

- **Introduction to the Spring Framework**

- Understanding the Spring Framework and Its Ecosystem
  - \* Introduction to the Spring framework
  - \* History and evolution of Spring
  - \* Core concepts: Inversion of Control (IoC) and Dependency Injection (DI)
- Configuring Spring with XML and Annotations
  - \* Configuration options in Spring: XML-based and annotation-based
  - \* Setting up a Spring project with XML configuration
  - \* Utilizing annotations for component scanning and bean definitions
- Creating Spring Beans and Managing Their Lifecycle
  - \* Defining and configuring Spring beans
  - \* Bean scopes (singleton, prototype, request, session)
  - \* Understanding the bean lifecycle: initialization and destruction methods
- Dependency Injection in Action
  - \* Implementing dependency injection in Spring
  - \* Constructor injection and setter injection
  - \* Resolving bean dependencies
  - \* Hands-on exercises on creating Spring applications

### Week 3: Spring Data Access with JDBC

#### Day 1: JDBC Template and Data Source Configuration

Overview of JDBC Template in Spring Configuring data sources for database connectivity  
Implementing data source properties

Day 2: Executing Queries and Managing Connections  
Performing basic SQL queries with JDBC Handling prepared statements and result sets Managing database connections and resources

Day 3: Handling Exceptions and Transactions  
Dealing with exceptions in JDBC operations Understanding transaction management Implementing programmatic and declarative transactions

Day 4: Developing a Simple JDBC-Based Application  
Building a complete Java application with Spring JDBC CRUD operations with JDBC Best practices and error handling