

Spring Core Learning Roadmap

1. Introduction to Spring Framework

- Overview of Spring and its role in Java applications.
- Understanding Inversion of Control (IoC) and Dependency Injection (DI).
- Key benefits and features of the Spring Framework.

2. Setting Up Spring Development Environment

- Installing and configuring Spring with Maven/Gradle.
- Setting up an IDE (Eclipse/IntelliJ) for Spring development.
- Using Spring Initializr for Spring Boot setup.

3. Spring Configuration

- Understanding XML-based configuration (optional for legacy apps).
- Focusing on Java-based configuration (`@Configuration`, `@Bean`).
- Overview of the `ApplicationContext` and Bean lifecycle.

4. Dependency Injection and Bean Scopes

- Using `@Autowired` for constructor, setter, and field injection.
- Understanding `@Qualifier` for resolving multiple bean conflicts.
- Exploring bean scopes (`singleton`, `prototype`).

5. Spring AOP (Aspect-Oriented Programming)

- Understanding cross-cutting concerns and modularization using AOP.
- Defining aspects, advice, and pointcuts.
- Working with annotations like `@Aspect`, `@Before`, `@After`, `@Around`.

6. Spring Bean Lifecycle and Scope

- Managing bean lifecycle using `@PostConstruct` and `@PreDestroy`.
- Handling initialization and destruction callbacks.
- Deep dive into the `BeanPostProcessor`, `InitializingBean`, `DisposableBean`.

7. Spring Event Handling

- Understanding Spring's event mechanism for communication within the container.

- Publishing and handling custom events using `@EventListener`.

8. Spring Profiles

- Using `@Profile` to define beans for different environments (dev, prod, test).
- Managing configuration for various environments in a clean way.

9. Spring's Integration with Databases

- Working with Spring JDBC for database interactions.
- Using `JdbcTemplate` for database CRUD operations.
- Understanding `DataSource` configuration in Spring.

10. Spring Transactions

- Managing transactions in Spring using `@Transactional`.
- Understanding transaction propagation and isolation levels.
- Handling programmatic and declarative transactions.