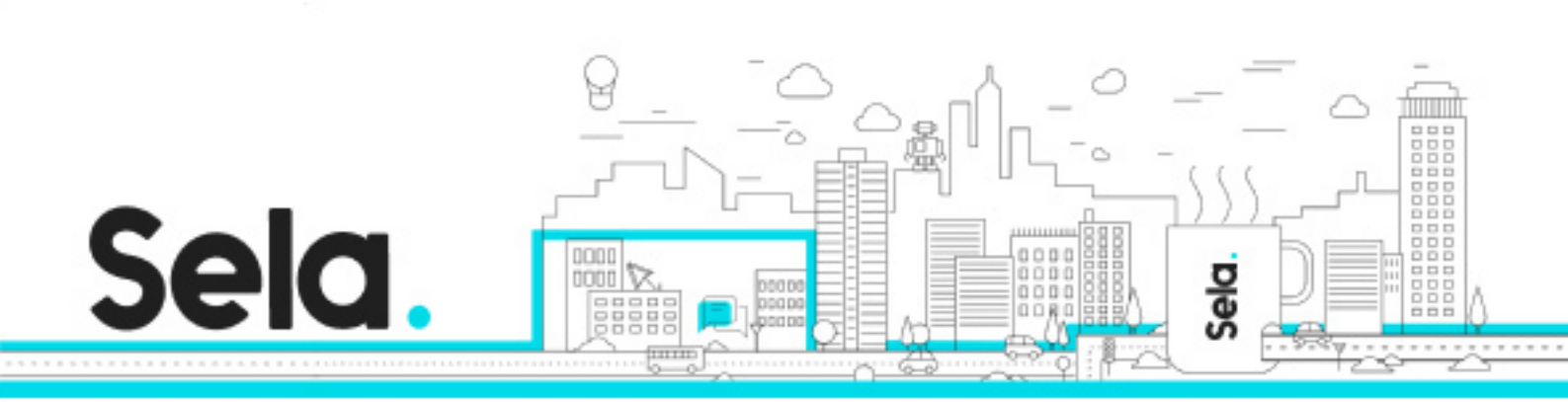
Sela.

SpringInt

Introduction to Spring 5, Spring Boot, and Spring REST

college@sela.co.il 03-6176666



Introduction to Spring 5, Spring Boot, and Spring REST

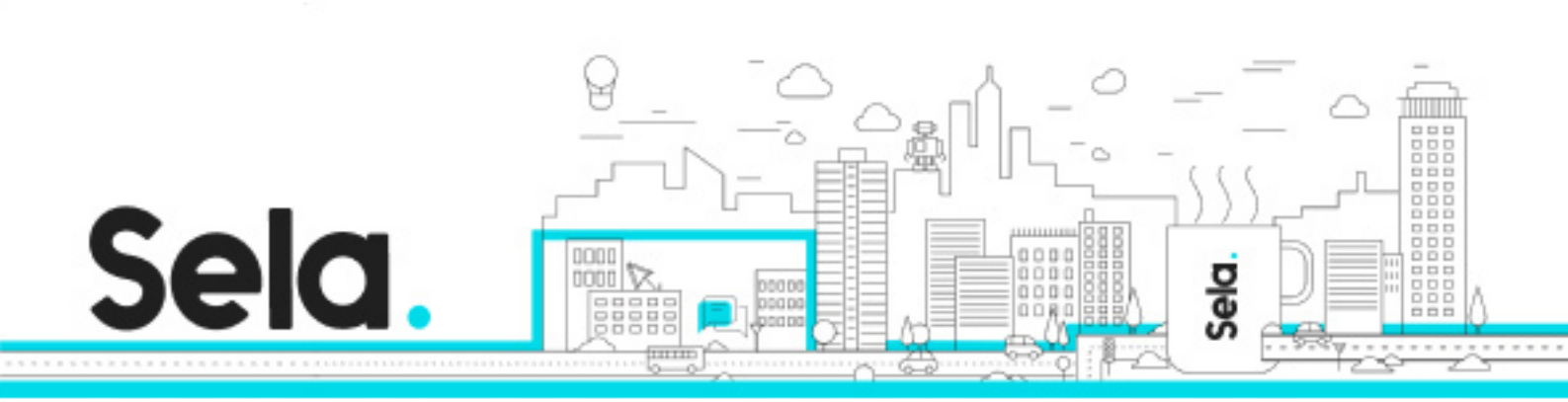
SpringInt - Version: 1

5 days Course

Description:

Spring 5 provides an evolutionary advance of Spring's powerful capabilities.
This course introduces the many Spring Core capabilities, as well as providing guidelines on when and how to use them. It also goes into considerable depth on Spring Boot for dependency management and auto-configuration, as well as Spring REST for creating RESTful resources.
The course starts with in-depth coverage of Spring's Core module to reduce coupling and increase the flexibility, ease of maintenance, and testing of your applications. It goes on to cover many of the most important capabilities of Spring, including easing configuration with Spring Boot, integrating JPA persistence layers with Spring and Spring Data, and using Spring's declarative transaction capabilities.
The course includes a solid introduction to Spring REST, and coverage of building RESTful resources. It also covers many of the details of Spring Boot, including how to create Boot-based POMs (maven) for simplified dependency management, customizing Boot behavior, and understanding/managing Boot's auto-configuration.
This course is hands on with labs to reinforce all the important concepts. It will enable you to build working Spring applications and give you an understanding of the important concepts and technology in a very short time.

Intended audience:



Prerequisites:

Working knowledge of Java programming, including use of inheritance, interfaces, and exceptions

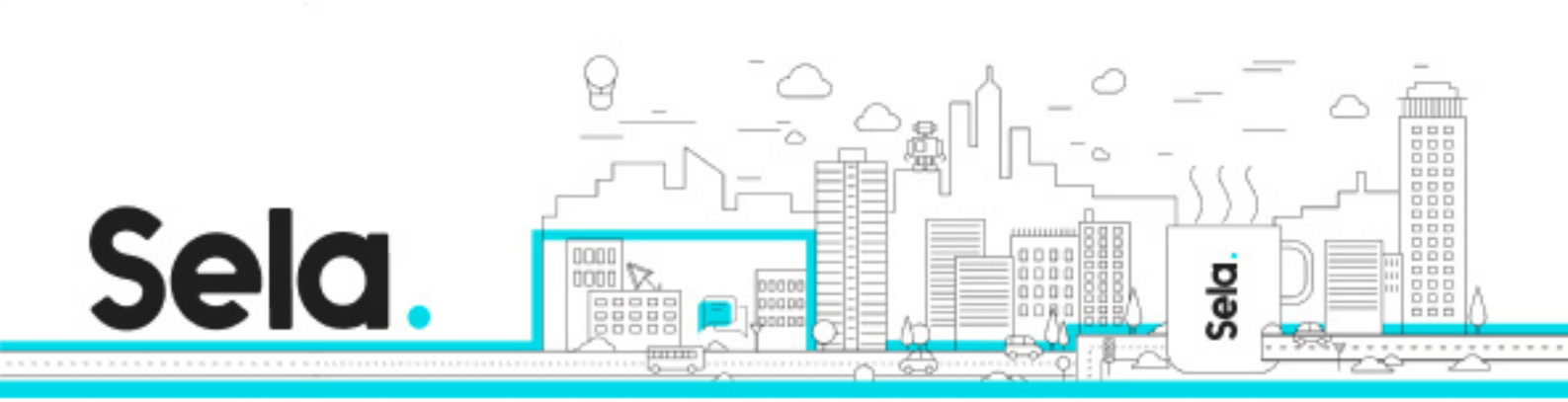
Objectives:

Understand the core principles of Spring, and of Dependency Injection (DI) / Inversion of Control
Use the Spring Core module and DI to configure and wire application objects (beans) together
Know the different types of metadata (XML, annotations/@Component, and Java Configuration/@Configuration), and how and when to use them
Understand and use the complete capabilities of the Core module, such as lifecycle events, bean scopes, and the Spring API
Use Spring Boot to simplify dependency management and configuration
Understand and use Boot's auto-configuration
Customize Boot's behavior with properties and in other ways
Work with the ORM (Object-Relational Mapping) module to integrate Spring with technologies such as JPA
Use Spring Data to automatically generate JPA-based repository classes
Understand and use Spring's transaction support, including the easy-to-use Java annotation support
Understand REST, and use Spring REST to build RESTful services
Use Ajax-based front ends with Spring REST
Use RestTemplate to create Java REST clients

Topics:

Introduction to Spring

- Overview of Spring Technology



- Motivation for Spring, Spring Architecture
- The Spring Framework
- maven and Spring

• Spring Introduction
- Declaring and Managing Beans
- ApplicationContexts - The Spring Container
- XML and @Component/@Named Config

• Dependencies and Dependency Injection (DI)
- Examining Dependencies
- Dependency Inversion / Dependency Injection (DI)
- DI in Spring - XML and @Autowired

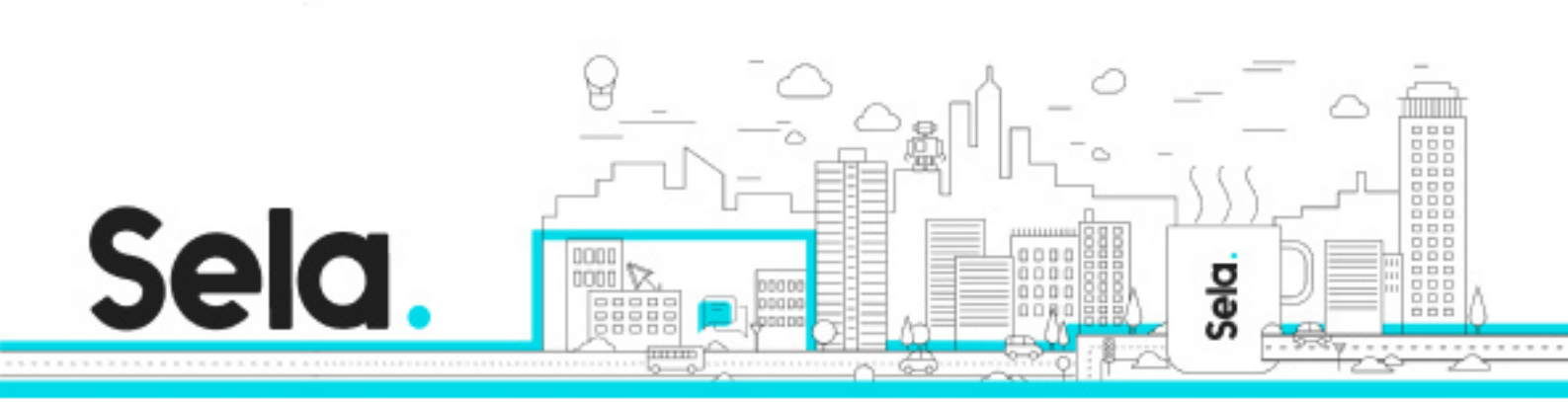
Configuration in Depth

• Java Based Configuration (@Configuration)
- Overview, @Configuration, @Bean
- Dependency Injection
- Resolving Dependencies

• Integrating Configuration Types
- XML and @Component Pros/Cons
- @Configuration Pros/Cons
- Choosing a Configuration Style
- Integrating with @Import and <import>

• Bean Scope and Lifecycle
- Singleton, Prototype, and Other Scopes
- Configuring Scope
- Bean Lifecycle / Callbacks

• Externalizing Properties
- Properties Files
- @PropertySource, property-placeholder
- Using @Value



    - SpEL
- Profiles
    - Overview and Configuration
    - Activating Profiles

Spring Boot Overview

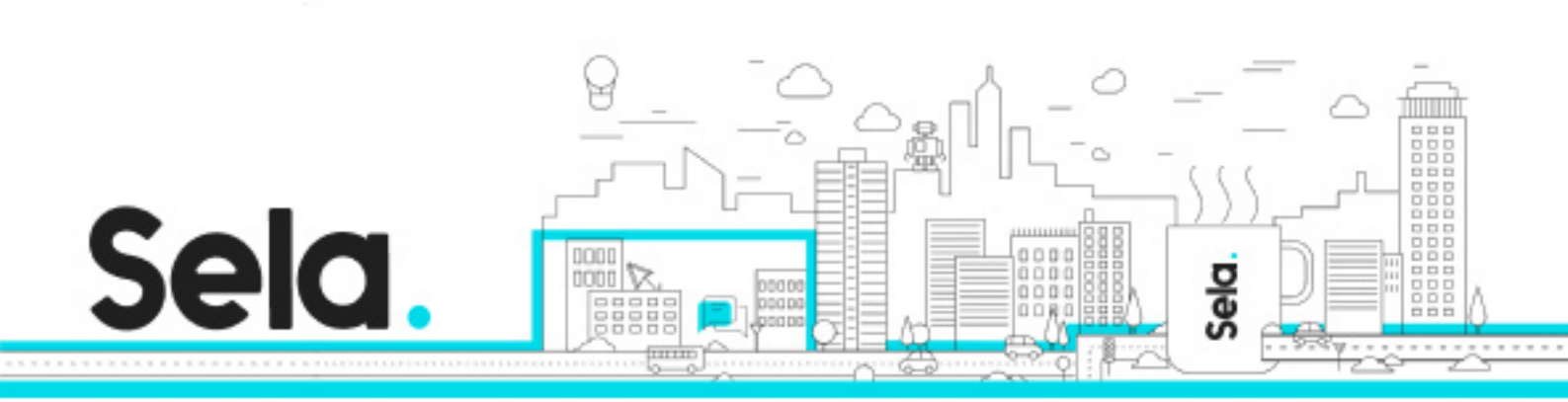
- Spring Boot Structure
- Spring POMs with Boot Parents
- Spring Boot Starters
- Other Capabilities

Spring Testing

- Testing and JUnit Overview
    - Writing Tests - Test Classes, asserts, Naming Conventions
    - Running Tests - IDE, maven, ...
    - Test Fixtures - setup and teardown
- Spring TestContext Framework
    - Overview
    - Configuration
    - Running Tests

Spring and Spring Data with JPA

- Overview of Spring database support
- Configuring a DataSource
- Using Spring with JPA
    - Managing the EntityManager (EM)
    - LocalContainerEntityManagerFactoryBean and Container-managed EMs



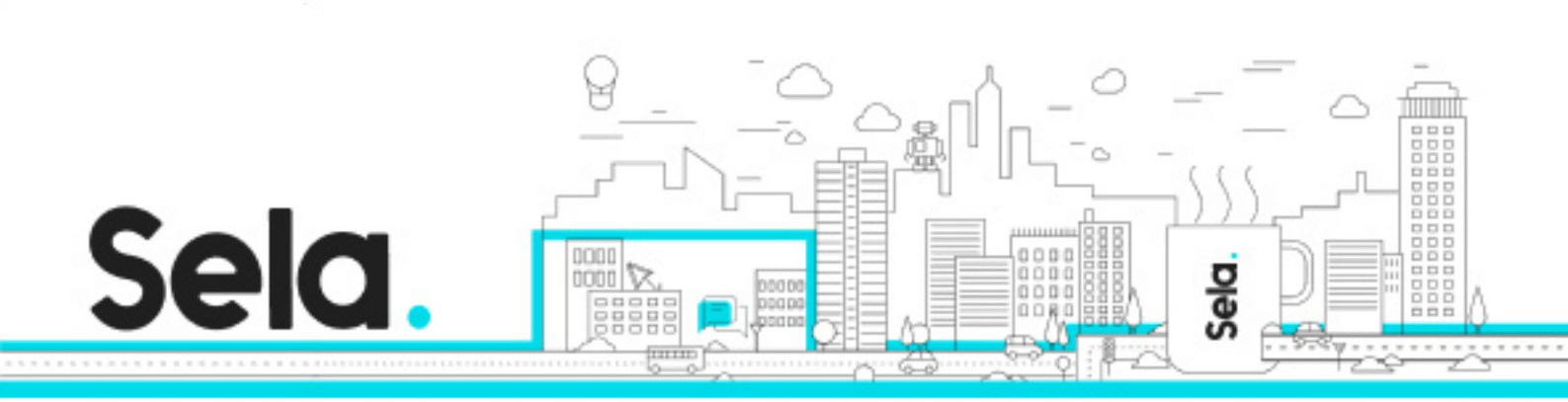
    - JEE and JNDI Lookup of the EM
    - Configuration and Vendor Adaptors
    - Creating a JPA Repository/DAO Bean - @PersistenceUnit, @PersistenceContext
- Spring Data Overview
    - Overview and Architecture
    - Configuring Spring Data
    - Repositories and JPA Repositories
    - Using CrudRepository
- Using Spring Data
    - Naming Conventions for Querying
    - Creating more Complex Queries
    - Query Configuration

Spring Transaction (TX) Management

- Overview
- Declarative TX Management (REQUIRED, etc.)
- TX Scope and Propagation
- Pointcut-based Configuration of Transactions

RESTful Services with Spring

- REST Overview and Principles
- REST and Spring MVC
    - Spring support for REST
    - @RequestMapping/@PathVariable, @RequestBody, @ResponseBody
    - URI Templates and @PathVariable
    - Controllers with @RestController
- Requests and Responses
- Ajax Overview



Working with JSON and XML

- Generating JSON
  - º JSON Overview
  - º JSON Representations for Resources
  - º Message Converters
- Generating XML
  - º JAXB and Jackson Message Converters for XML
  - º JAXB / @XmlRootElement
- Content Negotiation

Java Clients for RESTful Services

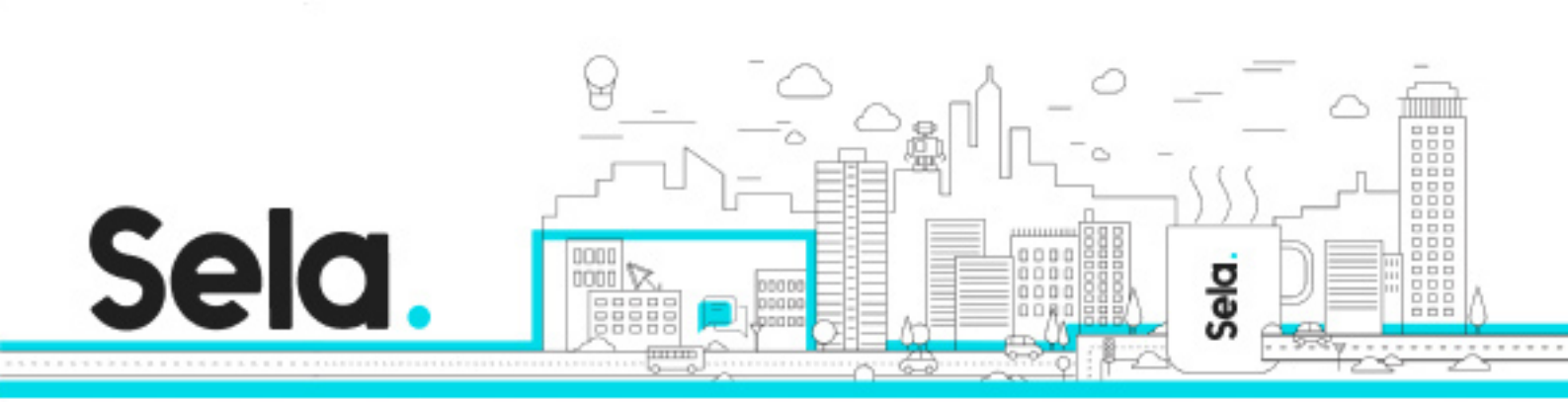
- Client Requirements and Spring's RestTemplate
- getForObject() / getForEntity()
- Other RestTemplate Methods
- Accessing Headers / exchange()

Common REST Patterns

- GET: Read
- POST: Create
- PUT: Update
- DELETE: Delete
- Programming on server side, and client side (with RestTemplate)

Boot and its Configuration/Customization

- SpringBootApplication / CommandLineRunner / ApplicationRunner



- Working with Properties - YAML and .properties
- Logging and its Configuration
- Spring TestContext Framework
- Auto-configuration and Customization

Boot Database Support

- Overview and JDBC Support
- JPA Support

Spring Boot Web/Security

- Spring Boot Web
- Spring Boot Security
- Spring Boot Data REST

Additional Spring 5 Features

- Updates to Spring Core
- WebFlux / Reactive Web Framework