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Java Full stack Development Course Content

Introduction

1. What is Front End Development
2. Front End Technologies
3. What is Back End Development
4. Backend Development Technologies
5. What is Full stack Development
6. Advantages of Full stack Development
7. Roles of Full stack Developer

Module-1: JAVA & J2EE

Core Java

1. What is Programming Language?
2. Types of programming languages
3. Java Introduction
4. History of Java
6. Principles of Java
7. Java Installation
8. Java Program Execution Flow
9. JDK vs JRE
10. JVM Architecture
11. Identifiers & Keywords
12. Data Types
13. Variables
14. Methods
15. Arrays
16. Strings Handling
17. Object Oriented Principles

18. Constructors
19. Interfaces
20. Programs related to OOPs
21. Final classes
22. Abstract Class
23. Exception handling
24. Multi-Threading
25. Concurrency Package
26. Synchronization
27. Lock mechanism
28. Serialization
29. Wrapper classes
30. Auto Boxing, UN Boxing
31. Java Memory Management
32. Class Loader Implementation
33. Variable Arguments
34. File IO Operations
35. Introduction to Collection Framework
36. List
37. Set
38. Map
39. Properties
30. Internal implementation of collection framework (List, Map, Set etc)
31. Java 8 Features Introduction
32. Lambda Expressions

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33. Functional Interfaces

34. Default & Static Methods

35. Method References

36. Constructor References

37. Date and Time API changes

38. Stream API

39. Optional class

40. Spliterator

Advanced Java

1. Why to learn Advanced Java

2. Introduction to Advanced Java

3. Introduction to Database

4. Types of databases

5. Database Environment Setup

6. JDBC Introduction

7. JDBC API Details

8. JDBC Architecture

9. JDBC Driver

10. Driver Manager

11. Connection

12. Statement

13. Prepared Statement

14. Callable Statement

15. Result Set

16. What is Dao Layer?

17. Steps to create JDBC Application

18. JDBC Applications Development

19. CRUD Operations

20. Connection Pooling

21. Most common exceptions in JDBC apps

22. Servlets

23. What is web application?

24. Web application architecture

25. Client & Server

26. Http Protocol

27. What is Servlet?

28. Servlet API

29. Servlet Life Cycle

30. Steps to create Servlet

31. Deployment Descriptor

32. Servlet interface

33. Generic Servlet class

34. HttpServlet class

35. HttpServletRequest

36. HttpServletResponse

37. ServletConfig

38. ServletContext

39. Init Params

40. Context Params

41. Forms development

42. Cookies

43. Hidden variables

44. Session Tracking in Servlets

45. JSP

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- 46. Introduction to User interface
- 47. Introduction to JSP
- 48. Servlets vs. JSP
- 49. Life Cycle of JSP
- 50. JSP Implicit Objects
- 51. JSP Directives
- 52. JSP Scripting Elements
- 53. JSP Taglibs
- 54. MVC Architecture Introduction
- 55. Forms Development
- 56. Mini Projects Development

Module-2: Web Development

HTML

- 1. Including external page links in a page using anchor tags and its properties
- 2. Working with row and column data using table tags
- 3. Hiding and unhiding elements using display property
- 4. Image tag, p tag, ul and ol tags, li, nobr, hr, br etc.
- 5. Layouts, forms, buttons
- 6. Input fields (textbox, radio button, checkbox, dropdown, text area etc.)

CSS

- 1. Adding borders, font, pseudo classes
- 2. Positioning elements (absolute, relative, fixed and static)
- 3. Image spriting
- 4. Box model (margins, padding)
- 5. Floating elements (float left, right etc.)
- 6. Including external resources
- 7. Absolute and Relative Paths
- 8. Including external resources like CSS, images etc
- 9. Form Elements
- 10. Get & Post
- 11. Validating input values in a form
- 12. Form action and type

HTML5

- 1. Difference between HTML5 and HTML 4
- 2. List of Browsers support HTML5
- 3. Doctype
- 4. Media tags (audio and video tags)
- 5. Graphics using Canvas tag
- 6. Drag and Drop features
- 7. Working on locations lat and lng using Geolocation
- 8. Storing user preferences using Local storage.
- 9. Cookies
- 10. Web worker
- 11. Web socket
- 12. Schematic elements



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CSS 3

1. Difference between CSS2 and CSS3
2. Adding borders and backgrounds
3. Advanced text effects(shadow)
4. 2D and 3D Transformations
5. Adding Transitions to elements
6. Adding animations to text and elements
7. Pseudo elements
8. Animations
9. Flex
10. Grid
11. SASS
12. LESS

Responsive Designs

1. Difference between multiple devices, making a page to work on multiple devices
2. Media queries
3. Introduction to Bootstrap CSS API

JavaScript (ES6-ES13)

1. variables
2. var,let and const
3. functions
4. arrow functions
5. Arrays
6. map(),reduce(),filter(),.....
7. JSON
8. JSON Server
9. Rest API'S
10. Promises

11. Async & Await keywords
12. DOM Manipulations
13. CallBacks
14. Callback hell
 - a. Events Handling
 - b. Event Bubbling & Event Capturing
 - c. Debouncing
 - d. Throttling
 - e. AJAX Calls
 - f. Regular Expressions
 - g. Closures
 - h. IIFE

BOOTSTRAP

Working with Bootstrap3

1. Introduction to Bootstrap 3
2. Bootstrap History
3. Why Bootstrap
4. Embedding Bootstrap in to page

Bootstrap Grid System

1. Importance of Grid System
2. Grid Classes
3. Bootstrap Stacked/Horizontal
4. Bootstrap Grid Small
5. Bootstrap Grid Medium
6. Bootstrap Grid Large

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7. Bootstrap Grid Examples
8. Bootstrap Text/Typography
9. Working with Text
10. Working with Contextual Colors and Backgrounds
11. Bootstrap Images
12. Rounded Corners
13. Circle
14. Thumbnail

Bootstrap Jumbotron

1. Inside Container
2. Outside Container

Bootstrap Buttons

1. Button Styles
2. btn-default
3. btn-primary
4. btn-success
5. btn-info
6. btn-warning
7. btn-danger
8. btn-link
9. Button Sizes
10. btn-lg
11. btn-md
12. btn-sm
13. btn-xs
14. Active/Disabled Buttons

BS Button Groups

1. Vertical Button Groups
2. Nesting Button Groups & Drop Down Menus

Bootstrap Glyphicons

1. Glyphicon Syntax
2. Badges
3. Progress Bars

Bootstrap Pagination

1. Basic Pagination
2. Active State
3. Disabled State
4. Pagination Sizing

Bootstrap Pager

Bootstrap List Groups

Bootstrap Forms

Bootstrap Inputs

Bootstrap Carousel

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Bootstrap Plugins

1. Overview
2. Transition Plugin
3. Collapsible Plugin
4. Modal Dialog Plugin
5. Dropdown Plugin
6. Scrollspy Plugin
7. Tab Plugin
8. Tooltip Plugin
9. Popover Plugin
10. Alert Plugin
11. Button Plugin
12. Carousel Plugin
13. Affix Plugin

Angular13

1. Introduction to Angular9
2. Components
3. Services
4. Single Page Applications
5. Rest API Calls
6. Directives
7. Pipes
8. Forms

ReactJS

1. Introduction to React JS
2. Components
3. Rest API Calls
4. Single Page Applications
5. Redux

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SPRING BOOT & MICRO SERVICES COURSE CONTENT

SPRING BOOT

- 1) What is Spring Framework
- 2) What is Spring Boot
- 3) Differences between Spring & Spring Boot
- 4) Spring Boot Overview
- 5) Pros & Cons of Spring Boot
- 6) Approaches to create Spring Boot Application
 - a) Spring Initializer (start.spring.io)
 - b) Spring Starter Wizard in STS IDE
- 7) Introduction to Spring Boot Starters
 - a) Spring Boot Parent Starter
 - b) Spring-boot-starter
 - c) Spring-boot-starter-web
 - d) Spring-boot-starter-webflux
 - e) Spring-boot-starter-data-jpa
 - f) Spring-boot-devtools
 - g) Spring-boot-starter-mail
 - h) Spring-boot-actuator
 - i) Spring-boot-starter-test etc.
- 8) What is Start Class in Spring Boot
- 9) @SpringBootApplication annotation internals
- 10) SpringApplication.run(..) method internals
- 11) Spring Boot Application Boot strapping
- 12) AutoConfiguration in Spring Boot
- 13) IOC container
- 14) Dependency Injection
 - a) Setter Injection
 - b) Constructor Injection
 - c) Field Injection
- 15) Stereotype Annotations
 - a) @Component
 - b) @Service
 - c) @Repository
 - d) @Controller
 - e) @Indexed

- 16) Base Package Naming convention
- 17) Component Scanning
- 18) Autowiring
 - a) byType
 - b) byname
 - c) constructor
 - d) none
- 19) @Qualifier annotation
- 20) @Primary annotation
- 21) Introduction to @Configuration annotation
- 22) Details of @Bean annotation
- 23) application.properties file
- 24) application.yml file
- 25) Standalone application development in Spring Boot
- 26) Standalone application with layered architecture
- 27) Runner in Spring Boot
 - a) Application Runner
 - b) CommandLine Runner
- 28) Spring Boot Profiles
- 29) Logging in Spring Boot
 - a) Log4J
 - b) Log4J2
 - c) Logback
 - d) SLF4J

SPRING DATA JPA

- 1) What is Persistence Layer
- 2) Best practises to follow in persistence layer
- 3) ORM Basics
- 4) Spring Data JPA Introduction
- 5) Differences between Spring ORM and Spring Data
- 6) CrudRepository introduction
- 7) CrudRepository methods for DB operations
 - a) save() method
 - b) saveAll() method
 - c) findById() method
 - d) findAllById() method
 - e) findAll() method
 - f) deleteById() method
 - g) deleteAllById() method
 - h) delete() method
 - i) count()
 - j) existsById()
- 8) Custom findByXXX method syntax
- 9) Custom Queries Execution in Data JPA
- 10) JpaRepository introduction
- 11) JpaRepository methods for DB operations
- 12) Pagination Using Data JPA methods
- 13) Sorting Using Data JPA Methods
- 14) Query By Example Executor
- 15) Generators
- 16) Custom Generators in Spring Data
- 17) Embedded Database Introduction
- 18) Embedded Database vs External Database
- 19) Application Development using Embedded Database (H2)
- 20) Application Development Using MYSQL Database
- 21) Application Development Using PostGreSQL Database
- 22) Application Development Using MongoDB

23) Profiles in Spring Boot

SPRING WEB MVC

- 24) Spring Web MVC Introduction
- 25) Spring Web MVC Advantages
- 26) Spring MVC Architecture
- 27) Introduction to Front Controller
- 28) Controllers
- 29) Handler Mappers
- 30) View Resolvers
- 31) Web Application development using Spring Boot
- 32) Embedded HTTP Servers Introduction
 - a) Embedded Tomcat Server
 - b) Embedded Jetty Server
 - c) Embedded Undertow Server
- 33) Making Jetty as Default server
- 34) Web Application Deployment in External Server
- 35) Sending Data From UI to Controller
 - a) Query Param
 - b) Path Param
- 36) Sending Data From Controller to UI
 - a) Model
 - b) ModelAndView
- 37) @RequestBody annotation
- 38) @ResponseBody annotation
- 39) Introduction to Spring MVC Form Tag library
- 40) Form Based application development using Spring Boot
- 41) Thymeleaf Introduction
- 42) Web Application with Thymeleaf
- 43) Sending Email using Spring Boot
- 44) Exception Handling in Spring Boot Web Application
- 45) Spring Boot Actuators
 - a) Health
 - b) Info
 - c) Heapdump
 - d) Theadddump
 - e) Beans
 - f) Httptrace

- g) Mappings
- h) Shutdown etc

- 46) Unit Testing for Spring Boot Application using Junit with Mocking**
- 47) Code Coverage using Jacocco**

SPRING REST

- 48) Distributed Applications**
- 49) Distributed Technologies**
- 50) SOAP vs REST**
- 51) RESTful Services Introduction**
- 52) REST principles**
- 53) XML**
- 54) XSD**
- 55) One Time operations**
- 56) Run Time Operations**
 - a) Marshalling
 - b) Un Marshalling
- 57) JAX-B Introduction**
- 58) JAX-B Architecture**
- 59) Applications development with JAX-B**
- 60) JSON Introduction**
- 61) XML vs JSON**
- 62) JACKSON API**
- 63) Converting Java object to JSON and vice versa using Jackson API**
- 64) GSON API**
- 65) Converting Java Object to JSON and Vice Versa using GSON API**
- 66) HTTP Protocol Details**
- 67) HTTP Methods**
 - a) GET
 - b) POST
 - c) PUT
 - d) DELETE
- 68) HTTP Status Codes**
 - a) 1XX
 - b) 2xx
 - c) 3xx
 - d) 4xx
 - e) 5xx
- 69) @RestController**

- 70) @RequestBody**
- 71) @ResponseBody**
- 72) @RequestParam**
- 73) @PathVariable**
- 74) MediaType**
- 75) Consumes**
- 76) Produces**
- 77) Accept Header**
- 78) Content-Type header**
- 79) REST API Development using Spring Boot**
- 80) POSTMAN**
- 81) SWAGGER & SWAGGER UI**
- 82) Exception Handling in REST API**
- 83) REST Security**
 - a) HTTP Basic Auth
 - b) JWT
 - c) OAuth2.0
- 84) Mono Objects**
- 85) Flux Objects**
- 86) REST Client Introduction**
- 87) RestTemplate**
- 88) WebClient**
- 89) RestTemplate vs WebClient**
- 90) Reactive Programming**
- 91) Synchronous vs Asynchronous Calls**
- 92) Apache Kafka Integration with Spring Boot**
- 93) Redis Cache Integration with Spring Boot**

MICRO SERVICES

- 94) Monolith Architecture Introduction**
- 95) Monolith Architecture case study**
- 96) Monolith Application Deployment Process**
- 97) Load balancer (Cluster) case study**
- 98) Load Balancing Algorithms**
 - a) Round Robin
 - b) IP Hashing
 - c) Sticky Session
- 99) Monolith Architecture Drawbacks**
- 100) Micro services Introduction**
- 101) Micro Services Advantages**



- 102) **Micro Services Dis-Advantages**
- 103) **Micro Services case study**
- 104) **Identifying Micro services boundaries**
- 105) **Micro services Architecture**
- 106) **Micro services Development**
 - a) API – 1
 - b) API – 2
- 107) **Interservice communication case study**
- 108) **FeignClient**
- 109) **Cloud Introduction**
 - a) AWS
 - b) AZURE
 - c) PCF
- 110) **PCF Account Creation**
- 111) **PCF CLI Installation**
- 112) **Deploying Micro services to PCF using CLI**
- 113) **Auto Scaling**
- 114) **Service Registry case study (Netflix Eureka)**
- 115) **Gateway API (Zuul proxy)**
- 116) **Hystrix (Circuit Breaker)**
- 117) **Hystrix Dashboard**
- 118) **Spring Boot Admin Server**
- 119) **Spring Boot Admin Client**
- 120) **Distributed Logging**
 - a) Sleuth Logging
 - b) Zipkin Server
- 121) **Ribbon case study (Micro services load balancer)**
- 122) **Implementing Ribbon in Micro services**
- 123) **ConfigServer Introduction & Implementation**
- 124) **Micro services Integration with Angular**

TOOLS

- 125) **Maven**
- 126) **Log4J**
- 127) **Junit & Mocking**
- 128) **Jenkins**
- 129) **Docker**
- 130) **SonarQube**
- 131) **JIRA**
- 132) **SOAP UI**
- 133) **POST MAN**

