

ILP / 3

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Logistics

- Piazza response times
- CW1 task is available since 29.09.
- Opening of the CW1 submission box
- Questions for tonight's BOF?
- Questions in general?

Spring Boot

- What is it?
- Where is it used?

Book: "Cloud Native Spring in Action"

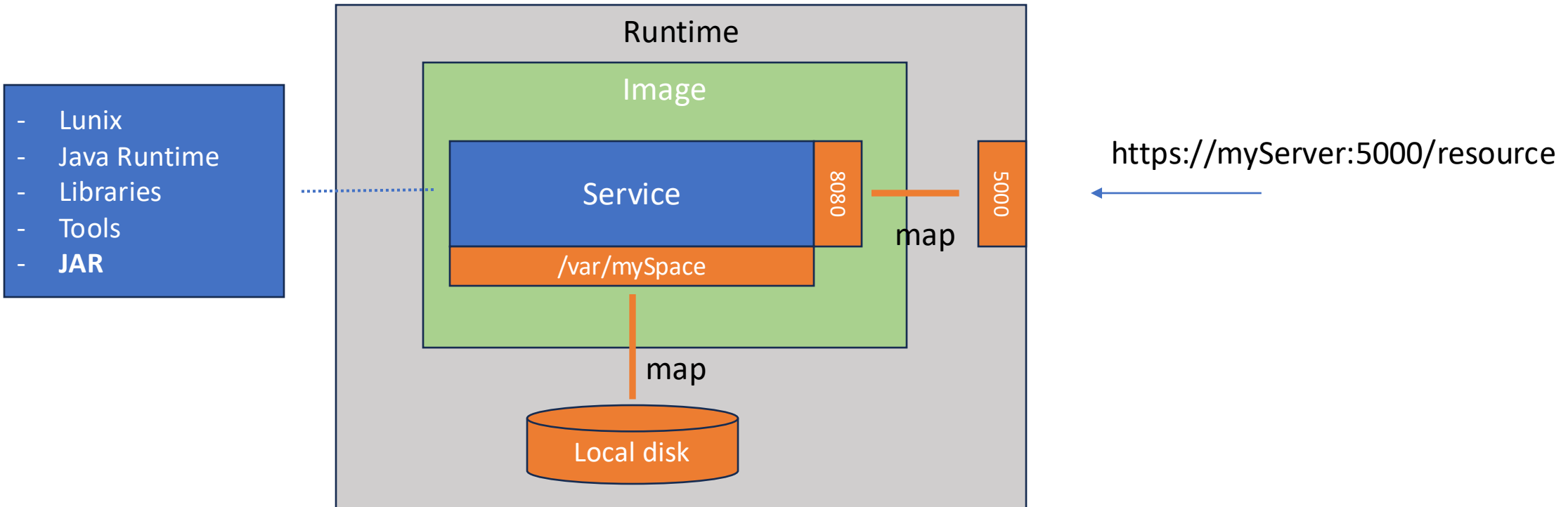
(reading recommendation)

- **Chapter 1**
- Chapter 2
 - 2.1 (general info)
 - **2.2, 2.3, 2.4**
- **Chapter 3**
- **4.1**
- 5.1 & 5.2
- **6.1, 6.2, 6.3**
- 9 / 10 11 (interesting)
- **13.2, 13.3**

Recap - Service anatomy

- Anatomy of a service (live exploration & explanation)
- Running as a process vs in docker
 - How to get to the .jar file you need in the dockerfile... (*Maven -> package*)
- Annotations
 - Spring Boot
 - Lombok
 - Others
- pom.xml

Recap - a microservice in docker



Recap - Containers

- Build an image
 - docker build / docker buildx
- Deploy the image (local / registry)
 - docker push
- Run the image
 - docker run

Spring Annotations (and Lombok...)

- @Getter, @Setter, @Data
- @Builder
- @SpringBootApplication
- @RestController

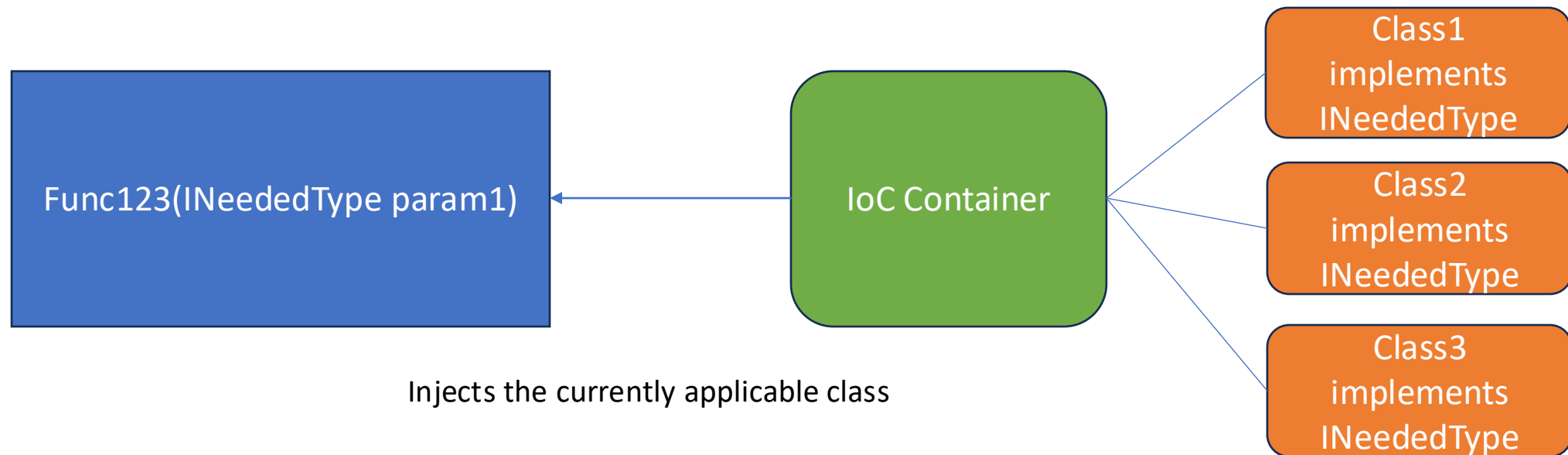
- @Bean, @Service
- @Configuration

Spring annotations (processing)

- @GetMapping
- @PostMapping
- @PathVariable / @RequestParam
- @RequestBody
- @RequestHeader
- ...

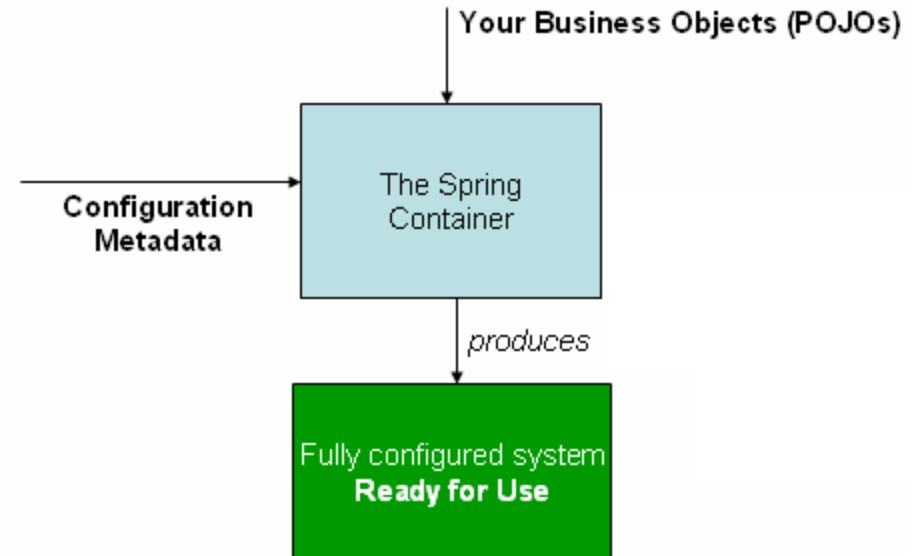
Dependency Injection

- Inversion of Control



Spring DI

- Spring IOC (Inversion of Control)
 - For Setter
 - For Constructor
- Configuration based



<https://docs.spring.io/spring-framework/docs/3.2.x/spring-framework-reference/html/beans.html>

- <https://docs.spring.io/spring-framework/reference/core/beans/dependencies/factory-collaborators.html>
- <https://www.geeksforgeeks.org/spring-dependency-injection-with-example/>

Spring is all about DI

- Dependency injection is key to most things
- Mostly done based on configurations and automatic scanning of JARs in the current execution environment

Spring Container Configuration

- **@Configuration** declares a class mostly has **@Beans** it provides as data elements for others to use
- **@Bean** annotation is used to indicate that a method instantiates, configures, and initializes a new object to be managed by the Spring IoC container
- @Configuration and @Bean are used often in cases where other annotations like @Service and @Repository don't work

```
@Configuration
public class SimpleConfiguration {

    @Bean
    public VeryOldServiceInterface veryOldServiceInterface() {
        return new VeryOldService();
    }
}
```

Example with Bean and DI

- See online example

Where to pass the data to GET / POST

- GET
 - Only in the path (URL)
 - No body to be used!
- POST / PUT
 - In the path (URL)
 - body

JSON

- Structure
- Annotations for JSON
 - @JsonProperty
- Various JSON processors
 - **Jackson**
 - **Gson**
 - json-io
 - Genson

Using JSON

- To represent objects with attributes in a readable format
 - Alternatives include YAML, XML, Protobuf (gRPC), csv
- How to use it... Jackson / gson
 - ObjectMapper() -> might need some extra handling
- Connect to another service and read data (the URL should be configured somewhere...)

<https://ilp-rest-2025-bvh6e9hschfagrgy.ukwest-01.azurewebsites.net/service-points>

Using JSON (example)

- See online example