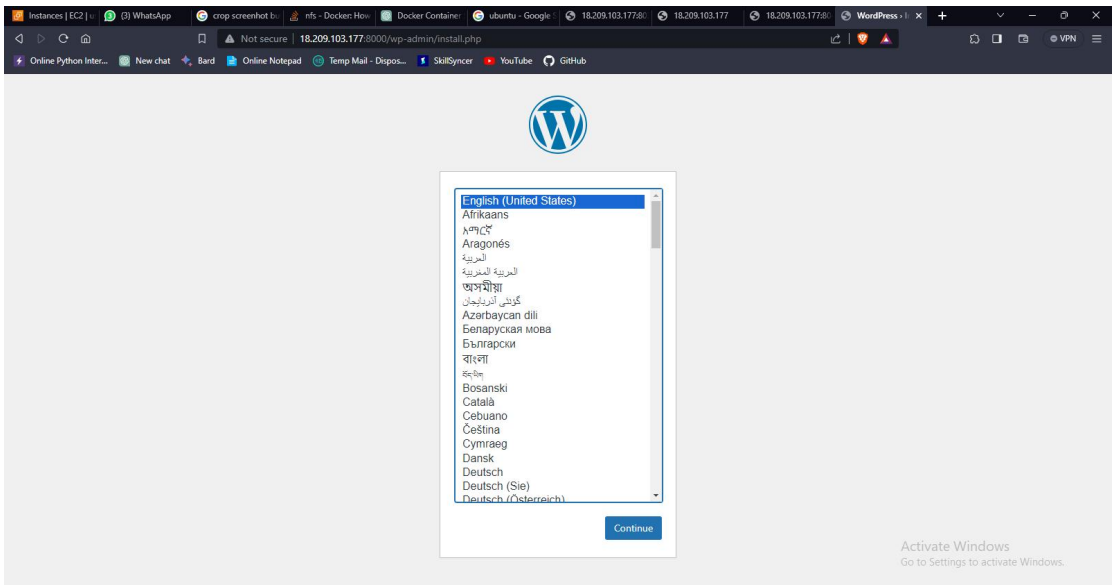
```
ubuntu@ip-172-31-43-144:~$ sudo -i
root@ip-172-31-43-144:~# cd /usr/local/bin
root@ip-172-31-43-144:/usr/local/bin# curl -L https://github.com/docker/compose/releases/download/1.29.2/docker-c
ompose-`uname -s`-`uname -m` -o /usr/local/bin/docker-compose
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100 12.1M  100 12.1M    0     0  51.2M      0 --:--:-- --:--:-- --:--:-- 51.2M
root@ip-172-31-43-144:/usr/local/bin# chmod +x /usr/local/bin/docker-compose
root@ip-172-31-43-144:/usr/local/bin# docker-compose --version
docker-compose version 1.29.2, build 5becea4c
root@ip-172-31-43-144:/usr/local/bin#
root@ip-172-31-43-144:/usr/local/bin# mkdir compose
root@ip-172-31-43-144:/usr/local/bin# cd compose/
root@ip-172-31-43-144:/usr/local/bin/compose# vi docker-compose.yml
```

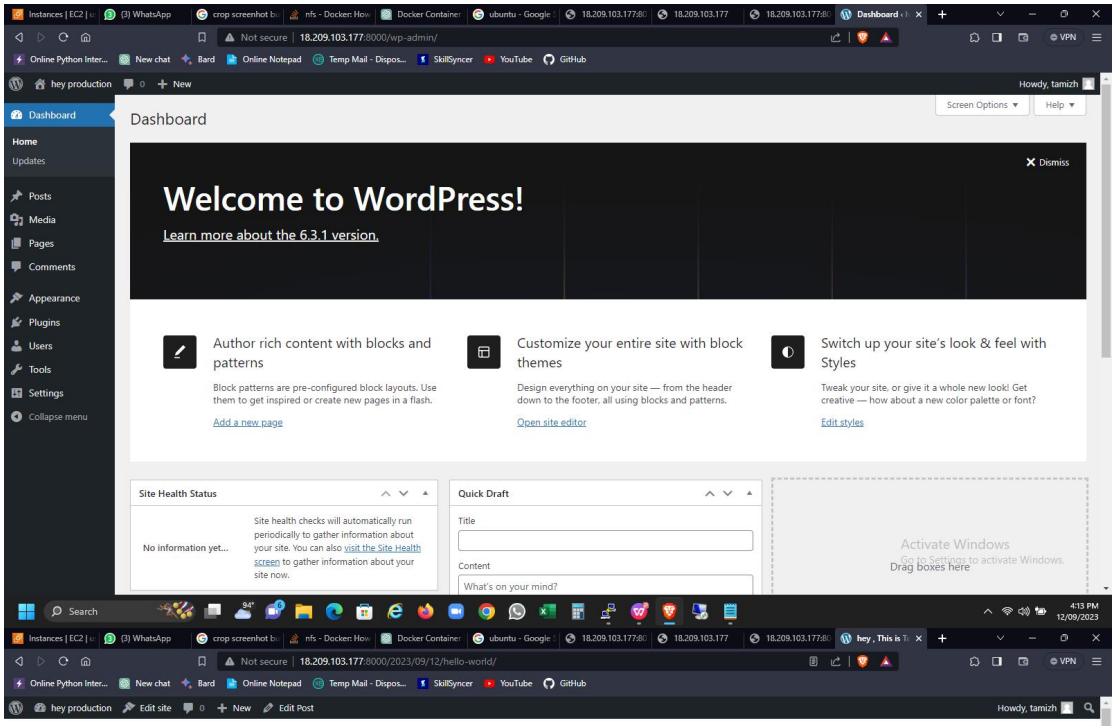
root@ip-172-31-43-144: /usr/local/bin/compose

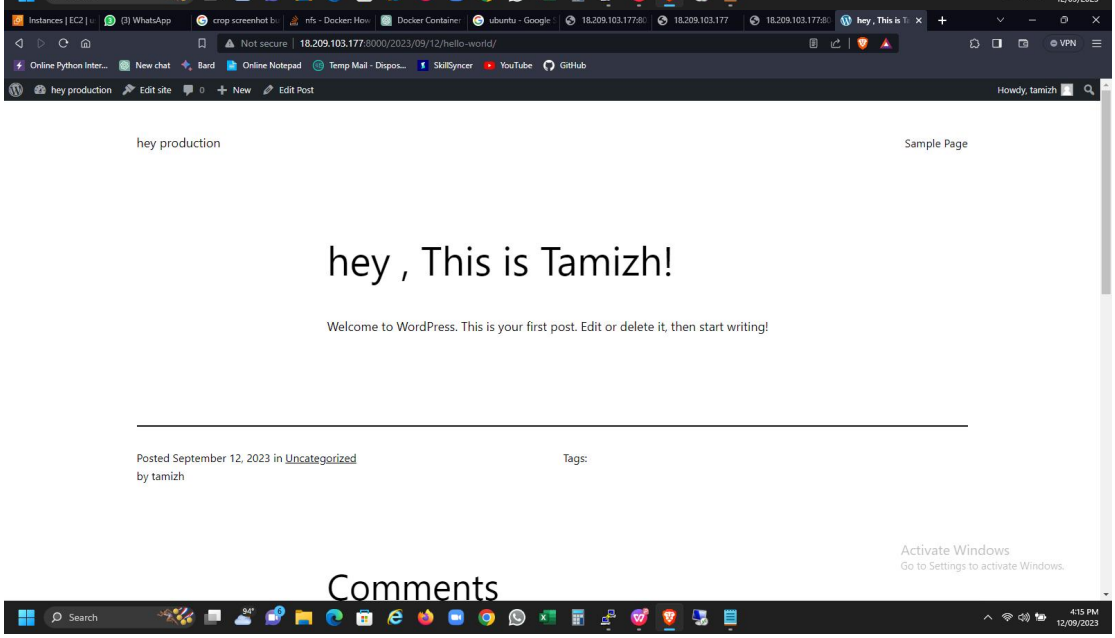
```
version: "3"
services: #global value
   database:
        image: mysql:5.7
        volumes:
        - ./data:/var/lib/mysql
        environment:
            MYSQL_ROOT_PASSWORD: somewordpress
            MYSQL_DATABASE: wordpress
            MYSQL_USER: wordpress
            MYSQL_PASSWORD: wordpress
   wordpress:
         image: wordpress
         depends_on:
         - database
         ports:
         - "8000:80"
         restart: always
         environment:
             WORDPRESS_DB_HOST: database:3306
             WORDPRESS_DB_USER: wordpress
             WORDPRESS_DB_PASSWORD: wordpress
             WORDPRESS_DB_NAME: wordpress
~
~
~
```

```
ERROR: No such service: docker-compose.yml
root@ip-172-31-43-144:/usr/local/bin/compose# docker-compose up -d
Pulling database (mysql:5.7)...
5.7: Pulling from library/mysql
70e9ff4420fb: Extracting [========================>                          ]  26.21MB/50.48MB
7ca4383b183f: Download complete
3e282e7651b1: Download complete
1ffa0e0ca707: Download complete
5eb790cf6382: Download complete
04b277ff2929: Download complete
592fe4469429: Download complete
c0d447d97bbd: Download complete
99ee594517ba: Download complete
a9ae52de4d77: Download complete
56cc05a182b5: Download complete
```

Step 4 : docker-compose up -d <Public ip>:8000 Php server




Not secure | 18.209.103.177:8000/wp-admin/
hey production
New
Howdy, tamizh
Dashboard
Home
Updates
Posts
Media
Pages
Comments
Appearance
Plugins
Users
Tools
Settings
Collapse menu
Screen Options
Help
Welcome to WordPress!
Learn more about the 6.3.1 version.
Dismiss
Author rich content with blocks and patterns
Block patterns are pre-configured block layouts. Use them to get inspired or create new pages in a flash.
Add a new page
Customize your entire site with block themes
Design everything on your site — from the header down to the footer, all using blocks and patterns.
Open site editor
Switch up your site's look & feel with Styles
Tweak your site, or give it a whole new look! Get creative — how about a new color palette or font?
Edit styles
Site Health Status
No information yet...
Site health checks will automatically run periodically to gather information about your site. You can also visit the Site Health screen to gather information about your site now.
Quick Draft
Title
Content
What's on your mind?
Drag boxes here
Activate Windows
Search
4:13 PM
12/09/2023


Not secure | 18.209.103.177:8000/2023/09/12/hello-world/
hey production
Edit site
New
Edit Post
Howdy, tamizh
hey production
Sample Page
hey , This is Tamizh!
Welcome to WordPress. This is your first post. Edit or delete it, then start writing!
Posted September 12, 2023 in Uncategorized
by tamizh
Tags:
Activate Windows
Comments
Search
4:15 PM
12/09/2023

THANK YOU