



Course Outline

Chapter 1- Spring Framework Basics

- 1 - Setting up a Spring Project
- 2 - Understanding Tight Coupling using the Binary Search Algorithm Example
- 3 - Making the Binary Search Algorithm Example Loosely Coupled
- 4 - Using Spring to Manage Dependencies - @Component, @Autowired
- 5 - What is happening in the background?
- 6 - Dynamic auto wiring and Troubleshooting - @Primary
- 7 - Constructor and Setter Injection
- 8 - Spring Modules
- 9 - Spring Projects
- 10 - Why is Spring Popular?

Chapter 2- Spring Framework in Depth

- 1 - Dependency Injection - A few more examples
- 2 - Autowiring in Depth - by Name and @Primary
- 3 - Autowiring in Depth - @Qualifier annotation
- 4 - Scope of a Bean - Prototype and Singleton
- 5A - Complex scenarios with Scope of a Spring Bean - Mix of Prototype and Singleton
- 5B - Difference Between Spring Singleton and GOF Singleton
- 6 - Using Component Scan to scan for beans
- 7 - Lifecycle of a Bean - @PostConstruct and @PreDestroy
- 8 - Container and Dependency Injection (CDI) - @Named, @Inject
- 9 - Removing Spring Boot in Basic Application
- 10 - Fixing minor stuff - Add Logback and Close Application Context
- 11 - Defining Spring Application Context using XML - Part 1
- 12 - Defining Spring Application Context using XML - Part 2
- 13 - Mixing XML Context with Component Scan for Beans defined with Annotations

- 14 - IOC Container vs Application Context vs Bean Factory
- 15 - @Component vs @Service vs @Repository vs @Controller
- 16 - Read values from an external properties file

Chapter 3- JUNIT and MOCKITO Basics

- 1 - What is JUnit and Unit Testing?
- 2 - First JUnit Project and Green Bar
- 3 - First Code and First Unit Test
- 4 - Other assert methods
- 5 - Important annotations
- 6 - Setting up an example using <http://start.spring.io>.
- 7 - Using Stubs - Disadvantages
- 8 - Your first mock with Mockito
- 9 - Using Mockito Annotations - @Mock, @InjectMocks, @RunWith
- 10 - Mocking List interface

Chapter 4- UNIT Testing with Spring Framework

- 1 - Spring Unit Testing with a Java Context
- 2 - Spring Unit Testing with an XML Context
- 3 - Spring Unit Testing with Mockito

Chapter 5- Spring Boot Basics

- 1 - Introduction to Spring Boot - Goals and Important Features
- 2 - Developing Spring Applications before Spring Boot
- 3 - Using Spring Initializr to create a Spring Boot Application
- 4 - Creating a Simple REST Controller
- 5 - What is the Spring Boot Auto Configuration?
- 6 - Spring Boot vs Spring
- 7 - Spring Boot Starter Projects - Starter Web and Starter JPA
- 8 - Overview of different Spring Boot Starter Projects
- 9 - Spring Boot Actuator
- 10 - Spring Boot Developer Tools

Chapter 6- Spring AOP

- 1 - Setting up the AOP Example - Part 1
- 2 - Setting up the AOP Example - Part 2
- 3 - Defining @Before advice
- 4 - Understand AOP Terminology - Pointcut, Advice, Aspect, JoinPoint, Weaving and Weaver
- 5 - Using @After, @AfterReturning, @AfterThrowing advice
- 6 - Using @Around advice to implement performance tracing
- 7 - Best Practice - Use common Pointcut Configuration
- 8 - Quick summary of other Pointcuts
- 9 - Creating Custom Annotation and an Aspect for Tracking Time

Chapter 7- Basic Java Web Application with JSP And Servlets

- 01 - Setting up Your First Java Web Application
- 02 - Theory 1 - Maven and Magic
- 03 - Theory 2 - What is a Servlet?
- 04 - Theory 3 - Web Application Request Flow
- 05 - Theory 4 - Understand Your First Servlet - LoginServlet
- 06 - Create LoginServlet From Scratch Again and Your First View
- 07 - Theory - Play Time - Let's Try Breaking Things
- 08 - Passing Request Parameters using Get Method
- 09 - Theory - Introduction and End to Scriptlets
- 10 - Disadvantages of Get Parameters
- 11 - Your First Post Request
- 12 - Your First Servlet doPost Method
- 13 - Let's Add a Password Field

Chapter 8- Spring MVC

- 00 - Setting up Maven, Tomcat and Simple JEE Application
- 01 - Configure an application to use Spring MVC
- 02 - First Spring MVC Controller, @ResponseBody, @Controller
- 03 - Redirect to Login JSP - LoginController, @ResponseBody and View Resolver
- 04 - DispatcherServlet and Log4j
- 05 - Show userid and password on the welcome page - ModelMap and @RequestParam
- 06 - LoginService and Remove all JEE Servlets based code

- 07 - Spring Auto-wiring and Dependency Management - @Autowired and @Service
- 08 - Create TodoController and list-todos view. Make TodoService a @Service and inject it.
- 09 - Web Application Architecture
- 10 - More about Spring Framework
- 11 - Session vs Model vs Request - @SessionAttributes
- 12 - New Todo and redirect to a Controller
- 13 - JSTL
- 14 - Bootstrap - using Webjars
- 15 - Let's delete a Todo
- 16 - Use Bootstrap to format and add HTML5 Validations
- 17 - Introduce JSR 349 Validations using Hibernate Validator - First Command Bean.
- 18 - Let's update a Todo
- 19 - Let's add a Target Date for Todo - Use initBinder to Handle Date Fields
- 20 - Navigation bar and JSP Fragments

Chapter 9- Spring Security

- 01 - Let's prepare for Spring Security
- 02 - Initial Setup for Spring Security
- 03 - Refactor and add Logout Functionality using Spring Security
- 04 - Exception Handling in Spring MVC - @ControllerAdvice, @ExceptionHandler & error-page in web dot xml
- 05 - Let's add Internationalization - i18n
- 06 - Basic Spring Rest Services - @RestController and Jackson-databind
- 07 - More Rest Services - @PathVariable

Course Requirements

- You have some experience with Java Web Applications but did not completely understand the basics
- You want to learn the basics of Spring MVC and gain expertise in it
- We will use an In-Memory List as Data Store in this Beginner's Course

Course Outcomes

- Basics of Spring Framework - Dependency Injection, IOC Container, Application Context and Bean Factory
- Spring Annotations - @Autowired, @Component, @Service, @Repository, @Configuration, @Primary....
- Spring MVC in depth - DispatcherServlet, Model, Controllers and ViewResolver
- Spring Boot Starters - Spring Boot Starter Web, Starter Data Jpa, Starter Test
- Basics of Spring Boot, Spring AOP, Spring JDBC and JPA

- Basics of Eclipse, Maven, JUnit and Mockito
- The basic concept of a Web application step by step using JSP Servlets and Spring MVC
- Unit testing with JUnit and Mockito using XML and Java Spring Application Contexts
- Basic Todo Management Application with Login/Logout
- Model, Controllers, ViewResolver and Filters
- Forms - DataBinding, Validation
- Annotation-based approach - @RequestParam, @PathVariable, @ModelAttribute, @SessionAttributes
- Bootstrap to style the page
- Spring Security
- Internationalization
- Exception Handling
- Basic REST Services