

Course name: Java - Spring Boot

Day 1: Java Refresher

- Java's role in modern software development
- Setting up java development environment
- Object-oriented programming concepts
- Exception handling, Collections and Generics

Hands-on Lab

- Implementing OOP Concepts and Exception Handling
- Using collections and generics

Day -2: Functional Programming Enhancements

- Lambda Expressions & Functional Interfaces
- Streams API Enhancements

New Java Features (JDK11, JDK17, JDK 21)

- Records, Sealed classes, Pattern Matching
- Enhanced switch expressions

Multi-Threading & Virtual Threads

Hands-on Lab

- Implementing functional programming with Streams & Lambdas
- Implementing Records and Sealed Classes

Day 3: Spring Framework - Introduction

Spring Framework Overview

- Introduction to Spring Framework 6
- Understanding Dependency Injection and various annotations

Spring Boot - Introduction & REST API Development

Creating REST APIs with Spring Boot

- Building RESTful services with @RestController
- HTTP Methods (GET, POST, PUT, DELETE)

Hands-on Lab

- Develop a simple CRUD API with Spring Boot

Day 4: Spring Boot - Database Integration with MySQL

Spring Data JPA

- Introduction to Spring Data JPA
- Defining JPA entities & repositories

Connecting to MySQL

- Configuring Spring Boot with MySQL
- Using JpaRepository for CRUD operations

Hands-on Lab

- Implement a REST API with MySQL

Day 5: Spring Boot – Spring Profiles, Exception Handling and Testing

Exception Handling for Rest API

- Using @RestControllerAdvice and @ExceptionHandler
- Spring Boot 3 – ProblemDetail class

Testing Spring Boot Applications

- Writing unit tests with JUnit & Mockito
- Integration testing with Spring Boot

Hands-on Lab

- Writing unit tests with JUnit
- Create and use different spring profiles like dev, qa, prod etc

Day 6: Spring Security

Spring Security Basics

- Introduction to authentication & authorization
- Implementing JWT-based authentication

Hands-on Lab

- Implement Spring Security for an existing API