

Practical Part

First I started on Linux, then changed to Windows that is why I have the codes pasted here and not screenshot of powershell.

Part 1 – Setup and Run

1. Create directory:

```
mkdir C:\webapp
```

```
cd C:\webapp
```

2. Create subfolders:

```
mkdir nginx
```

```
mkdir php
```

3. Create *index.php* in *webapp\php\index.php* with the following code in it:

```
<?php
```

```
echo "Hello from Docker! Server time: " . date('Y-m-d H:i:s') . "<br>";
```

```
echo "Created by: Your Name Surname";
```

```
?>
```

4. Create *default.conf* in *webapp\nginx\default.conf* with the following code in it:

```
server {  
  
    listen 80;  
  
    server_name localhost;  
  
  
    root /var/www/html;  
  
    index index.php index.html;  
  
  
    location / {  
  
        try_files $uri $uri/ =404;  
  
    }  
  
  
    location ~ \.php$ {  
  
        include fastcgi_params;  
  
        fastcgi_pass php:9000;  
  
        fastcgi_index index.php;  
  
        fastcgi_param SCRIPT_FILENAME /var/www/html$fastcgi_script_name;  
  
    }  
  
}
```

5. Create *docker-compose.yml* in *webapp\nginx\docker-compose.yml* with the following code in it:

version: '3.8'

services:

mysql:

image: mysql:5.7

restart: always

environment:

MYSQL_ROOT_PASSWORD: osfinal2025

volumes:

- db_data:/var/lib/mysql

php:

image: php:7.4-fpm

volumes:

- ./php:/var/www/html

depends_on:

- mysql

nginx:

image: nginx:latest

ports:

- "8080:80"

volumes:

- ./php:/var/www/html
- ./nginx/default.conf:/etc/nginx/conf.d/default.conf

depends_on:

- php

volumes:

db_data:

6. Start the project:

```
docker compose -f docker-compose.yml up -d --build
```

Go to <http://localhost:8080>



Task 2 – Test and Modify

1. Create *Dockerfile* in *webpack\php**Dockerfile* with following code in it:

```
FROM php:7.4-fpm
```

```
RUN docker-php-ext-install mysqli
```

2. Update *docker-compose.yml* to use the custom PHP build:

```
version: '3.8'
```

```
services:
```

```
  mysql:
```

```
    image: mysql:5.7
```

```
    restart: always
```

```
    environment:
```

```
      MYSQL_ROOT_PASSWORD: osfinal2025
```

```
    volumes:
```

```
      - db_data:/var/lib/mysql
```

```
  php:
```

```
    build:
```

```
      context: ./php
```

volumes:

- ./php:/var/www/html

depends_on:

- mysql

nginx:

image: nginx:latest

ports:

- "8080:80"

volumes:

- ./php:/var/www/html
- ./nginx/default.conf:/etc/nginx/conf.d/default.conf

depends_on:

- php

volumes:

db_data:

3. Restart container:

docker compose down

docker compose -f .\docker-compose.yml up -d --build

4. Update *index.php*:

```

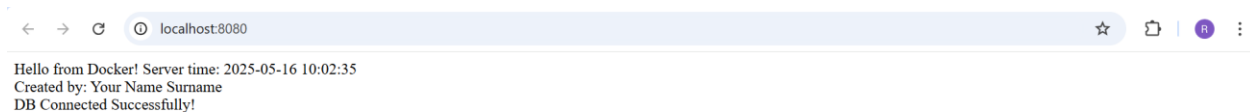
<?php
echo "Hello from Docker! Server time: " . date('Y-m-d H:i:s') . "<br>";
echo "Created by: Your Name Surname<br>";

$mysqli = new mysqli("mysql", "root", "osfinal2025");

if ($mysqli->connect_error) {
    die("Connection failed: " . $mysqli->connect_error);
} else {
    echo "DB Connected Successfully!";
}
?>

```

Refresh browser <http://localhost:8080>, it will show “DB Connected Successfully!”



5. Edit `webapp/nginx/default.conf`:

```

server {

```

```

listen 80;

server_name localhost;


# This is the root folder for your app
root /var/www/html;
index index.php index.html;


# Serve everything under /app/ from /var/www/html
location /app/ {
    try_files $uri $uri/ /app/index.php?$args;
}


# Handle PHP scripts under /app
location ~ ^/app/(.+\.php)$ {
    fastcgi_pass php:9000;
    fastcgi_index index.php;
    include fastcgi_params;

    # SCRIPT_FILENAME must point to the real file path
    fastcgi_param SCRIPT_FILENAME /var/www/html/$1;
}


# Deny PHP files outside /app to avoid unexpected behavior
location ~ \.php$ {
    return 404;
}
}

```

6. Restart container:

docker compose down

docker compose -f .\docker-compose.yml up -d --build

Now instead at / it would show the index.php on /app



Part 3 – Manage and Report

1. List all running containers with their ports and status:

```
PS C:\Projects(frontend)\webapp> docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
90aa977226e3   nginx:latest   "/docker-entrypoint..." 3 minutes ago  Up 3 minutes  0.0.0.0:8080->80/tcp              webapp-nginx-1
f8692526d8c7   webapp-php     "docker-php-entrypoi..." 3 minutes ago  Up 3 minutes  9000/tcp                          webapp-php-1
b5def5704ae6   mysql:5.7      "docker-entrypoint.s..." 3 minutes ago  Up 3 minutes  3306/tcp, 33060/tcp               webapp-mysql-1
PS C:\Projects(frontend)\webapp> |
```

2. Create *webapp\nginx\custom.conf* with the following code in it:

```
add_header X-Powered-By "DockerFinal";
```

3. Update *docker-compose.yml* nginx volumes:

```
version: '3.8'
```

services:

mysql:

image: mysql:5.7

restart: always

environment:

MYSQL_ROOT_PASSWORD: osfinal2025

volumes:

- db_data:/var/lib/mysql

php:

build:

context: ./php

volumes:

- ./php:/var/www/html

depends_on:

- mysql

nginx:

image: nginx:latest

ports:

- "8080:80"

volumes:

- ./php:/var/www/html

- ./nginx/default.conf:/etc/nginx/conf.d/default.conf

- ./nginx/custom.conf:/etc/nginx/conf.d/custom.conf

depends_on:

- php

volumes:

db_data:

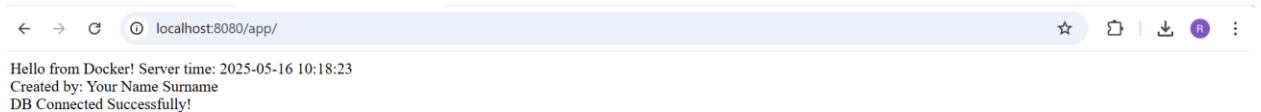
4. Restart container:

```
docker compose down
```

```
docker compose -f .\docker-compose.yml up -d --build
```

Final Submission Content

A screenshot of working index.php page in browser. Modified version of index.php with your name and surname added



A list of Docker commands used

```
docker ps
```

```
docker compose down
```

```
docker compose -f docker-compose.yml up -d --build
```

Reflection:

I had problems with the Ubuntu system at first, then I changed to Windows and started again, that is why it took so long. And the report was taking time also