



## **Core&Advanced Java Springframeworks Course Content:35-40hours**

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### Course Outline

### **Object-Oriented Programming (OOP) concepts**

#### **Introduction**

- Abstraction
- Encapsulation
- Inheritance
- Polymorphism
- Getting started with java
- Introduction to Java
- Features of java
- Java basics
- Java programming basics
- Data types
- Type casting
- Control Structure
- Java Arrays
- Command-line arguments

#### **Classes and Objects**

- Class and Object
- Abstract classes
- Interfaces
- Overloading and Overriding
- Inner classes
- Packages and Java class path



## Exception handling

- Exception handling fundamentals
- Exception types
- try catch finally blocks
- Throw , throws keywords
- Creating custom exceptions

## Java Threads

- Introduction to threads
- Multi threading in java
- Thread lifecycle
- Thread class and Runnable interface
- Thread priorities
- Synchronization
- Interthread communication

## Java.lang

- The java.lang package overview
  - The Object class
  - Wrapper classes
  - System class
  - Math class
  - String & StringBuffer
  - Java collections - java.util
  - Collections overview
  - Collection
  - List,Set,SortedSet
  - ArrayList ,LinkedList,TreeSet
  - Hashtable,Enumeration
  - Vector
  - Date,Calendar
  - Java streams- java.io
  - Streams overview
  - Byte streams vs. Character streams
  - Input/Output streams
  - Reading/Writing from/to files – the File Streams
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- Networking java.net

- Networking overview
- Basics of java network programming

### **Advanced Java**

- Database Programming
- JDBC overview
- SQL- Structured Query Language
- JDBC Programming Concepts
- Query Execution
- Scrollable and Updatable Result Sets
- Working with Statements
- Row Sets
- Batch Updates
- Calling stored procedures and functions
- ResultSetMetaData
- Transactions
- Getting Started with Web Applications
- Web Application Life Cycle
- Web Modules
- Configuring Web Applications
- Accessing Databases from Web Applications
- Jar, war and ear
- Webserver & Application Server
- HTML
- Javascript

### **Java Servlet Technology**

- Servlets overview
- Servlet Life Cycle
- Sharing Information
- Initializing a Servlet
- Writing Service Methods
- Filtering Requests and Responses
- Invoking Other Web Resources
- Accessing the Web Context
- Session tracking and management

### **Java Server Pages Technology**

- JSP overview
- The Life Cycle of a JSP Page

- Declarations, Scriptlets, Expressions
- JSP Action tags
- Directives
- JSP implicit objects
- Scope in JSP
- Ajax
- HTML
- Javascript

### Java Server Pages Standard Tag Library

- Using JSTL
- Core Tag Library
- Enterprise JAVA Beans
- Enterprise Bean overview
- Types of enterprise beans
- Advantages of enterprise beans
- The Life Cycles of Enterprise Beans
- Working with Session Beans
- Stateful vs. Stateless Session Beans
- Working with Entity Beans
- Bean Managed Persistence/Container Managed Persistence entity beans

### JAVA Messaging Service (JMS)

- Overview
- JMS architecture
- Messaging models
- Point-to-Point
- Publish/subscribe
- JMS API
- Message-Driven Beans
- Overview
- The Message-Driven Bean Class
- Life cycle of Message Driven Bean

### Spring Framework

#### Spring Introduction

- Spring modules
- Dependency injection
- Spring containers (Bean Factory, Application Context)

- Basic bean wiring
- Bean life cycle

### Spring Data Access

- Using jdbc with spring
- Working with Datasources,
- Working with jdbctemplates,
- DML operations on data

### Spring web-MVC

- Controllers
- Types of controllers
- Handling web requests
- Mapping requests to controllers
- Handler Mappings
- Processing commands, form submissions
- Views
- Resolving text messages (property files)
- View resolvers
- Validations
- Working with throw away controllers
- ContextLoaderListener for loading configuration files

### Aspect Oriented Programming

- Join points, point cuts, advice, aspects
- AspectJ syntax for AOP
- AOP configuration elements

### Spring Transactions

- The meaning of transaction
- Transaction attributes
- Spring transaction management support
- Choosing a transaction manager
- Declarative transaction management

### Spring Messaging

- Messaging overview (JMS)
- Using Messages with Spring

## **Advanced Bean Wiring**

- Parent and child beans
- Inner beans
- Bean wiring with property files

## **Spring Web**

## **Spring ORM**

## **Web Services**

## **XML basics**

- Introduction of XML
- Syntax
- Elements
- Attributes

## **DTD, XML schema and advanced schema**

- Introduction of DTD and XML Schema
- Elements of DTD and Schema
- Difference between DTD and Schema
- Implement example

## **SOAP and WSDL**

- Introduction of SOAP and WSDL
- Implement example

## **Parsers (SAX and DOM)**

- Introduction of SAX and DOM parsers
- Importance of Parsers
- Parser Architecture

## **JAXP**

- Introduction of JAXP
- Implement SAX example
- Implement DOM example

## Binding Frameworks(JAXB and XML Beans, JibX)

- Introduction of JAXB and XML Beans
- Importance of XSD
- Implement example

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