## **🧱 What Is docker-compose?**

docker-compose lets you define and **run multiple containers** using a **single YAML file** (docker-compose.yml). It simplifies the orchestration of services.

✅ Perfect for:

* Running a Python app + Jupyter
* MLflow with PostgreSQL
* GenAI API + frontend
* Team sharing with consistent environments

## **✅ Step-by-Step Guide to Using docker-compose**

### **🔹 Step 1: Check if You Have docker-compose**

Most recent Docker Desktop installs it by default.

Run in terminal:

bash

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docker-compose --version

You should see something like:

mathematica

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Docker Compose version v2.20.0

If not, update Docker Desktop or install manually.

### **🔹 Step 2: Create Project Folder**

bash

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mkdir genai-docker-compose

cd genai-docker-compose

Create your app file, e.g., app.py:

python

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# app.py

print("Hello from Docker Compose ML app!")

And a requirements.txt file:

txt

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# requirements.txt

numpy

### **🔹 Step 3: Create Dockerfile**

Dockerfile

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# Dockerfile

FROM python:3.9

WORKDIR /app

COPY . .

RUN pip install --upgrade pip

RUN pip install -r requirements.txt

CMD ["python", "app.py"]

### **🔹 Step 4: Create docker-compose.yml**

yaml

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# docker-compose.yml

version: '3.9'

services:

genai-app:

build: .

container\_name: genai\_ml\_app

volumes:

- .:/app

command: python app.py

### **🔹 Step 5: Build and Run with Compose**

From the project directory:

bash

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docker-compose up --build

You should see:

python-repl

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Building genai-app

...

Hello from Docker Compose ML app!

## **🧹 To Stop and Clean Up**

* To stop:  
   Ctrl+C in terminal  
   Then:  
   docker-compose down

## **💡 Bonus: Extend to Jupyter or Multiple Services**

Want to run Jupyter Lab too? Here's an example service added:

yaml

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jupyter:

image: jupyter/scipy-notebook

ports:

- "8888:8888"

volumes:

- .:/home/jovyan/work

Now access Jupyter at http://localhost:8888!

## **✅ Summary**

| **Task** | **Command** |
| --- | --- |
| Run app | docker-compose up |
| Build and run | docker-compose up --build |
| Stop and clean | docker-compose down |