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Java Spring Boot MicroServices

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

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