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## **React & Java Spring Boot**

### **Introduction to Java**

Object Oriented Programming Fundamentals  
Structure of a Java Program

### **Data Types**

Primitive data types  
Reference Data Types  
Keywords, Identifiers, Expressions

### **Operators**

Arithmetic Operators  
Assignment Operators  
Logical Operators  
Relational Operators  
Bitwise Operators

### **Variables**

Declaration, Definition, Types

### **Methods**

Syntax, Types

### **Object**

Object Creation, Reference, Reference Variables

### **Constructors**

Pass by Value and Pass by Reference  
Access Specifiers  
Access Levels  
Decision Making and Control Structures

### **Strings**

String, String Buffer, String Builder

### **Java Beans**

## **Arrays**

Declaring and defining arrays

Primitive Arrays

Object Arrays

## **Inheritance**

Is-A Relationship

Has-A Relationship

Inheritance using extends keyword

Inheritance using implements Keyword

## **Abstraction**

Abstraction using abstract classes

Abstraction using interfaces

## **Encapsulation**

## **Interfaces**

Interfaces Vs Classes

Nested Interfaces

Interface as a type

## **Polymorphism**

Overloading

Constructor overloading

Overloading between classes

Overriding

## **Exception Handling**

Exception

Categories of Exception, Exception hierarchy

Throw and throws keywords

Try catch and finally keywords

## **Collection Framework**

Core Interfaces

Core Classes

Iterator

Comparable & Comparator

## **Generics**

Auto boxing

Unboxing

Casting

Primitive Casting

Reference Casting  
Up casting and down casting  
File Handling  
File Handling in Java  
Files, Streams, Types of Streams  
Serialization  
Threads  
Thread Life Cycle  
Thread States  
Creating Threads  
Threads Priorities  
Thread Groups  
Synchronization  
Inner Classes  
Nested Classes  
Anonymous Classes

## **J2EE**

Overview of J2EE and WWW  
The HTTP Protocol and Web Application Introduction  
Environment Setup  
HTML  
Servlets  
What is a Servlet?  
Servlet Lifecycle, Configuring a Servlet, Types of Servlet  
Servlet Context  
Servlet Config

Deployment descriptor  
Session Management  
Java Server Pages (JSP)  
JSP Lifecycle  
Servlets vs JSP  
Scriptlets  
Directives  
Declaration  
Sessions  
Mixing Scriptlets and HTML  
Tag Libraries  
Beans and Forms Processing

MVC Architecture  
JDBC  
Database Setup (MySQL)  
Overview  
JDBC Driver Types  
How JDBC Works  
Steps Involved  
JDBC Process details  
Queries  
Prepared Statements  
Callable Statements

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## **FRAMEWORKS OVERVIEW**

### **Spring and Spring Boot Framework**

Spring: Introduction  
What is Spring  
Advantages of the Spring Framework  
Spring Framework Architecture and Spring Modules  
Java and Spring Configuration  
Spring: Core Container  
Components of Spring Core  
Object Coupling – Tight and Loose Coupling

### **Dependency Injection (DI)**

Types of DI  
Concepts and Implementation of Inversion of Controls (IoC)  
Spring Bean – Properties, Scope, Method, Bean Lifecycle  
DI with Bean  
Spring BeanFactory  
Wiring Beans

AutoWiring Beans  
Understanding the Default AutoWiring  
AutoWiring by Name and AutoWiring by Constructors  
Annotations in Spring  
Dependency Injection using Annotations  
Wiring Bean with Annotations

Spring: Data Access and Integration  
Data Access with Spring using JDBC  
JDBC Templates  
Data Access Object Patterns (DAO) and Bean  
Querying Database and Binding the Variables  
Handling Database Exceptions  
Executing Update and Delete Statements  
Batch Update data  
Database Transactions  
Transactions Management with Spring  
Spring: Web Layer  
Spring Model View Controller (MVC) Architecture  
Components of MVC  
Setting Up a Spring MVC Application  
The Purpose of Dispatcher Servlets  
Spring Controllers  
Spring View Resolvers  
Adding Data using Spring Data Models  
Creating and Managing Forms in Spring  
Managing File Uploads

### **Spring: Aspect Oriented Programming (AOP)**

Limitations of Object Oriented Programming  
Introduction to Aspect Oriented Programming  
Advantages of AOP  
Terminologies Associated with AOP

#### **Aspects**

“Advice” to Aspects  
Types of Advice – Before, After, Around, Others  
Creating Annotations based Aspects  
Point Cut Expressions – “Within”, “This”, “Target”  
Point Cut Designators  
AspectJ

### **Spring: Security**

Securing Applications with Spring Security

Spring Security Filters

Configuring Authentications

Spring Authorizations

“Remember Me” Functionality

### **Spring: Boot**

Introduction to Spring Boot

Features of Spring Boot

The Spring Boot Project Structure

The Spring Boot Initializr

Spring Boot Actuator

Configuring the Spring Boot Server

Spring Boot Application Properties

Spring Vs Spring Boot

### **Introduction to Spring**

Introduction to Spring

Introduction to IoC & Dependency Injection

Configuring spring and full demo

Introduction to Hibernate

Introduction to Hibernate, ORM Overview, Hibernate Environment

Hibernate Architecture & API

Hibernate Configuration

Hibernate Sessions

Persistent Class and Mapping Files

Building Hibernate Application, Hibernate Query Language (HQL)

Hibernate O/R Mappings – Collection & Association Mappings

### **ReactJS**

React Overview

Introduction

What are SPA apps

What is React

How react works internally

What are the alternatives

What problem does it solve

When to use React

Component based architecture

### **JSX**

Introduction

Write your first jsx code

How to compile jsx to Javascript  
Write class based components with jsx  
Renderig jsx to DOM using react DOM

## **Dom manipulation**

Introduction  
Select elements using ref  
Other ways to select elements

## **Props vs States**

Introduction  
What are Props  
What are states  
Proptypes validation

## **Lifecycle Methods in React**

Introduction  
How componentWillMount works  
How componentDidMount works  
How componentWillReceiveProps works  
How shouldComponentUpdate works  
How componentWillUpdate works  
How componentDidUpdate works  
How componentWillUnmount works  
Understanding When to use which life cycle method

## **Forms & validations**

Introduction  
How to get input from users using Forms  
Form validations

## **Style React Components**

Introduction  
Using css in react  
Inline styles  
Impoting external styles

## **Event Handling in React**

Introduction  
How events work in react world  
What are synthetic events  
Mouse events

Keyboard events

### **Redux and State management**

Introduction

What is state management

Flux architecture

Redux Introduction

How to manage state in large applications with redux

### **Routing**

Introduction

Navigating between components

React Router

Creating and managing routes

Integrating redux with react router

Project with React & Java Spring Boot

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