Containerizing an Application

Nigel Poulton

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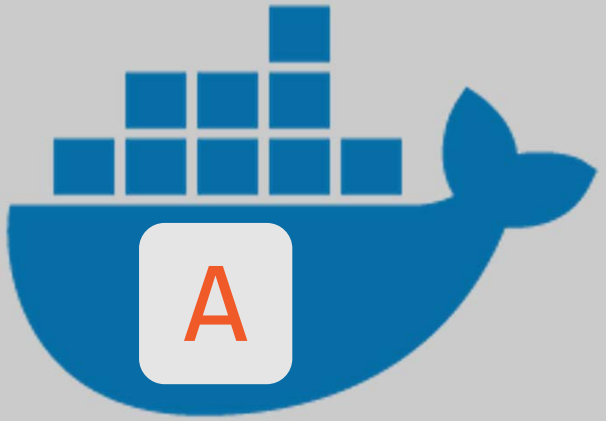


Module Outline

Big Picture

Containerize an App

Dig Deeper

Multi-stage Builds

Recap

Domain 2: Image Creation, Management, and Registry

- Show the main parts of a Dockerfile
- Describe Dockerfile options [add, copy, volumes, expose, entrypoint, etc)
- Give examples on how to create an efficient image via a Dockerfile
- Apply a file to create a Docker image

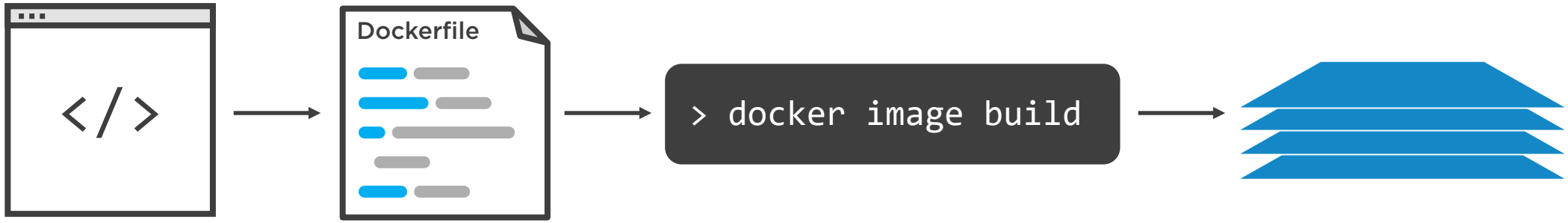
Coming up

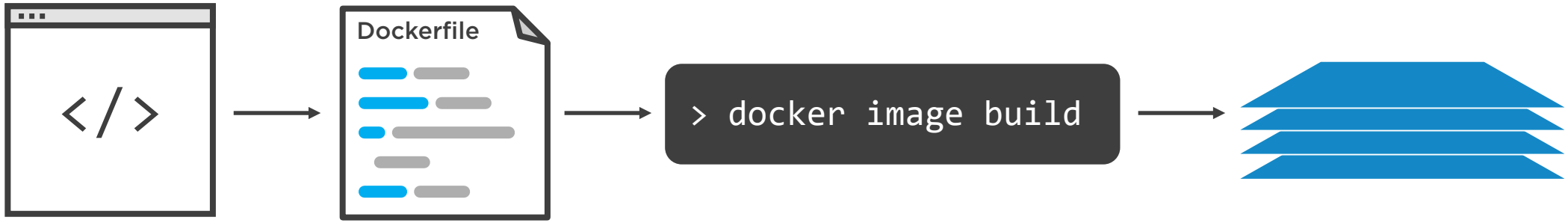
The Big Picture

The Big Picture

Code - Dockerfile - Build - Image


Dockerfile
A


Dockerfile
> docker image build


Dockerfile
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Coming up

Containerizing an App

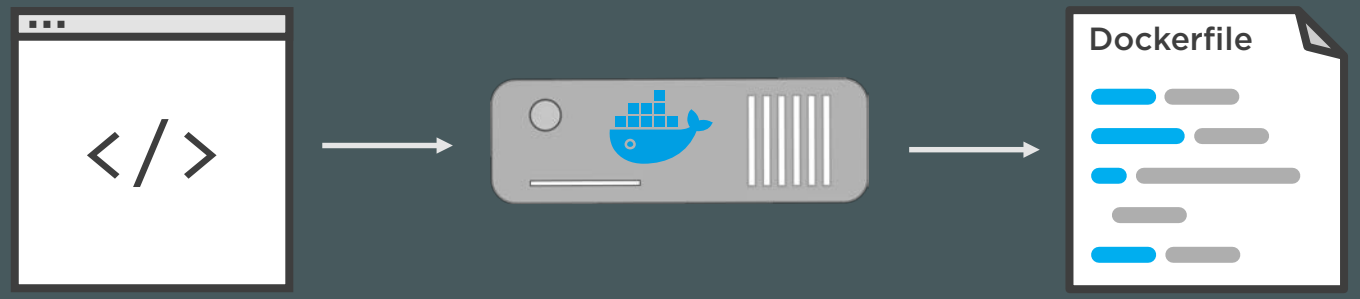
Containerizing an App

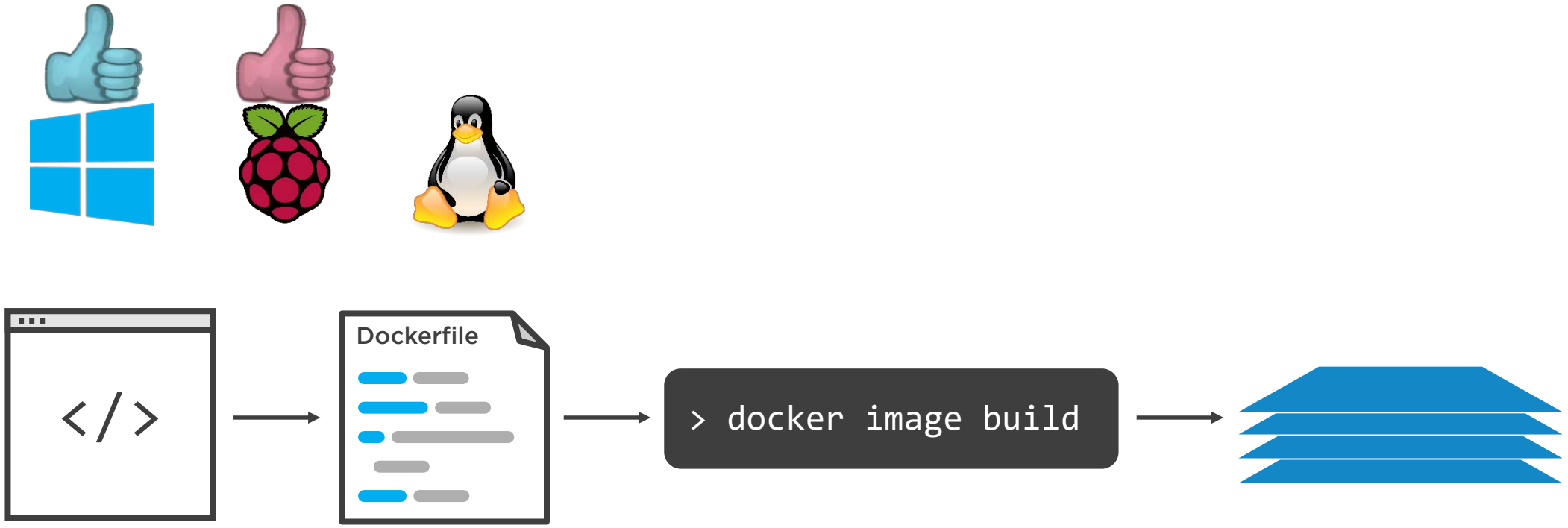
Code - Dockerfile - Build - Image

Dockerfile

Dockerfile notes

- Instructions for building images
- CAPITALIZE instructions
- <INSTRUCTION> <value>
- FROM always first instruction
- FROM = base image
- Good practice to list maintainer
- RUN = execute command and create layer
- COPY = copy code into image as new layer
- Some instructions add metadata instead of layers
- ENTRYPOINT = default app for image/container


Dockerfile


Dockerfile
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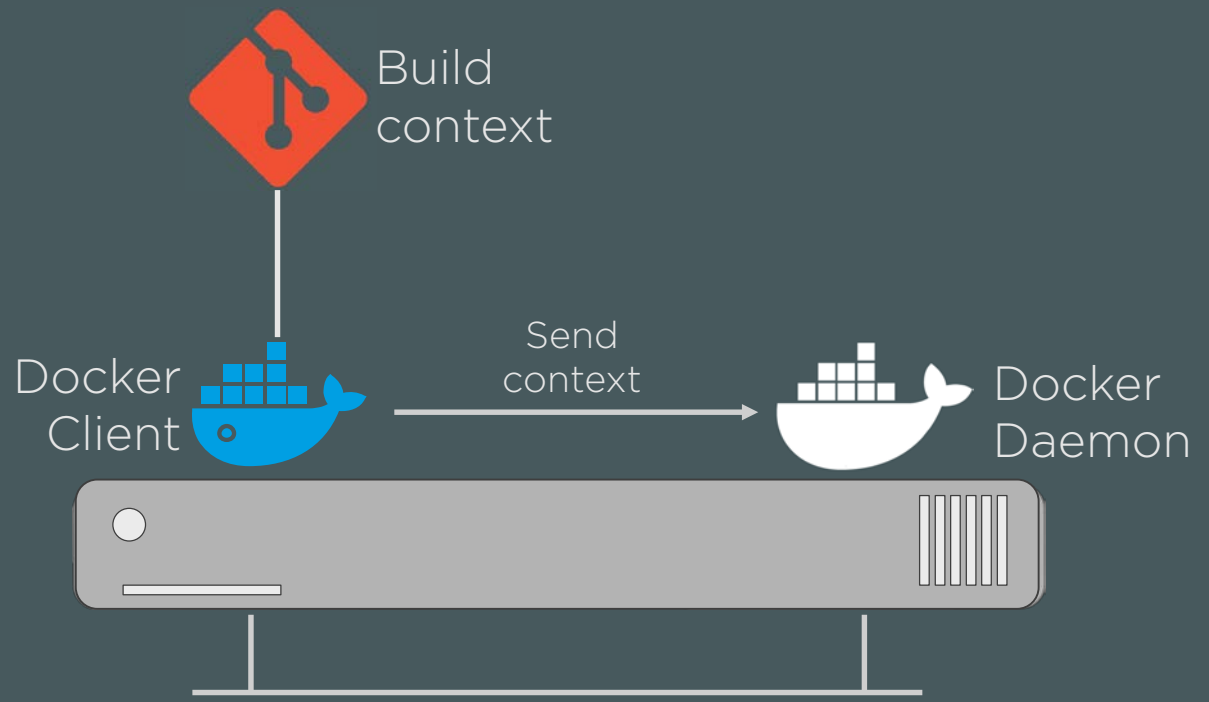
Coming up

Digging Deeper

Digging Deeper

Layers and Metadata


Build
context
Docker
Client
Send
context
Docker
Daemon

Coming up

Multi-stage Builds

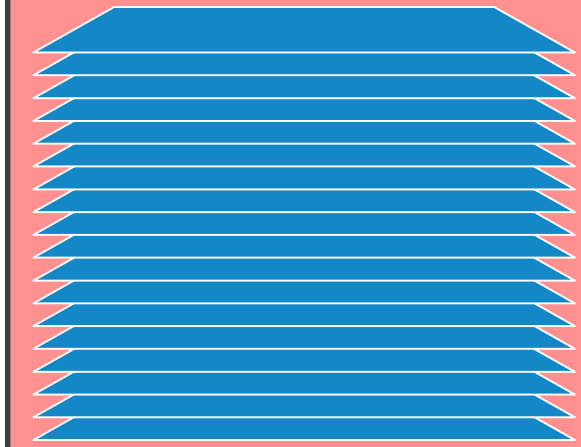
Multi-stage Builds

Because size matters

Small Images

Minimal OS
and packages

Bloated Images



Too much OS
Too many packages

[Stage 0]

[Stage 1]

[Stage 2]

```
1   FROM node:latest AS storefront
2   WORKDIR /usr/src/atsea/app/react-app
3   COPY react-app .
4   RUN npm install
5   RUN npm run build
6
7   FROM maven:latest AS appserver
8   WORKDIR /usr/src/atsea
9   COPY pom.xml .
10  RUN mvn -B -f pom.xml -s /usr/share/maven/ref/settings-docker.xml dependency:resolve
11  COPY . .
12  RUN mvn -B -s /usr/share/maven/ref/settings-docker.xml package -DskipTests
13
14  FROM java:8-jdk-alpine AS production
15  RUN adduser -Dh /home/gordon gordon
16  WORKDIR /static
17  COPY --from=storefront /usr/src/atsea/app/react-app/build/ .
18  WORKDIR /app
19  COPY --from=appserver /usr/src/atsea/target/AtSea-0.0.1-SNAPSHOT.jar .
20  ENTRYPOINT ["java", "-jar", "/app/AtSea-0.0.1-SNAPSHOT.jar"]
21  CMD ["--spring.profiles.active=postgres"]
```

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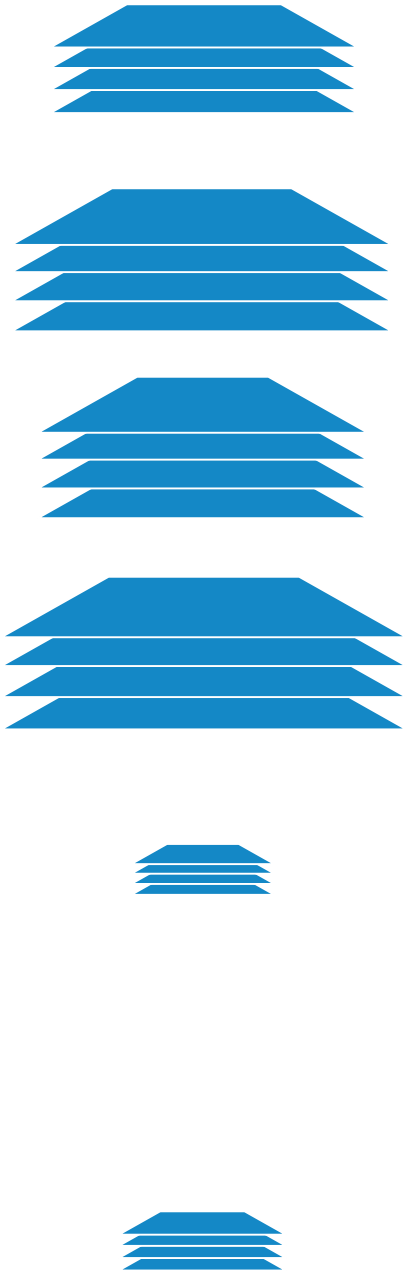

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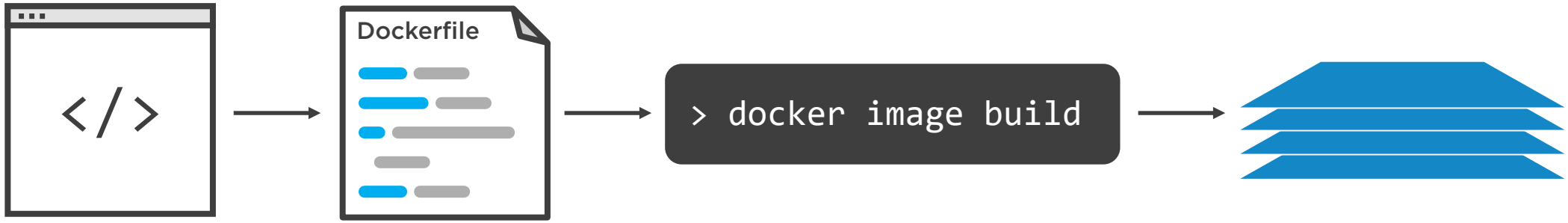
Coming up

Recap

Recap

Drilling it home!

It’s all about the apps!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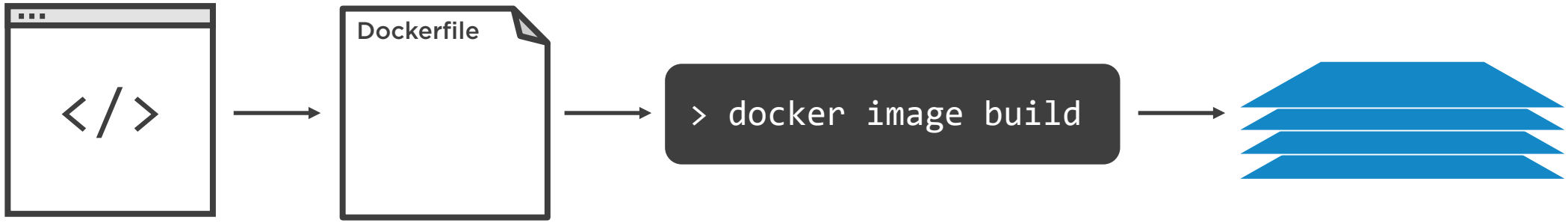

Dockerfile
> docker image build

Dockerfile

```
FROM … AS Build-Stage-0
```

```
FROM … AS Build-Stage-1
```

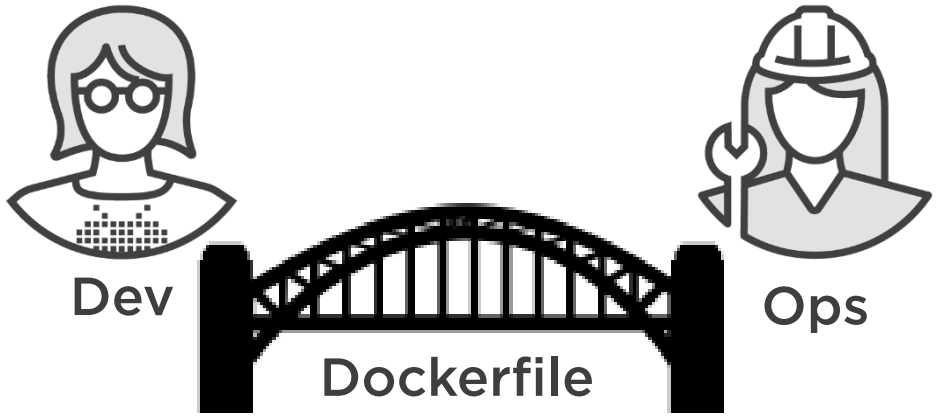
```
FROM … AS Production-Stage
```

Dockerfile

```
FROM … AS Build-Stage-0

FROM … AS Build-Stage-1

FROM … AS Production-Stage
```



Coming up

NEXT MODULE

Working with Containers