Code Green Workshop

Reducing Carbon Footprint and Costs in IT

(Part 1)

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About "Kelly"

– **Wears lots of hats:** Dad, Cat Slave, Mentor, Speaker, IT Professional, Handweaver, Game Designer, Novice Photographer, Leader, Cook, & Renaissance Person in Training

– **Can be found:** Online, wandering parks with a camera, behind a loom, playing/designing tabletop games, and conferences near you.

– Recent transplant to Northern Colorado

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About our App

- Shakespeare Database API
- Query for words used, and more

Requirements:

Docker

– Get Started

Git

– (although zip will do in a pinch)

Repository:

https://github.com/making-software-greener/code-green-workshop-v1

Stage 1

Steps:

Getting Started

1. Install Docker

Steps:

Obtain the repository

1. Go to the Repository and either:

   – download the zip file & extract

   -or-

   – clone the repository with git.

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Steps:

Build the containers

1. Open a teminal window.
2. Change your directory to where you installed the repository.
3. Go into the `stage-1` directory
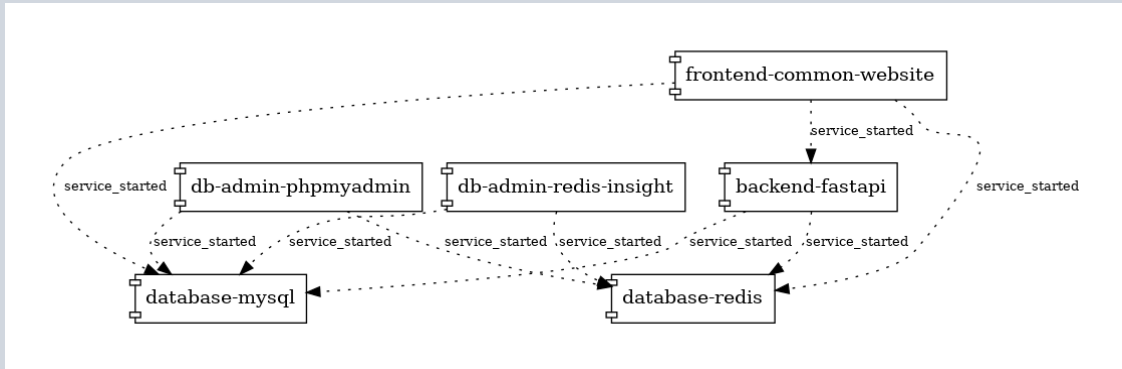4. `docker compose build`

Steps:

Start the Application

1. `docker compose up -d`

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Architecture:

URLS & Ports:

(Bare Bones) Web App

– http://localhost:81

Note: You may need to replace localhost with 127.0.0.1

URLS & Ports:

API

– http://localhost:82

– http://localhost:82/plays

– API Docs/Playground:
http://localhost:82/docs

API Docs Exploration

FastAPI 0.1.0 OAS3
/openapi.json

default ∧

GET	/ Read Root	∨
GET	/plays Get Play Names	∨
GET	/players Get Player Names	∨
GET	/plays/{play_name}/players Get Play Players	∨
GET	/words Get Words	∨
GET	/words/counts Get Words Counts	∨
GET	/words/play/{play_name} Get Play Words	∨
GET	/words/play/{play_name}/count Get Play Words Count	∨
GET	/words/player/{player_name} Get Player Words	∨
GET	/words/player/{player_name}/count Get Player Words Count	∨

Schemas

Play with it for a few

Ideas

- Try out the `docker compose` command.
  - Is there anything which might be useful?
- Take a look at the frontend and backend code (if time)
- Examine the Architecture

Make notes

– Anything odd
– Anything slow
– Anything that doesn't make sense

Discussion of Initial findings

Cleanup

– `docker compose down`

Stage 2

Edge Router

Steps:

Edge Router

1. Move to the stage-2 directory
2. `docker compose` `up` `-d` `reverse-proxy`
3. In your browser go to `http://localhost:8080/api/rawdata`

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reverse-proxy   whoami   frontend-common-website

service_started

service_started   db-admin-phpmyadmin   db-admin-redis-insight   backend-fastapi   service_started

service_started   service_started   service_started   service_started   service_started   service_started

database-mysql   database-redis
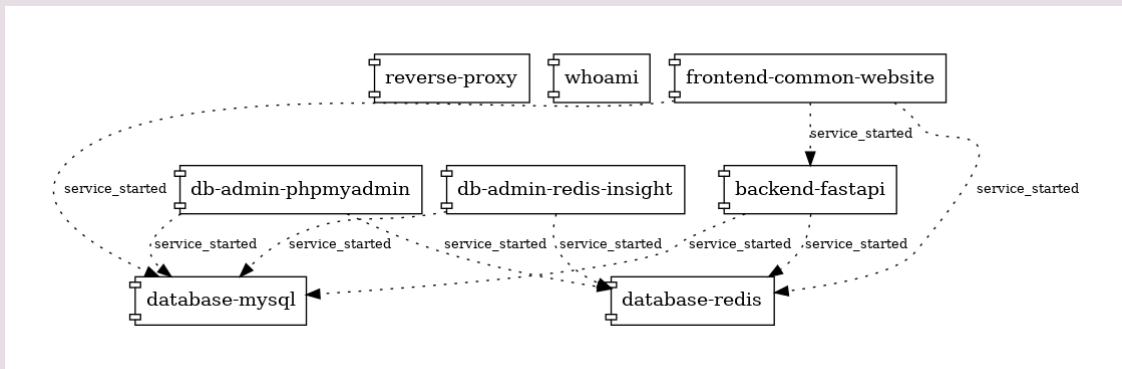
Steps:

Whoami

1. In the terminal type `docker compose up -d whoami`

2. Reload `http://localhost:8080/api/rawdata` -- notice that the whoami service is there

```
"reverse-proxy-stage-2@docker": {
  "entryPoints": [
    "http"
  ],
  "service": "reverse-proxy-stage-2",
  "rule": "Host(`reverse-proxy-stage-2`)",
  "status": "enabled",
  "using": [
    "http"
  ]
},
"whoami@docker": {
  "entryPoints": [
    "http"
  ],
  "service": "whoami-stage-2",
  "rule": "Host(`whoami.docker.localhost`)",
  "status": "enabled",
  "using": [
    "http"
  ]
}
},
```
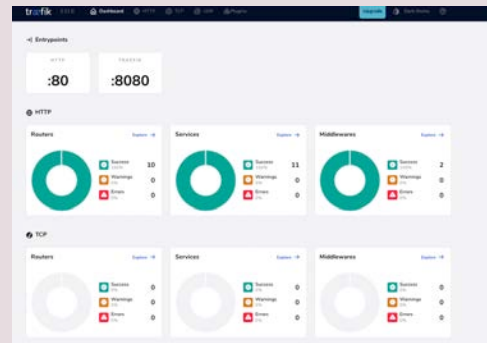
Steps:

Whoami

1. In the browser go to
   `whoami.docker.localhost`
   and you'll see something like

Steps:

UI

1. Go to `http://localhost:8080` for the Dashboard

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But what about Will???

Steps

Start up the rest

1. In the terminal do `docker compose build`

2. Then do `docker compose up -d`
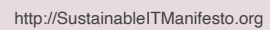
http://backend-fastcgi.docker.localhost:82

http://backend-fastcgi.docker.localhost:80/docs

Next Time:

Tracing and Metrics

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Resources

- William Shakespeare
- Shakespeare plays
- The initial software stack was generated with Compose Generator. It really is a timesaver.
- Docker

Resources

- [FastAPI](#)
- [Traefik Labs: Say Goodbye to Connectivity Chaos](#)
- [Jaeger: open source, distributed tracing platform](#)
- Thanks to [ahmaddanni (Danni nux)](#) for https://github.com/ahmaddanni/traefik-jaeger-docker/tree/main

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Resources

- Creating block diagrams from docker-compose.yml I by Krishna I Medium
- How to visualize your docker composition
- pmsipilot/docker-compose-viz: Docker compose graph visualization