Docker Compose

Divyansh Rajesh Jain

UCDAVIS

Problem?

- Docker is designed to work with isolated containers
- How do I build multiple containers
    - Have to run many build and run commands
    - NOT SCALABLE!

Docker Compose!

- Tool for defining multi-container application configuration
- One YAML file is the source of truth for the entire build configuration
- Simplified CLI (my opinion)

Steps of using Docker Compose

- Define Dockerfile(s) for all of your different containers
- Define the logical “services” and their environments (Dockerfile)
    - Can configure many options in the Compose file
- Use one command to build/run all containers!

Basic Components

- Environment → Dockerfile
- Services → The invocation of a Dockerfile with all options
- Volumes → Attach services to volumes
- Networking → Configure Local Connectivity for services

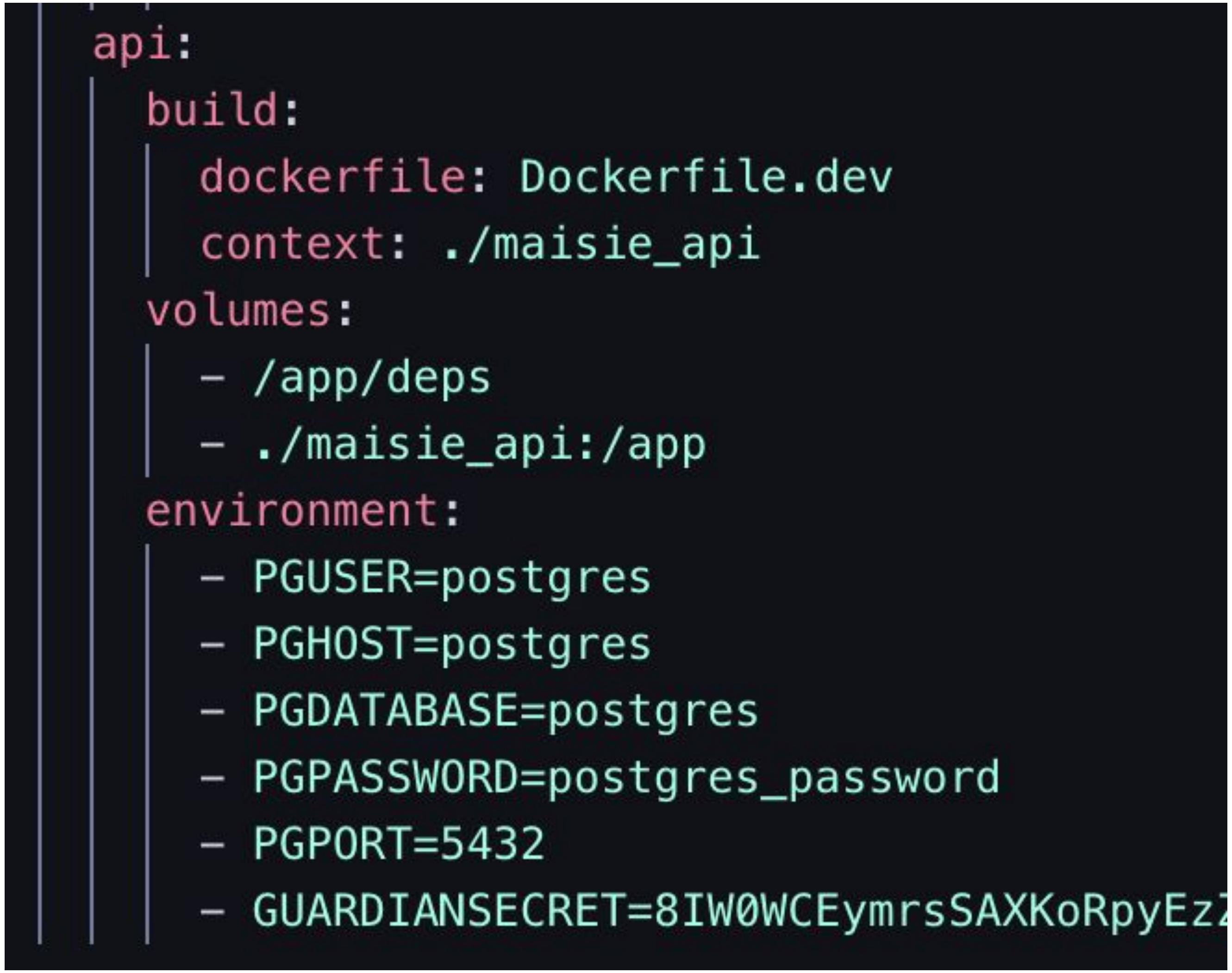
Networking in Docker Compose

- Docker → Containers are separated
- Docker Compose → Services belong to the same network
- What are possible use cases of this?

Why Docker Compose?

- Easier configuration for docker containers
  - Docker configurations are baked into the compose file
- Compatible with Deployment Tools
  - Swarm Mode → Orchestration Platform from Docker
  - Kubernetes → Open Source Container Orchestration Platform

Example of Docker Compose File



```
  api:
    build:
      dockerfile: Dockerfile.dev
      context: ./maisie_api
    volumes:
      - /app/deps
      - ./maisie_api:/app
    environment:
      - PGUSER=postgres
      - PGHOST=postgres
      - PGDATABASE=postgres
      - PGPASSWORD=postgres_password
      - PGPORT=5432
      - GUARDIANSECRET=8IW0WCEymrsSAXKoRpyEzZ
```

Docker Compose Commands

- docker compose build → Build all the images in compose configuration
- docker compose up [-d] → Build Images and/or start all containers in the compose configuration
- docker compose ps → See all running contains in the compose configuration

Docker Compose Live Demo

Github Link for Demo:

https://github.com/divteaching/ecs198f_lecture6_inclass_coding

Thank You!

Next Time: Kubernetes