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Core Java:

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
8. What is Programming Language?
9. Types of programming languages
10. Java Introduction
11. History of Java
12. Principles of Java
13. Java Installation
14. Java Program Execution Flow
15. JDK vs JRE
16. JVM Architecture
17. Language Fundamentals
 - Identifiers & Keywords
 - Data Types
 - Variables
 - Methods
 - Arrays
18. Declarations and Access Control
19. Interfaces
20. Operators
21. Flow Control
22. Exception Handling
23. Assertions
24. Garbage Collections
25. OOPs
26. Multi-Threading
27. java.lang Package:
 - String
 - StringBuffer
 - StringBuilder
 - Wrapper Classes,
 - Object class Methods,
 - Autoboxing
28. java.io package
29. Serialization
30. Collections Framework
 - . List
 - . Set
 - . Map
 - . Internal implementation of collection
 - framework (List, Map, Set etc)
31. Generics
32. Inner Classes
33. Java 8 Features Introduction
34. Lambda Expressions
35. Functional Interfaces
36. Default & Static Methods
37. Method References
38. Date and Time API changes
39. Stream API
40. Optional class
41. Spliterator

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SQL:

- | | |
|----------------------|---------------|
| ❖ Select | ❖ Drop Table |
| ❖ Select Distinct | ❖ Alter Table |
| ❖ Where | ❖ Constraints |
| ❖ And, Or, Not | ❖ Not Null |
| ❖ Order By | ❖ Unique |
| ❖ Insert Into | ❖ Primary Key |
| ❖ Null Values | ❖ Foreign Key |
| ❖ Update | ❖ Check |
| ❖ Delete | ❖ Default |
| ❖ Select Top | ❖ Index |
| ❖ Min and Max | ❖ Auto |
| ❖ Count, Avg, Sum | ❖ Increment |
| ❖ Like | ❖ Dates |
| ❖ Wildcards | ❖ Views |
| ❖ In | ❖ Injection |
| ❖ Between | ❖ Hosting |
| ❖ Aliases | ❖ Data Types |
| ❖ Joins | |
| ❖ Inner Join | |
| ❖ Left Join | |
| ❖ Right Join | |
| ❖ Full Join | |
| ❖ Self Join | |
| ❖ Union | |
| ❖ Group By | |
| ❖ Having | |
| ❖ Exists | |
| ❖ Any, All | |
| ❖ Select Into | |
| ❖ Insert Into Select | |
| ❖ Case | |
| ❖ Null Functions | |
| ❖ Stored | |
| ❖ Procedures | |
| ❖ Comments | |
| ❖ Operators | |
| ❖ Database | |
| ❖ Create DB | |
| ❖ Drop DB | |
| ❖ Backup DB | |
| ❖ Create Table | |

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JDBC:

- ❖ Introduction
- ❖ Environment
- ❖ Sample Code
- ❖ Driver Types
- ❖ Connections
- ❖ Statements
- ❖ Result Sets
- ❖ Data Types
- ❖ Transactions
- ❖ Exceptions
- ❖ Examples
- ❖ Create Database
- ❖ Select Database
- ❖ Drop Database
- ❖ Create Tables
- ❖ Drop Tables
- ❖ Insert Records
- ❖ Select Records
- ❖ Update Records
- ❖ Delete Records
- ❖ Mini Project on JDBC

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HIBERNATE:

- ❖ Introduction.
- ❖ Advantages of Hibernate compared to JDBC
- ❖ ORM (Object Relational Mapping)
- ❖ Configuration xml file and Mapping xml file along with dtos.
- ❖ Hibernate architecture
- ❖ Installation and Directory Structure
- ❖ Hibernate Data Types.
- ❖ First Application using Hibernate.
- ❖ Hibernate API
- ❖ CRUD operations
- ❖ Primary key Generators
- ❖ Hibernate Query Language (HQL)
- ❖ Native
- ❖ Criteria API
- ❖ Inheritance in Hibernate
- ❖ Relations (one to one, one to many, many to one, many to many)
- ❖ Caching
- ❖ Connecting with Multiple Databases
- ❖ Integrating Hibernate with Servlets and Struts
- ❖ Hibernate Annotations

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Spring Core:

- ❖ IOC
- ❖ Dependency Injection
- ❖ AutoWiring
- ❖ BeanLifeCycle

Spring Boot:

- ❖ Spring vs Spring Boot
- ❖ Spring Boot Advantages
- ❖ Spring Boot Starter Poms
- ❖ Spring Boot Application creation
 - o Initializer website
 - o IDE
- ❖ @SpringBootApplication
- ❖ @ComponentScanning
- ❖ Auto-Configuration
- ❖ SpringApplication.run() method
- ❖ Banner in Spring Boot
- ❖ Runners in Spring Boot
 - o Application Runner
 - o Command-Line Runners

Spring Data JPA:

- ❖ Persistence Layer
- ❖ Best Practises for Persistence Layer
- ❖ Differences between Hibernate & Data JPA
- ❖ Spring Data JPA repositories
 - o CrudRepository
 - o JpaRepository
- ❖ Entity class (with Annotations)
- ❖ Curd Operations using Data JPA
- ❖ Pagination & Sorting
- ❖ Generators
- ❖ Custom Generators
- ❖ application.properties file & application.yml
- ❖ Profiles in Spring Boot
- ❖ Oracle DB Integration
- ❖ MySql DB Integration
- ❖ Embedded DB (h2) Integration
- ❖ Monog DB Integration

Spring Web MVC:

- ❖ MVC Introduction
- ❖ Spring MVC Introduction
- ❖ Spring MVC Architecture
- ❖ DispatcherServlet (Front Controller)
- ❖ HandlerMappers
- ❖ Controllers
- ❖ View Resolvers
- ❖ RequestMappings
- ❖ Spring Form Tag Library
- ❖ Form Based applications
- ❖ Form app with JSP front End
- ❖ Form app with Thymeleaf Front End
- ❖ Form validations
- ❖ Model
- ❖ ModelAttribute
- ❖ @RequestBody
- ❖ @ResponseBody
- ❖ Interceptors in Spring MVC
- ❖ Spring Boot Actuators
- ❖ Exception Handling using Spring AOP

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Restful Services:

- ❖ Distributed Applications
- ❖ Distributed Technologies
- ❖ SOAP vs REST
- ❖ Rest Introduction
- ❖ Rest Architecture
- ❖ Rest Principles
- ❖ Rest Application Development using Spring With REST
- ❖ Internals of REST Application
- ❖ HTTP Protocol
 - Http Request Structure
 - Http Response Structure
- ❖ Http Status Codes
- ❖ Http Status Messages
- ❖ GET
- ❖ POST
- ❖ PUT
- ❖ DELETE
- ❖ JSON with Jackson
- ❖ XML with JAX-B
- ❖ Swagger
- ❖ Swagger UI
- ❖ POSTMAN
- ❖ Exception Handling REST API
- ❖ Rest Client Introduction
- ❖ java.net client
- ❖ apache http client
- ❖ RestTemplate
- ❖ WebClient (reactive programming- Spring 5.x)
- ❖ Mono Objects
- ❖ Flux Objects
- ❖ Asynchronus Communications

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❖ Microservices:

- ❖ Monolith Architecture
- ❖ Drawbacks of Monolith
- ❖ Load Balancers
- ❖ Load Balancer Algos
- ❖ Sticky session
- ❖ IP Hashing
- ❖ Round Robin etc.
- ❖ Microservices Introduction
- ❖ Microservices challenges
- ❖ Microservices Advantages
- ❖ Microservices Architecture
- ❖ Service Registry (Eureka Server)
- ❖ API Gateway with Zuul proxy
- ❖ Config Server
- ❖ Microservices Development
- ❖ Interservice Communication (FeginClient)
- ❖ Angular 10 Integration
- ❖ Cloud Platforms
- ❖ PCF cloud
- ❖ PCF account creation
- ❖ PCF CLI
- ❖ Microservice Deployment to Cloud
- ❖ Scaling
- ❖ Horizontal Scaling
- ❖ Vertical Scaling
- ❖ Autoscaling

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Java Realtime Project (Full Stack Development):

INTRODUCTION

- ❖ Introduction to Real-time Project
- ❖ Types of Software companies
 - Product Based Companies
 - Service Based Companies
 - Outsourcing Companies
 - Interview process in software companies

❖ Types of software jobs

Permanent Job

Contract Job

❖ Types of software projects

- Scratch Development Projects
- Maintenance Projects
- Migration Projects

❖ Types of teams in software project

- On-shore Team
- Off-shore Team

❖ How to collaborate with team members

❖ Discussion related to Bridge calls & Official emails

❖ Role Chart Details

➤ **Realtime Tools**

- ❖ Maven
- ❖ Gradle
- ❖ SVN
- ❖ Git
- ❖ BitBucket
- ❖ Agile with JIRA
- ❖ JUnit
- ❖ Mocking
- ❖ Jacoco
- ❖ Log4J
- ❖ Log Monitoring tools
- ❖ (Putty, WinScp, Splunk)
- ❖ JMETER
- ❖ Sonar Qube
- ❖ Docker
- ❖ MAT
- ❖ Jenkins
- ❖ Apache POI
- ❖ Swagger
- ❖ SOAP UI
- ❖ POSTMAN

➤ **SDLC (Agile)**

- ❖ Story
- ❖ Story Points
- ❖ Backlog grooming
- ❖ Sprint Planning
- ❖ Sprint
- ❖ Sprint Duration
- ❖ Scrum
- ❖ Mid-iteration review
- ❖ Retrospective
- ❖ Real-time Environment Terminology
- ❖ Requirements Gathering
- ❖ Minutes of meeting
- ❖ Query Log
- ❖ DB Design
- ❖ DB Template
- ❖ Real-time Coding Standards

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Mini Projects (All mini projects we will develop using spring boot & microservices)

- i. Mini Project 01
- ii. Mini Project 02
- iii. Mini Project 03
- iv. Mini Project 04
- v. Mini Project 05
- vi. Mini Project 06
- vii. Mini Project 07
- viii. Mini Project 08
- ix. Mini Project 09
- x. Mini Project 10

MAJOR PROJECT DEVELOPMENT

- 1) Major Project Introduction
- 2) Major Project Modules
- 3) Major Project Architecture
- 4) Major Project Functional Flow
- 5) Database Design
- 6) Story Creation in JIRA
- 7) Story Development
- 8) Logging in Project
- 9) Swagger Configuration
- 10) Actuators Configuration
- 11) Exception Handling
- 12) Multi-Threading use case in Project
- 13) Rest Calls in Project
- 14) Batch Processing
- 15) Unit Testing
- 16) Integration Testing
- 17) Code Review
- 18) Project Deployment

INTERVIEW GUIDE

- 1) Resume Preparation
- 2) Profile Creation in job portals
- 3) Email Writing
- 4) HR Discussion details
- 5) Joining Formalities
- 6) First day and last day in office
- 7) Daily Activities in Job
- 8) Interview Tips & Tricks

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