

Docker Compose

- When your application needs more than one container, managing them manually can be difficult. For example, a web application might need one container for the web server and another for the database.
- Docker Compose is a tool provided by Docker that helps you define and manage multi-container applications.
- Instead of running containers manually with long docker run commands, you describe your application's services, networks, and volumes in a single YAML file (usually docker-compose.yml).
- "YAML- Ain't Markup Language" to emphasize that YAML is more about data serialization (like JSON or XML), not just a markup language

Purpose of Docker Compose

- **Simplifies Multi-Container Apps**
- Many real-world applications need more than one container (e.g., a web app + database + cache).
- Compose lets you define them all in one file and start them together.
- **Centralized Configuration**
- Instead of remembering many docker run commands, you define everything (images, ports, environment variables, volumes, networks) in one YAML file.
- **Environment Management**
- Easily define dev, test, and production environments.
- You can scale services (e.g., multiple web app containers) with a single command.
- **Networking Made Easy**
- Compose automatically creates a private network for your containers so they can talk to each other by name (service name).
- **Reproducibility**
- Anyone with the YAML file can spin up the same setup consistently with docker-compose up.

docker-compose.yml File

- A docker-compose.yml file is a configuration file that defines:
- What containers (services) to create.
- How they should work together (like connecting WordPress to MySQL).
- Settings for each container (such as ports, environment variables, etc.)
- This file is written in YAML format, which is a simple, human-readable way to structure data.

Basic docker-compose.yml File

- Step 1: Create a Folder
 - Go to your desktop or any folder you prefer.
 - Right-click and select New Folder.
 - Name the folder my_docker_project.
- Step 2: Open a Text Editor
 - Open Visual Studio Code, Notepad, or any other text editor.
 - Create a new file.
- Step 3: Write the YAML Configuration
 - Here's a simple example of a docker-compose.yml file for WordPress and MySQL:

4. docker-compose.yml file to run WordPress with a MySQL database

version: '3.8'

services:

wordpress:

image: wordpress:latest

container_name: wordpress

restart: always

ports:

- "8082:80"

environment:

WORDPRESS_DB_HOST: db:3306

WORDPRESS_DB_USER: wp_user

WORDPRESS_DB_PASSWORD: wp_pass

WORDPRESS_DB_NAME: wordpress_db

depends_on:

- db

volumes:

- wordpress_data:/var/www/html

db:

image: mysql:5.7

container_name: mysql

restart: always

environment:

MYSQL_ROOT_PASSWORD: rootpassword **db_data stores** database files.

MYSQL_DATABASE: wordpress_db

MYSQL_USER: wp_user

MYSQL_PASSWORD: wp_pass

volumes:

- db_data:/var/lib/mysql

volumes:

wordpress_data:

db_data:

services: defines containers (WordPress,

environment: passes config (DB connecti

ports: maps local port to container port.

depends_on: ensures WordPress waits fo

volumes: keeps your data safe across res

wordpress_data stores WordPress files.

5. Saving the File

- Save the file as docker-compose.yml.
- Place it in the my_docker_project folder.

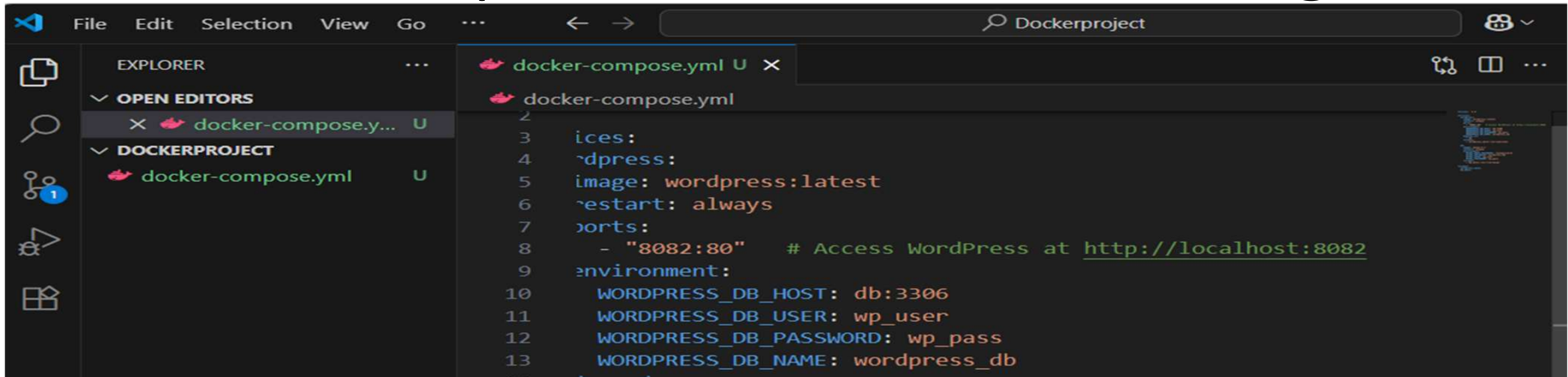
6. Running the Setup

- Step 1: Open Command Line
- Open PowerShell or Command Prompt.
- Navigate to the my_docker_project folder:
- `cd path_to_my_docker_project`
- Step 2: Start the Containers

Run:

- `docker-compose up -d`

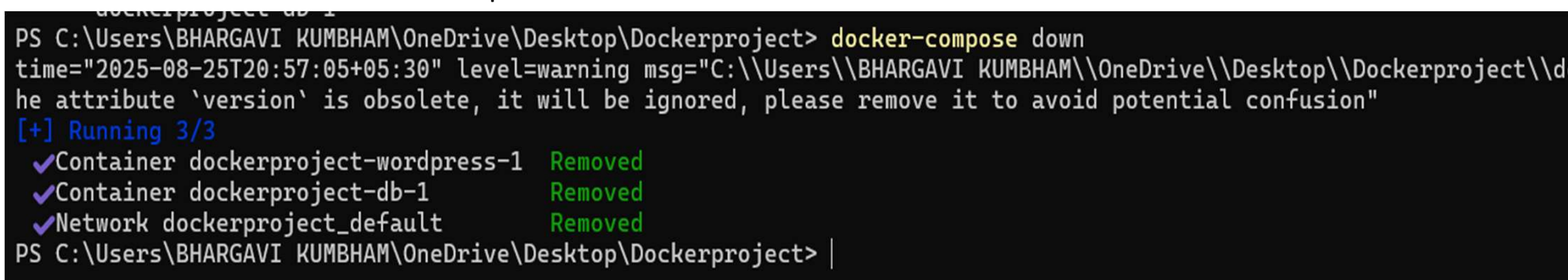
have the same port for another then change it



The screenshot shows the Visual Studio Code editor with a file named `docker-compose.yml` open. The Explorer sidebar on the left shows the project structure with `docker-compose.yml` selected. The main editor area displays the following YAML configuration:

```
2
3 ices:
4  \dpress:
5  image: wordpress:latest
6  restart: always
7  ports:
8    - "8082:80" # Access WordPress at http://localhost:8082
9  environment:
10    WORDPRESS_DB_HOST: db:3306
11    WORDPRESS_DB_USER: wp_user
12    WORDPRESS_DB_PASSWORD: wp_pass
13    WORDPRESS_DB_NAME: wordpress_db
```

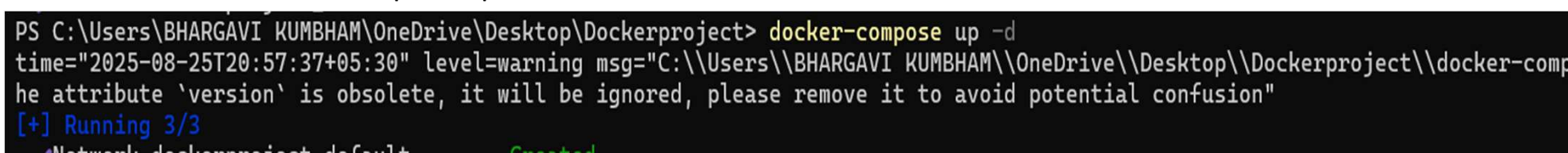
then do docker compose down



The terminal shows the execution of the `docker-compose down` command in a PowerShell prompt. The output indicates that the containers and network were successfully removed.

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> docker-compose down
time="2025-08-25T20:57:05+05:30" level=warning msg="C:\\Users\\BHARGAVI KUMBHAM\\OneDrive\\Desktop\\Dockerproject\\d
he attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Running 3/3
 ✓ Container dockerproject-wordpress-1 Removed
 ✓ Container dockerproject-db-1 Removed
 ✓ Network dockerproject_default Removed
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> |
```

Run: `docker-compose up -d`



The terminal shows the execution of the `docker-compose up -d` command. The output indicates that the containers and network were successfully created.

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> docker-compose up -d
time="2025-08-25T20:57:37+05:30" level=warning msg="C:\\Users\\BHARGAVI KUMBHAM\\OneDrive\\Desktop\\Dockerproject\\docker-comp
he attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Running 3/3
 Network dockerproject_default Created
```

7. Accessing the Application

- Open your web browser.
- Go to `docker-compose up -d`
 - Follow the WordPress setup wizard to complete the installation:
 - Site Name.
 - Admin Username and Password.
 - Email Address

`docker ps`

Verify containers of wordpress and mysql 5.7

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> docker ps
```

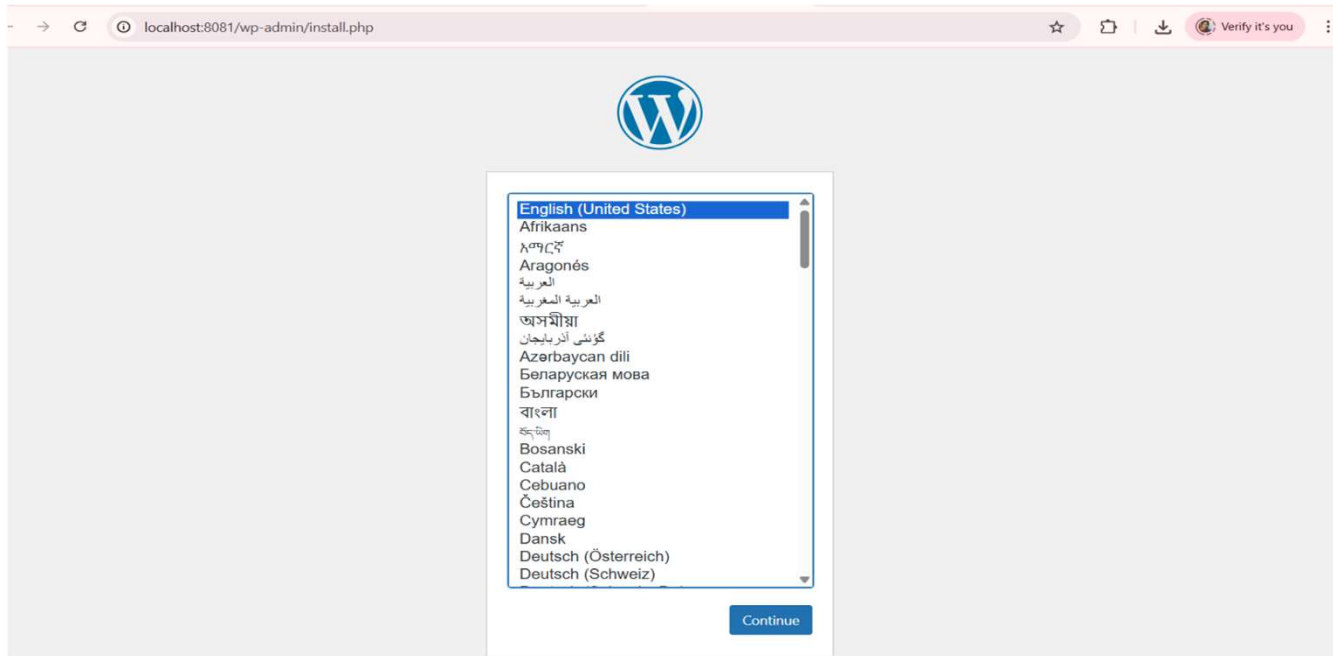
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
9447219097d3	wordpress:latest	"docker-entrypoint.s..."	About a minute ago	Up About a minute	0.0.0.0:8082->80/tcp, [::]:8082->80/tcp
d54fd9a41461	mysql:5.7	"docker-entrypoint.s..."	About a minute ago	Up About a minute	3306/tcp, 33060/tcp

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> |
```

Open browser:


<http://localhost:8082>

→ You should see the WordPress setup page



sitetitle,user name,password,your E-mail and
click on install wordpress

← → ↻ ⓘ localhost:8081/wp-admin/install.php?step=1 🔍 ☆ 📄 ⬇️ 🔒 Verify it's you ⋮



Welcome

Welcome to the famous five-minute WordPress installation process! Just fill in the information below and you'll be on your way to using the most extendable and powerful personal publishing platform in the world.

Information needed

Please provide the following information. Do not worry, you can always change these settings later.

Site Title

Username
Usernames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.

Password [Show](#)
Medium

Important: You will need this password to log in. Please store it in a secure location.

Your Email
Double-check your email address before continuing.

Search engine visibility ☐ Discourage search engines from indexing this site
It is up to search engines to honor this request.

[Install WordPress](#)

click on login



Success!

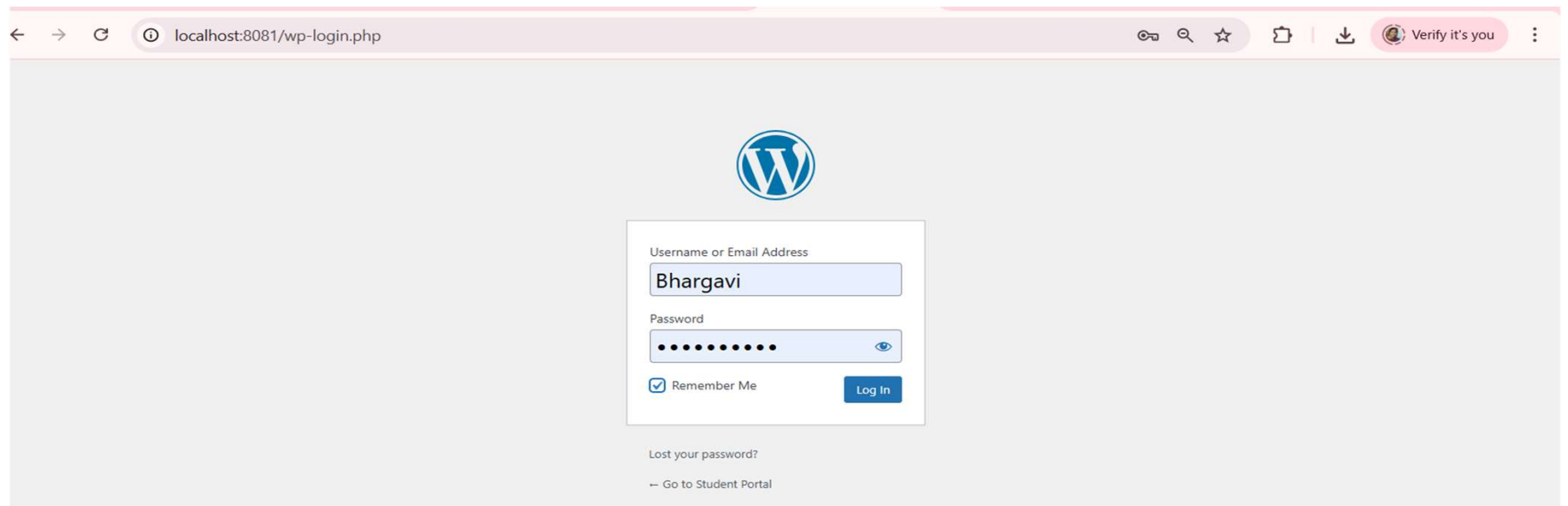
WordPress has been installed. Thank you, and enjoy!

Username Bhargavi

Password *Your chosen password.*

[Log In](#)

Login page

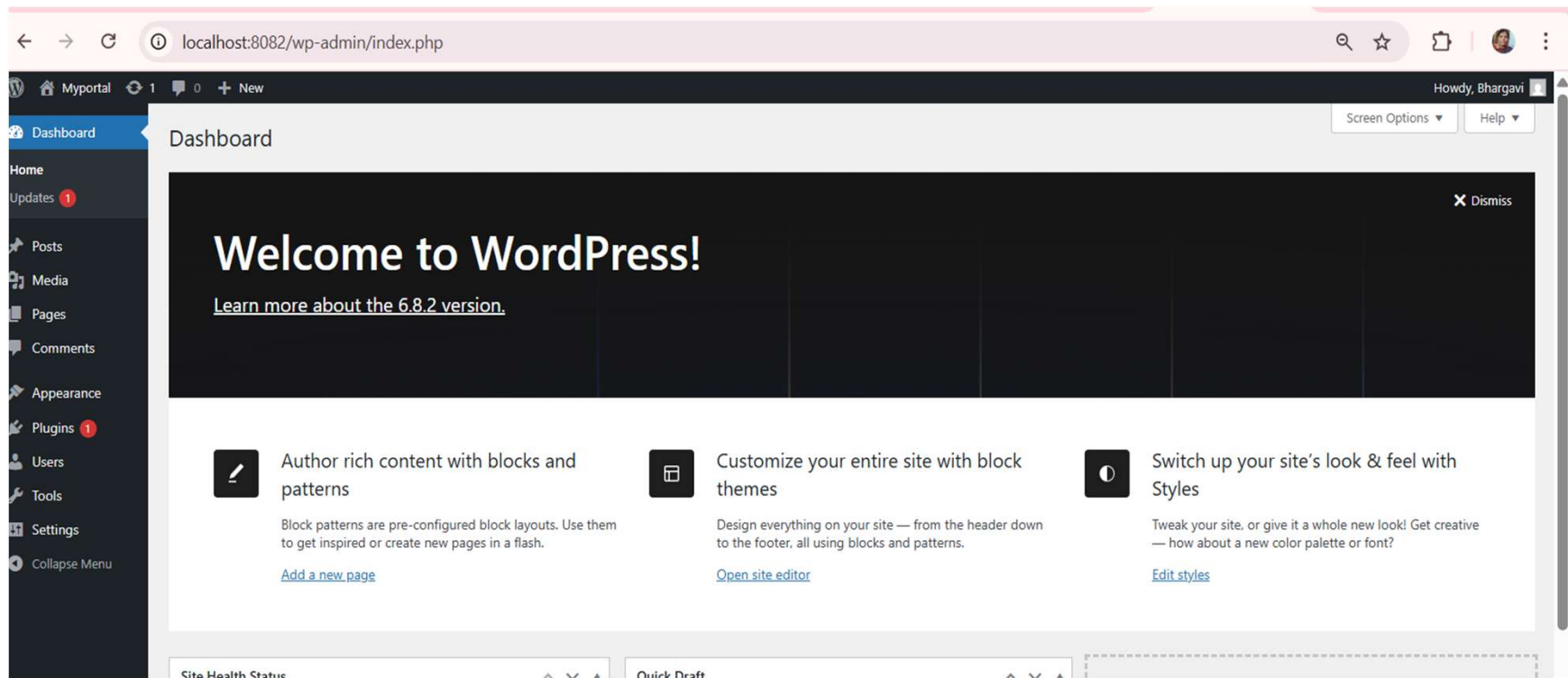


A screenshot of a web browser displaying the WordPress login page. The browser's address bar shows the URL `localhost:8081/wp-login.php`. The page features the WordPress logo at the top center. Below the logo is a login form with the following elements:

- A text input field labeled "Username or Email Address" containing the text "Bhargavi".
- A password input field labeled "Password" with masked characters (dots) and a toggle icon (an eye) on the right.
- A checkbox labeled "Remember Me" which is checked.
- A blue "Log In" button.

Below the login form, there is a link for "Lost your password?" and a link labeled "Go to Student Portal". The browser's toolbar includes navigation buttons (back, forward, refresh), a search icon, a star icon, a download icon, and a "Verify it's you" security prompt.

opens the wordpress



What is --scale in Docker Compose?

- The --scale option in Docker Compose is used to tell Docker how many copies (replicas) of a service you want to run at the same time.
- --scale = Run multiple instances of the same service, all managed by Docker Compose.

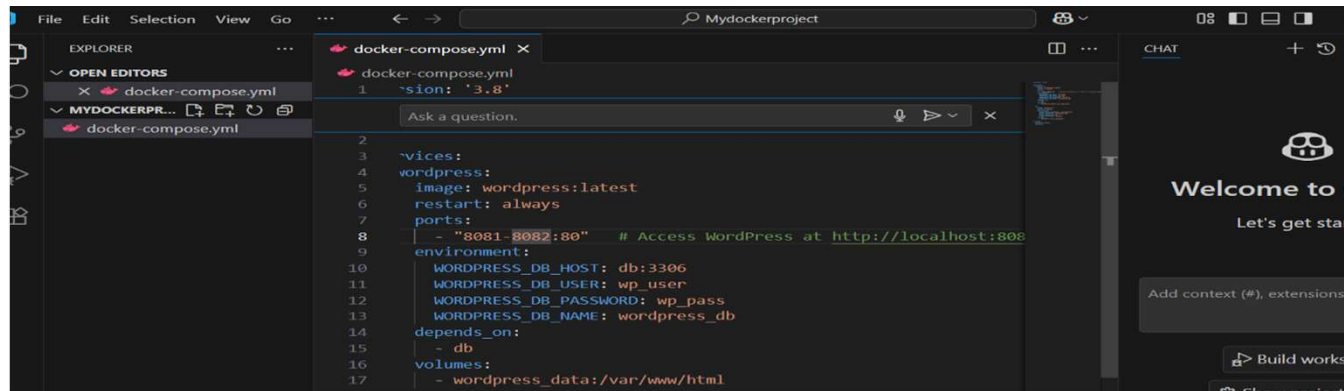
To scale the container

`docker-compose up --scale docker-compose up --scale web=2 -d`

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> docker-compose up --scale web=2 -d
time="2025-08-25T21:15:45+05:30" level=warning msg="C:\\Users\\BHARGAVI KUMBHAM\\OneDrive\\Desktop\\Dockerproject\\docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion"
no such service: web: not found
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> |
```

getting an error, That happened because in your docker-compose.yml, the service name is wordpress, not web. **There is no service called web → hence the error.**

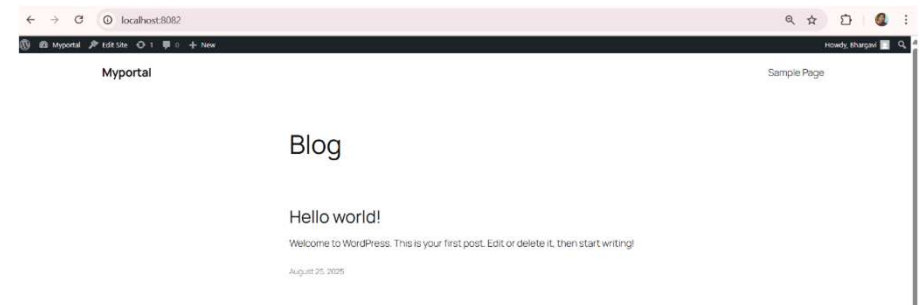
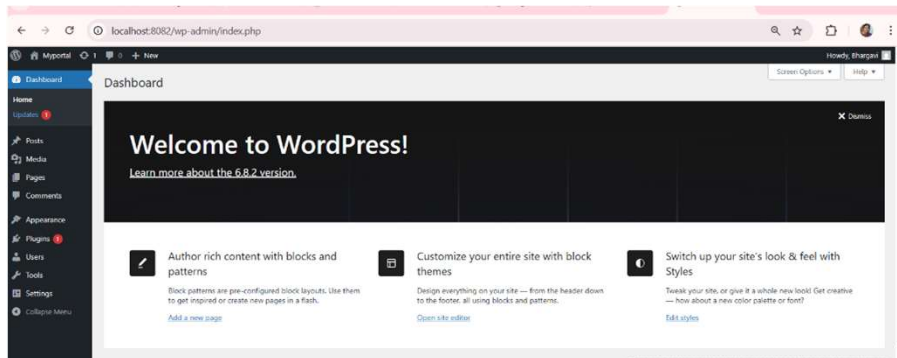
Compose starts 1 container of wordpress.change the ports -8082-8083
But if you run:
docker-compose up --scale wordpress=2 -d



```
located
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Mydockerproject> docker-compose up --scale wordpress=2 -d
time="2025-08-26T10:42:50+05:30" level=warning msg="C:\\Users\\BHARGAVI KUMBHAM\\OneDrive\\Desktop\\Mydockerproject\\docker-compose
the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Running 3/3
 ✓ Container mydockerproject-db-1      Running
 ✓ Container mydockerproject-wordpress-1 Started
 ✓ Container mydockerproject-wordpress-2 Started
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Mydockerproject> |
```

Open in your browser:
<http://localhost:8082>

<http://localhost:8083>



Try this

A homepage (Home page you created).

A menu with navigation.

A theme for design.

docker-compose logs -f

Apache started.

MySQL should say MySQL init process done. Ready for start up.

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> docker-compose logs -f
time="2025-08-25T21:32:01+05:30" level=warning msg="C:\\Users\\BHARGAVI KUMBHAM\\OneDrive\\Desktop\\Dockerproject\\docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion"
wordpress-2 | AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.20.0.4. Set the 'ServerName' directive globally to suppress this message
wordpress-2 | AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.20.0.4. Set the 'ServerName' directive globally to suppress this message
wordpress-2 | [Mon Aug 25 15:54:21.205698 2025] [mpm_prefork:notice] [pid 1:tid 1] AH00163: Apache/2.4.65 (Debian) PHP/8.2.29 configured -- resuming normal operations
wordpress-2 | [Mon Aug 25 15:54:21.205824 2025] [core:notice] [pid 1:tid 1] AH00094: Command line: 'apache2 -D FOREGROUND'
wordpress-2 | 172.20.0.1 - - [25/Aug/2025:15:58:58 +0000] "GET / HTTP/1.1" 301 416 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/139.0.0.0 Safari/537.36"
wordpress-2 | 172.20.0.1 - - [25/Aug/2025:15:59:50 +0000] "-" 408 0 "-" "-"
db-1 | 2025-08-25 15:38:09+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 5.7.44-1.el7 started.
db-1 | 2025-08-25 15:38:10+00:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
db-1 | 2025-08-25 15:38:10+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 5.7.44-1.el7 started.
db-1 | '/var/lib/mysql/mysql.sock' -> '/var/run/mysqld/mysqld.sock'
db-1 | 2025-08-25T15:38:10.538389Z 0 [Warning] TIMESTAMP with implicit DEFAULT value is deprecated. Please use --explicit_defaults_for_timestamp server option (see documentation for more details).
db-1 | 2025-08-25T15:38:10.540624Z 0 [Note] mysqld (mysqld 5.7.44) starting as process 1 ...
wordpress-1 | AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.20.0.3. Set the 'ServerName' directive globally to suppress this message
```

docker ps
will come to know the containers names

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAME
3034770eb5fb	wordpress:latest	"docker-entrypoint.s..."	11 minutes ago	Up 11 minutes	0.0.0.0:8082->80/tcp, [::]:8082->80/tcp	dockerproject-wordpress-1
43819d997652	wordpress:latest	"docker-entrypoint.s..."	11 minutes ago	Up 11 minutes	0.0.0.0:8083->80/tcp, [::]:8083->80/tcp	dockerproject-wordpress-2
d54fd9a41461	mysql:5.7	"docker-entrypoint.s..."	27 minutes ago	Up 27 minutes	3306/tcp, 33060/tcp	dockerproject-db-1

MySQL container name → dockerproject-db-1

WordPress container names →

dockerproject-wordpress-1

dockerproject-wordpress-2

connect into MySQL container

`docker exec -it dockerproject-db-1 mysql -u wp_user -p`

asks the password take from docker-compose.yml file i.e wp_pass

```
C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> docker exec -it dockerproject-db-1 mysql -u wp_user -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 28
Server version: 5.7.44 MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> |
```

See which databases exist

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> docker exec -it dockerproject-db-1 mysql -u wp_user -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 28
Server version: 5.7.44 MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| wordpress_db       |
+-----+
2 rows in set (0.00 sec)

mysql> |
```

Switch to your WordPress database:

```
mysql> USE wordpress_db;  
Reading table information for completion of table and column names  
You can turn off this feature to get a quicker startup with -A  
  
Database changed  
mysql> |
```


See all tables inside

```
mysql> SHOW TABLES;
+-----+
| Tables_in_wordpress_db |
+-----+
| wp_commentmeta          |
| wp_comments             |
| wp_links                |
| wp_options              |
| wp_postmeta             |
| wp_posts                |
| wp_term_relationships   |
| wp_term_taxonomy        |
| wp_termmeta             |
| wp_terms                |
| wp_usermeta             |
| wp_users                |
+-----+
12 rows in set (0.00 sec)

mysql> |
```

SELECT user_login, user_email FROM wp_users;

```
mysql> SELECT user_login, user_email FROM wp_users;
+-----+-----+
| user_login | user_email |
+-----+-----+
| Bhargavi   | bhargaviprojects@gmail.com |
+-----+-----+
1 row in set (0.01 sec)

mysql> |
```

Exit MySQL

```
mysql> exit;  
Bye  
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Dockerproject> |
```

Remove containers

- docker compose down

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Mydockerproject> docker compose down
time="2025-08-26T10:58:14+05:30" level=warning msg="C:\\Users\\BHARGAVI KUMBHAM\\OneDrive\\Desktop\\Mydockerproject\\docker-compose.yml
the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Running 3/3
✔ Container mydockerproject-wordpress-1 Removed 1.4s
✔ Container mydockerproject-db-1 Removed 2.3s
✔ Network mydockerproject_default Removed 0.5s
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Mydockerproject> |
```

To stop the containers without removing them:
docker-compose stop

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Myprojects> docker-compose stop
time="2025-08-22T15:28:20+05:30" level=warning msg="C:\\Users\\BHARGAVI KUMBHAM\\OneDrive\\Desktop\\Myprojects\\docker-compose.yml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Stopping 2/2
 ✓ Container wordpress   Stopped      1.4s
 ✓ Container mysql       Stopped      2.2s
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Myprojects>
```

Start Again

To restart the containers:

docker-compose start

```
✓ Container mysql      Stopped      2.2s
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Myprojects> docker-compose start
time="2025-08-22T15:29:48+05:30" level=warning msg="C:\\Users\\BHARGAVI KUMBHAM\\OneDrive\\Desktop\\Myprojects\\docker-compos
e.yml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Running 2/2
 ✓ Container mysql      Started      0.2s
 ✓ Container wordpress  Started      0.3s
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Myprojects> 
```

Remove Containers

To stop and remove everything:

docker-compose down

```
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Myprojects> docker-compose down
time="2025-08-22T15:30:37+05:30" level=warning msg="C:\\Users\\BHARGAVI KUMBHAM\\OneDrive\\Desktop\\Myprojects\\docker-compos
e.yml: the attribute `version` is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Running 3/3
 ✓ Container wordpress      Removed      1.5s
 ✓ Container mysql          Removed      2.0s
 ✓ Network myprojects_default Removed      0.4s
PS C:\Users\BHARGAVI KUMBHAM\OneDrive\Desktop\Myprojects>
```