PHP MySQL Docker App

This project demonstrates how to build a **PHP web application** with a **MySQL database** and **phpMyAdmin**, all containerized using **Docker** and orchestrated with **Docker Compose**.

Technologies Used

- **PHP 8.2** – Backend scripting language for the web app.
- **Apache** – Web server to serve the PHP application.
- **MySQL 8.0** – Relational database to store application data.
- **phpMyAdmin** – Web-based interface to manage MySQL databases.
- **Docker** – Containerization platform to package the application.
- **Docker Compose** – Tool for defining and running multi-container Docker applications.

Project Structure

```
my-php-app/
├── Dockerfile            # Dockerfile for the PHP app
├── index.php            # PHP script for the web app
├── docker-compose.yml  # Docker Compose configuration
└── README.md            # Project documentation
```

How It Works

1. The **PHP web app** runs inside an Apache container.
2. The **MySQL database** is deployed in a separate container with persistent storage.
3. The user list is fetched and displayed dynamically on the page.
4. **Docker Compose** orchestrates all three services.

Steps to Build and Run the App

1. Create the Dockerfile

The `Dockerfile` defines the environment for the PHP web app:

```
# Use an official PHP + Apache image as base
FROM php:8.2-apache

# Set the working directory in the container
WORKDIR /var/www/html

# Copy the application files to the container
COPY . .
```

```
# Install MySQL extensions for PHP
RUN docker-php-ext-install mysqli pdo pdo_mysql

# Expose port 80 to allow access
EXPOSE 80
```

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2. Create the Docker Compose File (`docker-compose.yml`)

The `docker-compose.yml` file defines three services:

- `web`: Runs the PHP app on Apache and serves the website on port 8080.
- `db`: Runs MySQL, storing user data persistently using the mysql_data volume.
- `phpmyadmin`: Web-based MySQL management tool.

```
version: '3.8'

services:
  web:
    build: .
    container_name: php_app
    ports:
      - "8080:80"
    volumes:
      - .:/var/www/html
    depends_on:
      - db

  db:
    image: mysql:8.0
    container_name: mysql_db
    environment:
      MYSQL_ROOT_PASSWORD: rootpassword
      MYSQL_DATABASE: mydatabase
      MYSQL_USER: myuser
      MYSQL_PASSWORD: mypassword
    volumes:
      - mysql_data:/var/lib/mysql
    restart: always

  phpmyadmin:
    image: phpmyadmin/phpmyadmin
    container_name: phpmyadmin
    environment:
      PMA_HOST: db
      PMA_USER: myuser
      PMA_PASSWORD: mypassword
    ports:
      - "8081:80"
    depends_on:
      - db

volumes:
  mysql_data:
```

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4. Running the Application

Start the Containers

Run the following command in the project directory:

```
docker-compose up --build -d
```

Access the Application

- **PHP Web App**: Open `http://localhost:8080` in your browser.
- **phpMyAdmin**: Open `http://localhost:8081` and log in with:
  - **Username**: `myuser`
  - **Password**: `mypassword`

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5. Understanding `docker-compose.yml`

Key Components:

- `version: '3.8'` – Specifies the Docker Compose file version.
- `services:` – Defines multiple containers (PHP, MySQL, phpMyAdmin).
- `depends_on:` – Ensures that MySQL starts before the PHP app and phpMyAdmin.
- `volumes:` – Uses a named volume (`mysql_data`) to persist MySQL data.
- `restart: always` – Ensures that MySQL restarts automatically if it stops.

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6. Persistent Storage

The MySQL database uses a **Docker volume** (`mysql_data`) to **store data permanently**. Even if the MySQL container is stopped or removed, the data remains available.

```
volumes:
  mysql_data:
```

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7. Application Overview

1️⃣ User Interface (index.php)

✅ **A form allows users to enter their name and email,Submitted data is stored in MySQL**
✅ **A table dynamically displays all users from the database.**

2️⃣ Database Management (phpMyAdmin)

✅ **Access phpMyAdmin at http://localhost:8081.**
✅ **Manage the mydatabase and view the users table.**

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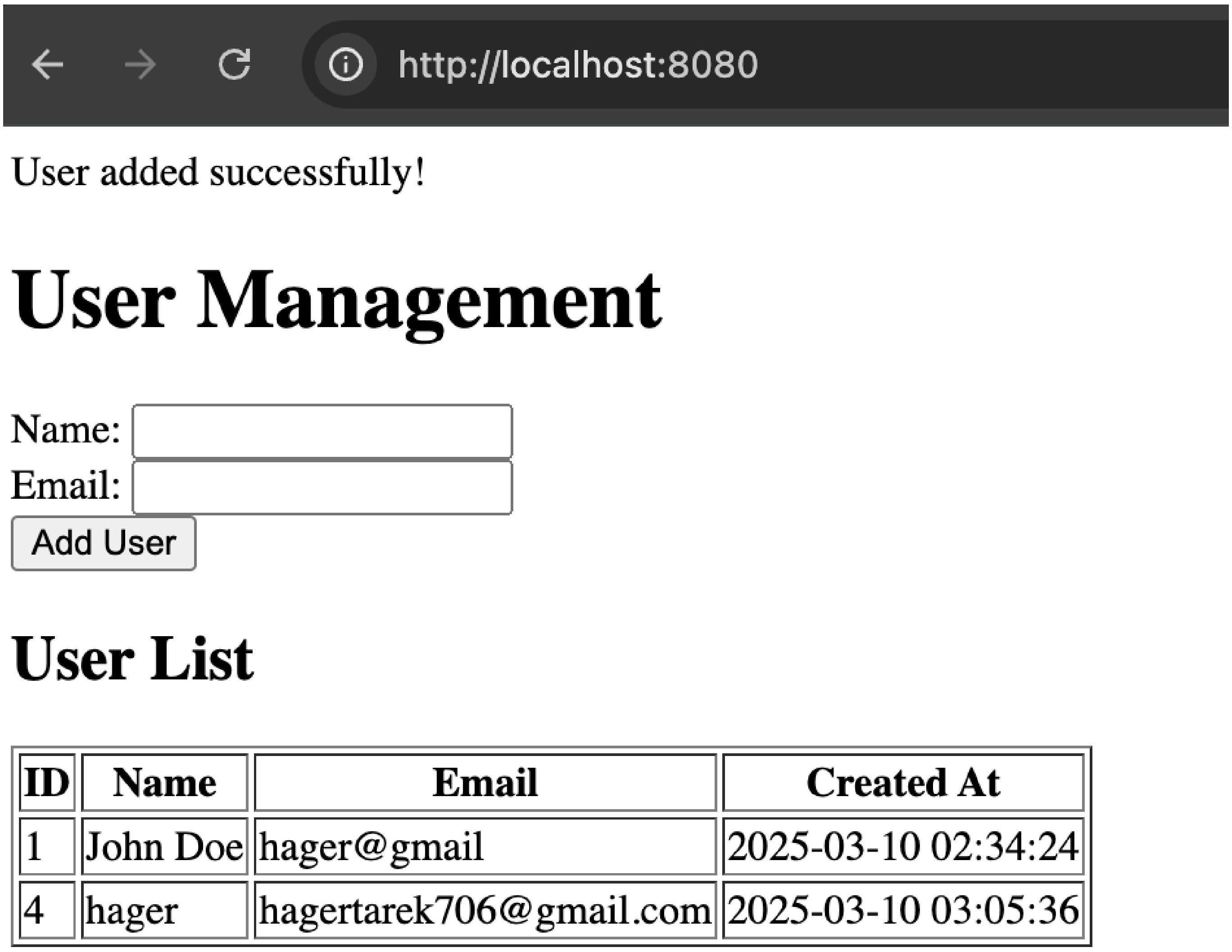
8. Next Steps & Enhancements

Want to extend the project? Here are some ideas:

- **Create a CRUD app** – Add a form to insert, update, delete, and view records.
- **Use a `.env` file** – Store database credentials securely.
- **Deploy on a cloud platform** – Run the app on **AWS, Azure, or Google Cloud**.

Screenshots

✅ **User Management System in Action**



User added successfully!

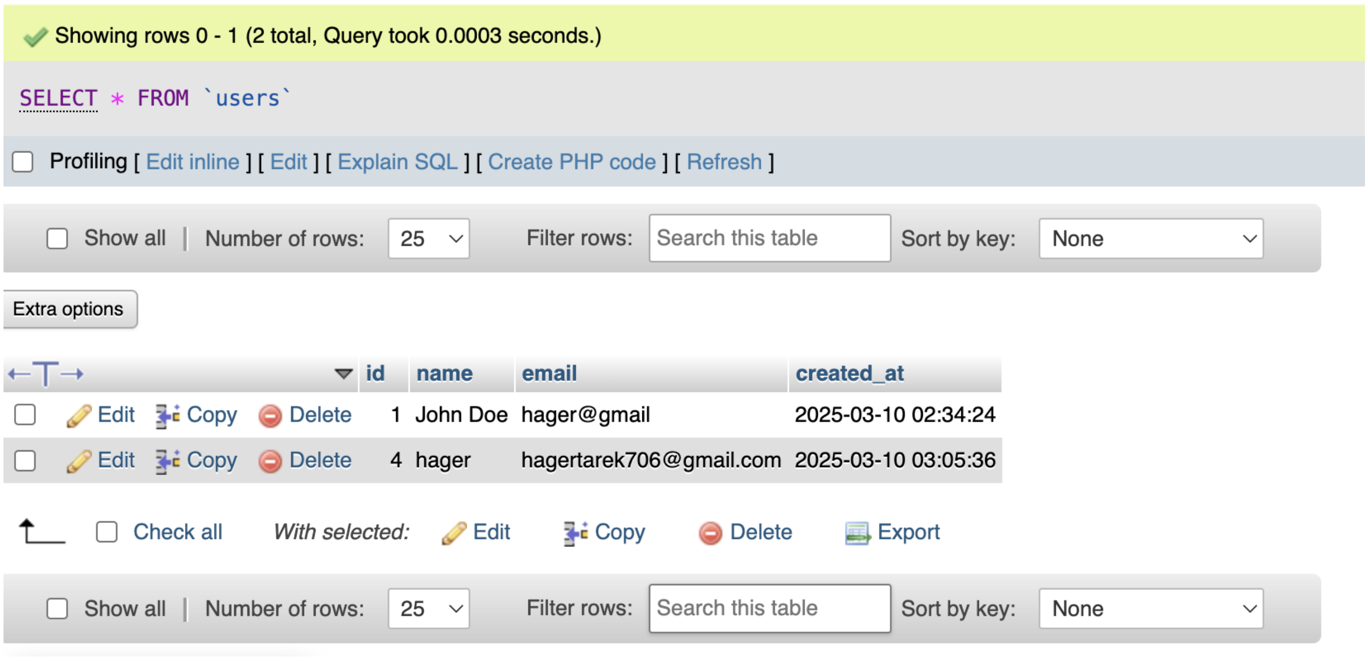
User Management

Name:
Email:

User List

ID	Name	Email	Created At
1	John Doe	hager@gmail	2025-03-10 02:34:24
4	hager	hagertarek706@gmail.com	2025-03-10 03:05:36

✅ phpMyAdmin Interface



✓ Showing rows 0 - 1 (2 total, Query took 0.0003 seconds.)

```
SELECT * FROM `users`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None

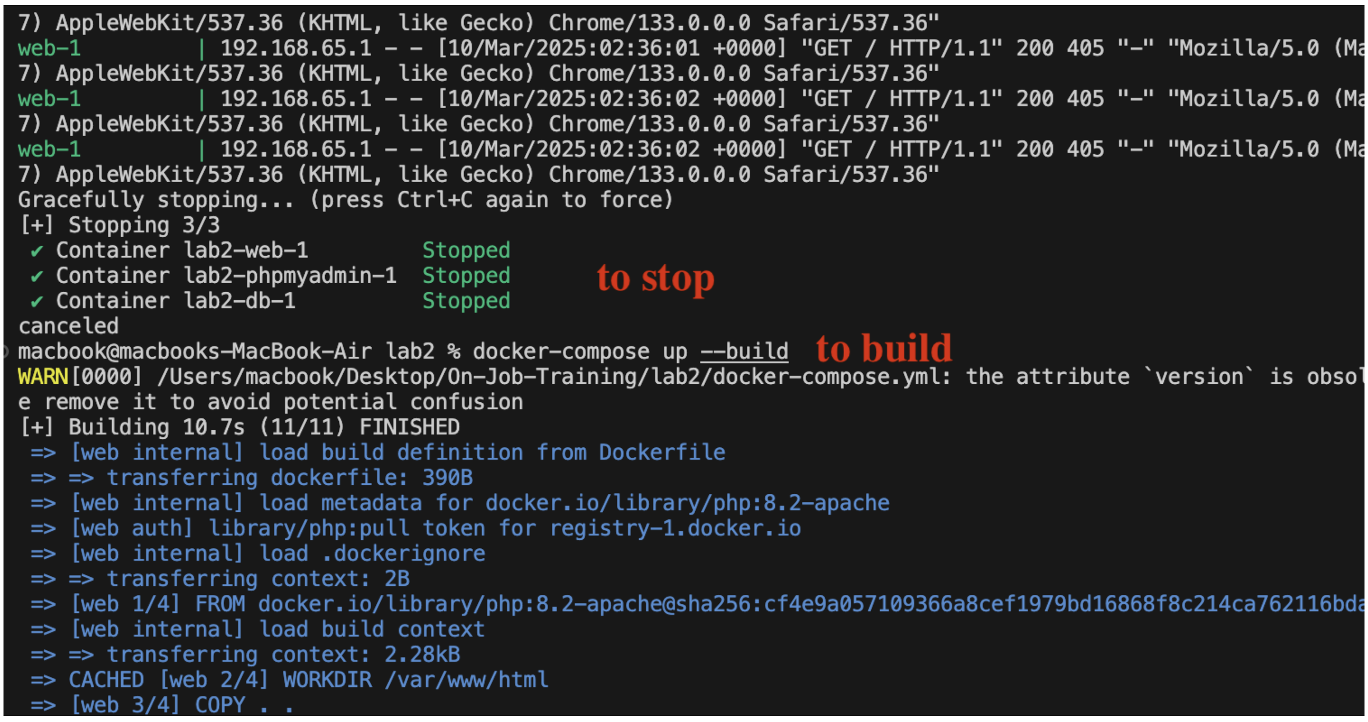
Extra options

←T→	id	name	email	created_at
Edit Copy Delete	1	John Doe	hager@gmail	2025-03-10 02:34:24
Edit Copy Delete	4	hager	hagertarek706@gmail.com	2025-03-10 03:05:36

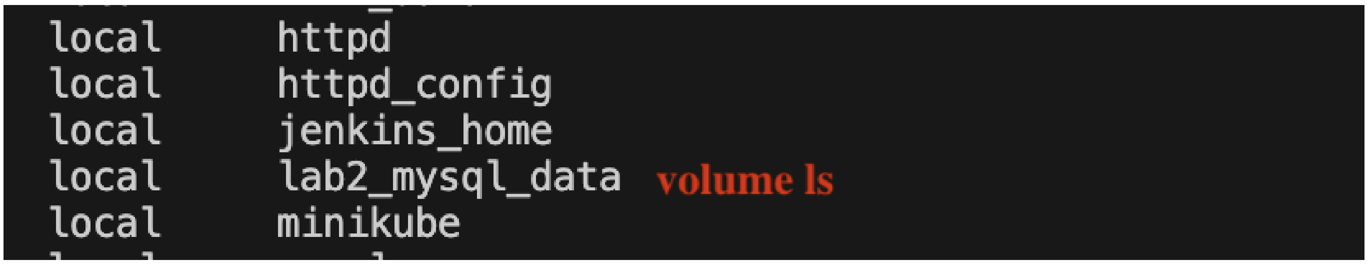
Check all *With selected:* Edit Copy Delete Export

Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None

✅ varifying



```
7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/133.0.0.0 Safari/537.36"
web-1            | 192.168.65.1 - - [10/Mar/2025:02:36:01 +0000] "GET / HTTP/1.1" 200 405 "-" "Mozilla/5.0 (Ma
7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/133.0.0.0 Safari/537.36"
web-1            | 192.168.65.1 - - [10/Mar/2025:02:36:02 +0000] "GET / HTTP/1.1" 200 405 "-" "Mozilla/5.0 (Ma
7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/133.0.0.0 Safari/537.36"
web-1            | 192.168.65.1 - - [10/Mar/2025:02:36:02 +0000] "GET / HTTP/1.1" 200 405 "-" "Mozilla/5.0 (Ma
7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/133.0.0.0 Safari/537.36"
Gracefully stopping... (press Ctrl+C again to force)
[+] Stopping 3/3
 ✔ Container lab2-web-1          Stopped
 ✔ Container lab2-phpmyadmin-1   Stopped
 ✔ Container lab2-db-1           Stopped
canceled
macbook@macbooks-MacBook-Air lab2 % docker-compose up --build
WARN[0000] /Users/macbook/Desktop/On-Job-Training/lab2/docker-compose.yml: the attribute `version` is obso
e remove it to avoid potential confusion
[+] Building 10.7s (11/11) FINISHED
 => [web internal] load build definition from Dockerfile
 => => transferring dockerfile: 390B
 => [web internal] load metadata for docker.io/library/php:8.2-apache
 => [web auth] library/php:pull token for registry-1.docker.io
 => [web internal] load .dockerignore
 => => transferring context: 2B
 => [web 1/4] FROM docker.io/library/php:8.2-apache@sha256:cf4e9a057109366a8cef1979bd16868f8c214ca762116bda
 => [web internal] load build context
 => => transferring context: 2.28kB
 => CACHED [web 2/4] WORKDIR /var/www/html
 => [web 3/4] COPY . .
```



```
local     httpd
local     httpd_config
local     jenkins_home
local     lab2_mysql_data
local     minikube
```