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Java Spring Boot & Angular

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

Angular-(version 2 to 11)

TypeScript Framework

Introduction to TypeScript
Advantages of TypeScript
Overview of Node and Node Environment Setup
Installing and Configuring TypeScript Engine
Understanding Transpilation

TypeScript Variables and Data types

Declaring and Defining Variables
About “any”
“var” Vs “let” keywords
Static and Dynamic Type

Data types : String, Number, Array, Object, Tuple, Enum, Void and NULL

OOPS in TypeScript

Defining Class and Creating Objects

Property, Methods and Constructors

Handling Inheritance

Types of Inheritance in TypeScript

Understanding Access Modifiers

Static Methods in TypeScript

Understanding Interfaces in TypeScript

Programming with Angular 7 / 8

Introducing Angular

What is Angular

Advantages of using Angular

Understanding Differences between a Framework and a Library

Understanding Single Page Applications (SPA)

SPA Vs. Traditional Applications

Understanding the MVC Architecture

MVC in Client and Server Side

Elements of Angular

Modules

Data Binding Directives

Templates

Metadata

Dependency Injection

Angular Components

Angular 7 / 8 – Environment Setup

Installing Node.js and understanding Node Package Manager (NPM)

What is Angular CLI

Advantages of using Angular CLI to manage Projects

Installing Angular CLI

Create a Angular App with CLI

Angular Application File Structure

Executing Angular Application

Code Linting

Installing and Understanding Webpack

Angular Modules

Understanding Angular Modules

When to use Angular Modules

Understanding NgModule
Understanding Root Modules, Feature Modules, Shared Modules
Using Providers, Managing Imports
Bootstrapping Angular Application

Angular Components

Understanding Components
Understanding Components Structure
Components Interaction and Component Lifecycle
Using ngOnInt
Exploring All Lifecycle Hooks
Understanding Change Detection
Working with Zone.js
Working with Component Decorator and its Meta data
Passing Data between Child and Parent

Angular – Data and Event Bindings

Understanding Data Binding
Explaining Two-way Data Binding
Working with Style Binding and Class Binding
Understanding and Exploring Event Binding
Element Reference and Event Filtering

Understanding Different types of Angular Directives

Structural Directives Vs. Attribute Directives
Exploring all the Angular Structural and Attribute Directives
Creating Custom Attribute Directives
Creating Custom Structural Directives
Writing Attribute Directive Code
Respond to User Initiated Events
Pass and Receive property values

Angular Pipes

Understanding Pipes in Angular
Uses of Pipes
Parameterizing Pipes
Pipes Vs. Directives
Exploring Pipes : Uppercase, Lowercase, Number, Percent, Currency, Date, Slice, Json
Difference between Pure Pipes and Impure Pipes
The PipeTransform Interface

Chaining Pipes
Creating Custom Pipes
Angular Services and Dependency Injection
Understanding Services
Purpose of using Services
Creating Services in Angular
Overview of Singleton Object
Understanding Dependency Injection
Injectors and Providers
@Injectable() and Hierarchical DI

Angular Routing and Advanced Routing

Understanding the Essentiality of Routing
Configuring and Defining Routing in Angular Application
Understanding the Routing Parameters
Understanding Static and Dynamic Routes
Passing and Fetching Route Parameters
Creating Child Route

Angular Template Driven Forms

Introduction to Forms
Overview of Template Driven Forms
Setting up Forms in Angular and Forms Control
Understanding ngForm
Accessing Form Values and setting default form values
Understanding Various Form States
Form Validations
Form Groups and Form Control Class
Understanding One Way Data Binding in Angular Forms
Angular Reactive Forms
Understanding Reactive Forms
Template Driven Forms Vs. Reactive Forms
Reactive Form Control and Sync View
Dynamic Validations in Reactive Forms
Getting Reactive Form Values

Angular Asynchronous Operations and Advanced HTTP

Understanding Event Emitter

Transferring Data with Event Emitter

Creating Custom Events and Trigger

ng-content and ng-container

Introduction to Async

Understanding HTTP mechanism

Handling HTTP Request and Response

Introduction to Observable and Observer

Call back Methods in Observable

Creating Custom Observable

Connecting backend and APIs

Angular Authorizations

Understanding Client side Authorization and Server Side Authorization

Creating Guard in Angular

Understanding Route Guard

Setting up Route Guard

Understanding HTTP Interceptors

Angular Animations

Introduction to Animations

Animations Setup

Understanding States & Transitions

Entering and Leaving from States

Animatable Properties

Animatable Units

Automatic Property Calculations

Understanding Animation Timing

Multistep Animation using Keyframes

Testing Angular Applications

Introduction to Testing

Unit Testing

Setup Jasmine Framework

Basics to Test Components

Components Test Scenarios

Introduction to Karma

E2E Testing and Protractor

Angular Security and Internalization

Importance of Security

Security in Angular

Sanitizing the Dangerous Value
Trusting Values
bypassSecurityTrustHtml
bypassSecurityTrustScript
bypassSecurityTrustStyle
bypassSecurityTrustUrl
bypassSecurityTrustResourceUrl
Cross-site Request Forgery
Pre-Compiled and runtime
Using ng2-Translate

Angular Performance, Optimization and Deployment

Change Detection Strategy
Understanding Web Workers
Precompiling (AoT)
Lazy Loading
Deployment Best Practices
Production Mode

Real Time Project with Java Spring Boot & Angular

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