Szkolenie: Capstone Courseware
117E Developing RESTful Services with Spring

DOSTĘPNE TERMINY

2025-06-16 | 5 dni | Virtual Classroom
2025-06-16 | 5 dni | Warszawa / Wirtualna sala

Cel szkolenia:

This course enables the experienced Java developer to use the Spring MVC framework to create RESTful web services. We begin by developing fluency with the Spring container and configuration practices, and then learn the annotation-driven MVC system for REST controllers. We consider persistence techniques and unit testing to round out the week.

Learning Objectives

- Understand the scope, purpose, and architecture of Spring.
- Use Spring application contexts to declare application components, rather than hard-coding their states and lifecycles.
- Use dependency injection to further control object relationships from outside the Java code base.
- Use annotations to take advantage of Spring post-processors for automated bean instantiation and wiring.
- Configure systems of Spring beans using either Java or XML.
- Build web applications and RESTful services as a Spring DispatcherServlet and associated application context.
- Use Spring MVC annotations to map request URLs, methods, content types, and parameters to Java methods, and to bind request data to method parameters.
- Validate input via HTTP requests, and use exception handlers to produce appropriate HTTP error responses.
- Build REST clients using Spring's "REST template."
- Connect REST controllers to persistent stores using Spring for JDBC or JPA.
- Control transactions either programmatically with TransactionTemplate or declaratively with @Transaction annotations.
- Use the Spring testing framework for tests of core components, REST controllers, and persistence components.

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Plan szkolenia:

- Overview of Spring
  - Java EE: The Good, The Bad, and the Ugly
  - Enter the Framework
  - Spring Value Proposition
  - The Spring Container
  - Web Applications
  - Persistence Support
  - Aspect-Oriented Programming
  - The Java EE Module(s)
- The Container
  - JavaBeans, Reconsidered
  - The Factory Pattern
  - Inversion of Control
  - XML View: Declaring Beans
  - Java View: Using Beans
  - Singletons and Prototypes
- Instantiation and Configuration
  - Configuring Through Properties
  - Configuration Namespaces
  - The p: Notation
  - Bean (Configuration) Inheritance
  - Configuring Through Constructors
  - Bean Post-Processors
  - Lifecycle Hooks
  - Integrating Existing Factory Code
  - Awareness Interfaces
- Dependency Injection
  - Assembling Object Graphs
  - Dependency Injection
  - Single and Multiple Relationships
  - The Utility Schema
  - Using Spring Expression Language (SpEL)
  - Inner Beans
  - Autowiring

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- @Component, @Service, & Company
- @Autowired Properties
- Best Practices with Spring Annotations
- Java Classes as @Configurations
- AnnotationConfigApplicationContext
- Capabilities and Limitations
- Mixing and Importing XML and Java Configurations

- Assembling Object Models
  - Collections and Maps
  - Support for Generics
  - The Spring Utility Schema (util:)
  - Autowiring to Multiple Beans
  - Order of Instantiation
  - Bean Factory vs. Application Context
- REST Basics
  - The REST Vision
  - Use of HTTP
  - Use of URIs
  - Use of Content Types
  - CRUD Operations and Business Operations
  - Hypermedia, and the Richardson Maturity Model
- The Web Module
  - Servlets and JSPs: What's Missing
  - The MVC Pattern
  - The Front Controller Pattern
  - DispatcherServlet
  - A Request/Response Cycle
  - The Strategy Pattern
  - Web Application Contexts
  - Annotation-Based Handler Mappings
  - @Controller and @RequestMapping
  - "Creating" a Model
  - Entities, Not Views
- Handling Requests
  - Matching URLs
  - Matching Methods

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- Matching Content Types
- Path Variables
- Request Parameters
- Headers and Cookies
- Injectable Method Parameters
- Command Objects vs. Entities
- @RequestBody and @ResponseBody
- @RestController
- HttpEntityand ResponseEntity

- Producing Responses
  - Return Types
  - Default Content Types
  - Default Status Codes
  - @ResponseStatus and HttpStatus
  - The produces Element
  - ResponseEntity
  - Binary Content
- Entities and Complex Content
  - Converters and Formatters
  - HttpMessageConverter
  - Using
  - Built-In HttpMessageConverters
  - Working with XML
  - Working with JSON
  - Custom Message Converters
- Generic Services
  - Applying Patterns
  - Generic Service Methods
  - Annotation Inheritance
  - Separation of Concerns
  - CRUD, Sub-Resource, and Business Methods
  - Entity Representations
  - Entity Relationships
- Error Handling and Validation
  - Error Handling for REST Services
  - HandlerException Resolver

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- @ExceptionHandler
- @ControllerAdvice for Global Handling
- Validation in Spring MVC
- Java-EE Bean Validation
- Configuration
- Support for @Valid
- Message Sources and Localization
- Resolving Error Codes

- Data Representations and Hypermedia
  - Multiple Representations
  - Filtering with @JsonView
  - Handling Object Associations: Embedding
  - Handling Object Associations: Passing IDs
  - Handling Object Associations: Linking
  - Hypermedia
- REST Clients
  - RestTemplate
  - Sending HTTP Requests
  - Translating Entities
  - Reading Responses
  - Error Handlers
- Persistence with JDBC
  - Reducing Code Complexity
  - The DataAccessException Hierarchy
  - JdbcTemplate
  - RowMapperand ResultSetExtractor
  - The DaoSupport Hierarchy
  - Capturing Generated Keys
  - Transaction Control
  - TransactionTemplate
  - Isolation Levels
  - Transaction Propagation
- Persistence with JPA
  - Object/Relational Mapping
  - The Java Persistence API
  - JpaDaoSupport and JpaTemplate

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- @PersistenceUnit and @PersistenceContext
- Shared Entity Managers
- Using
- The @Transaction Annotation
- Isolation and Propagation
- A Limitation of @Transactional
- Understanding Entity States
- Bean Validation in JPA
- Optimistic Locking
- Bi-Directional Associations and Serialization
- Using @XmlTransient
- Using @JsonView

- Testing
  - Testability of Spring Applications
  - Dependency Injection
  - Mocking
  - SpringJUnit4ClassRunner
  - TestContext
  - @ContextConfiguration
  - Mocking Spring MVC
  - Building Requests
  - Checking Content
  - xpath() and jsonPath()
  - Profiles
  - Testing Persistence Components

Wymagania:

- Java programming -- Course 103 Java Programming is excellent preparation.
- Basic knowledge of XML -- Course 501 Introduction to XML.

Poziom trudności

Certyfikaty:

The participants will obtain certificates signed by Capstone Courseware.

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Prowadzący:

Authorized Capstone Courseware Trainer.

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