

### Definitions

Image	A snapshot or blueprint of an environment (OS + app + dependencies)
Container	A running instance of an image (lightweight, isolated environment)
Dockerfile	A text file with instructions to build a Docker image
Volume	Persistent data storage shared between host and container
Bind Mount	Mounts a specific file or folder from host into the container
Port Mapping	Links container port to host port (e.g., -p 8080:80)
Network	Virtual network for containers to talk to each other or the outside world
Base Image	The starting image in a Dockerfile (e.g., FROM ubuntu)
ENTRYPOINT	Default executable when container starts (used for fixed command behavior)
CMD	Arguments passed to ENTRYPOINT or default command (overridable)
Context	Files sent to the Docker engine when building an image

### docker-compose.yml

services	Top-level section; defines each container
image	Use an image from registry or local

### docker-compose.yml (cont)

build	Build image from Dockerfile (build: . or build: ./app)
container-name	Optional name for the container
ports	Host-to-container port mapping ("8080:80")
volumes	Mount host paths or named volumes ("./data:/app/data")
environment	Set environment variables (VAR=value)
command	Override CMD from image/-Dockerfile
depends_on	Declare startup order between services
networks	Assign container to network (default if not declared)
restart	Auto-restart policy (always, on-failure, unless-stopped)

### Dockerfile

FROM	Sets the base image
WORKDIR	Sets working directory inside container
COPY	Copies files into the image
RUN	Executes a command in the image
EXPOSE	Declares which port(s) the container uses
USER	Sets default user inside the container
CMD	Default command to run in a container
ENV	Sets environment variables

### Docker commands

docker ps (-a)	List containers
docker exec -it container bash	Run command in a running container (e.g., open shell)
docker stop container	Gracefully stop a container
docker rm container	Delete (remove) a stopped container
docker rmi image	Delete an image
docker logs container	View container output logs

### Docker Compose Commands

docker-compose up	Start services (build if needed)
docker-compose up -d	Start in background (detached mode)
docker-compose down	Stop and remove containers + network
docker-compose build	Build services from Dockerfile
docker-compose ps	List running services
docker-compose logs	View service logs
docker-compose exec service sh	Shell into a running container
docker-compose restart	Restart all or specific service(s)

