Full Stack Development

Containers, Microservices and UI

7c. Spring Boot

Complexity

- Spring simplifies the organization of POJOs into a complex Java application
- However, this does not make the application simple to deploy and configure
- We still have to manage:
  - Writing and coding all the configuration metadata
  - Configuring the toolchain – Maven, etc
  - Configuring the application’s integration with other components
  - Databases, files, sockets
  - Web components

Introducing Spring

- Spring was developed as an easy-to-use alternative to J2EE
  - Became incredibly popular.
  - Java EE (J2EE) began to adopt many of the features of Spring
  - Java EE now is very Spring like
- Spring is now a collection of projects, like Apache
  - Built around Spring Core.
  - The whole list of projects can be found at the Spring website

Convention over Configuration

- Spring framework manages the POJOs in the application architecture
  - However, the configuration of Spring can be very complex
  - Most of the configurations for a project are often similar
  - Similar applications often use similar architecture
- “Convention over Configuration”
  - A labor-saving approach
  - Rather than build every configuration from scratch we just follow convention and do what everyone else does
  - This is called an “opinionated” approach because had definite opinions about what ought to be done
  - sWe trade flexibility in choices for ease of development

Spring Boot

- Spring Boot is an application framework that uses an opinioned set of defaults to simplify configuration and deployment of a Java application
- Opinionated means
  - The defaults used by Spring Boot are reasonable
  - But you can override them in the configuration
- For example:
  - You can use any web container in a Boot app
  - But defaulting to Tomcat is a reasonable convention
  - There are many preconfigured shortcuts like using Spring Boot starters

Starters

- A starter is a set of dependencies specific to a type of application
  - A list of starters is available at:
  - https://docs.spring.io/spring-boot/docs/current/reference/htmlsingle/#using.build-systems.starters
- For example,
  - spring-boot-starter-web
  - “Starter for building web, including RESTful, applications using Spring MVC. Uses Tomcat as the default embedded container”
- Spring Boot apps can be totally self contained
  - A single jar file that contains everything the app needs to run
  - Including a web server if necessary
  - Can also be deployed as a WAR file

Spring Initializr

- The Spring Initialize is located at:
  - https://start.spring.io
- It allows you to quickly configure a Spring boot application
  - The Spring projects or components you want are selected from a list
  - Spring boot auto-wires all of them together into a project
- The resulting deliverable is a Maven or Gradle project that can be built
  - With either a WAR file packaging for delivery to an existing server
  - Or a standalone JAR file that has the server in it.

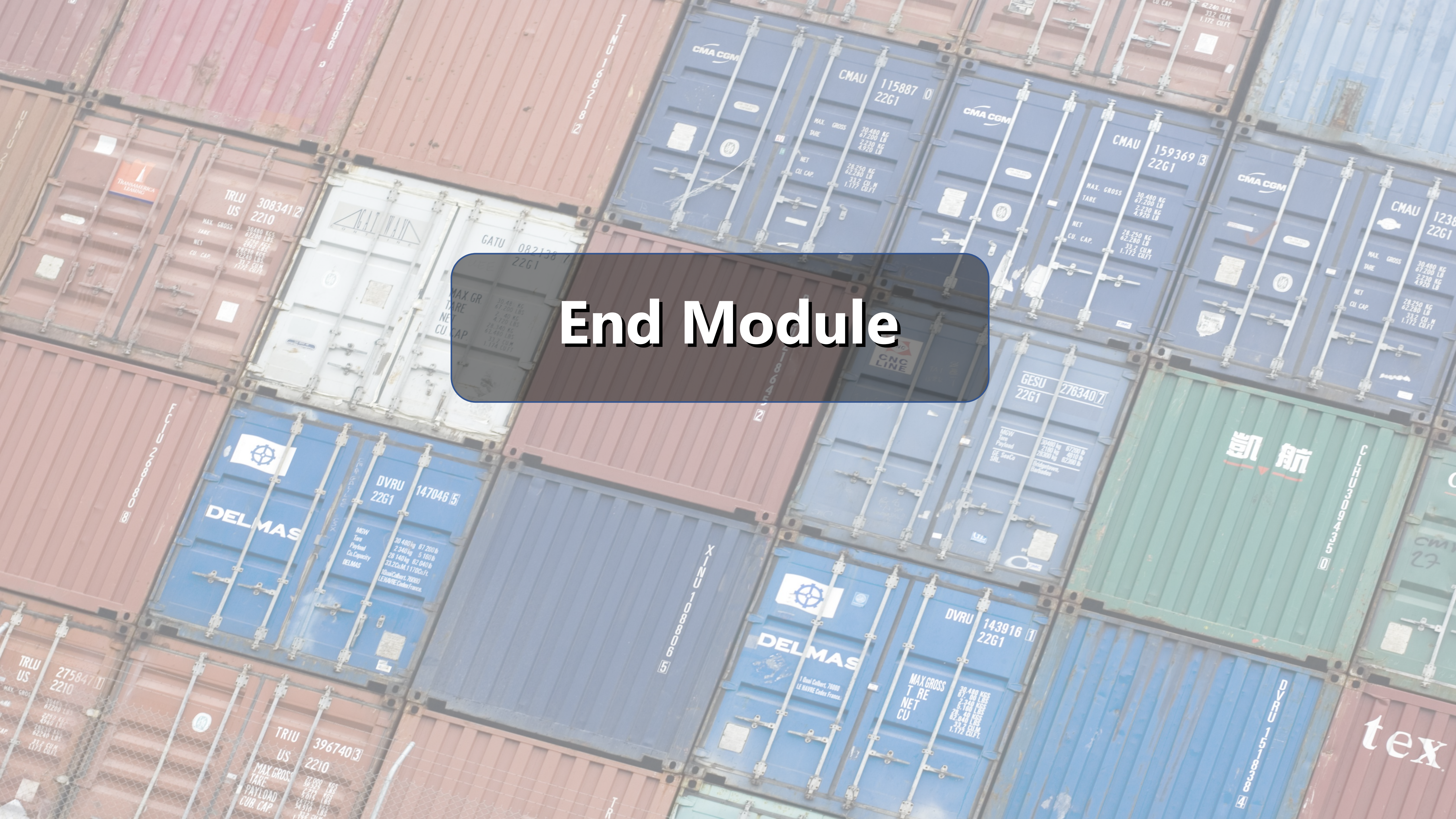
Spring MVC

- In the lab, you will be building a Spring Boot MVC based web service.
- As we go through the project, notice how the principles of good design give us code that is very easy to use in the webservoce

Creating a Spring Boot Web Service

Demo

Spring Boot Lab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