
CORE JAVA

1.Introduction To Java

- History & Features Of Java
- Java Editions: JDK, JRE, JVM
- Java Program Structure
- Compilation & Execution Process (.java → .class)
- Writing Your First Java Program (Hello World)



2. Data Types, Variables & Operators

- Primitive Data Types (int, float, char, Boolean, etc.)
- Type Casting & Type Promotion
- Operators: Arithmetic, Relational, Logical, Bitwise
- Increment / Decrement, Assignment, Ternary

3. Control Statements

- Conditional: if, if-else, switch
- Looping: for, while, do-while
- Jump Statements: break, continue, return

4. Arrays & Strings

- 1D & 2D Arrays
- Array Operations (sort, search)
- String Class & Methods
- StringBuffer Vs StringBuilder
- String Immutability Concept

5. Object-Oriented Programming(OOP)

- Classes & Objects
- This keyword
- Constructors(Default, Parameterized, Copy)
- Method Overloading
- Static Members & Blocks

6. Inheritance & Ploymorphism

- Extends keyword
- Types of Inheritance (Single, Multilevel, Hierarchical)
- Super keyword
- Method Overriding
- Dynamic Method Dispatch (Run-time Polymorphism)
- Final Keyword

7. Abstraction & Encapsulation

- Abstraction With Abstract Classes
- Interfaces & Multiple Inheritance
- Encapsulation: Getters / Setters
- Access Modifiers: private, default, protected, public

8. Packages & Access Modifiers

- Built-in Packages (java.util, java.io, etc.)
- Creating user-defined Packages
- Importing & Using Packages

9. Exception Handling

- Try, catch, finally, throw, throws
- Checked Vs Unchecked Exceptions
- Custom Exceptions
- Nested Try Blocks

10. Multithreading

- Threads: Thread class & Runnable Interface
- Thread Lifecycle
- Thread methods: start(), run(), sleep(), join()
- Synchronization & Deadlock
- Inter-thread Communication

11. Java I / O (Input / Output)

- Scanner, BufferedReader
- File Handling: FileReader, FileWriter, BufferedWriter
- Byte & Character Streams

- Serialization & Deserialization

12. Java 8 Features (Operational / Advanced)

- Lambda Expressions
- Functional Interface
- Stream API
- Method References
- Optional Class
- Date & Time API (LocalDate, LocalTime, LocalDateTime)

13. Web Based Application

- HTML
- CSS
- JavaScript

14. Introduction To SQL & RDMS

- What Is SQL?
- RDMS Vs DBMS
- Popular RDMS: MYSQL, PostgreSQL, Oracle, SQL Server
- Basic SQL Syntax & Structure
- SQL Data Types
- Tables, Rows, Columns, Primary Key, Foreign Key

15. Data Definition Language (DDL)

- CREATE TABLE
- ALTER TABLE (Add, Drop, Modify Columns)
- DROP TABLE
- RENAME TABLE
- Constraints:
 - PRIMARY KEY, FOREIGN KEY
 - NOT NULL, UNIQUE, DEFAULT, CHECK

16. Data Manipulation Language (DML)

- INSERT INTO
- UPDATE
- DELETE

- Inserting Multiple Rows
- NULL Values Handling

17. Data Query Language (DQL) – SELECT Statements

- SELECT Basics
- WHERE Clause
- Comparison Operators (=, >, <, !=, BETWEEN, IN, LIKE)
- Logical Operators (AND, OR, NOT)
- ORDER BY
- DISTINCT

18. Functions In SQL

- Aggregate Functions: COUNT(), SUM(), AVG(), MIN(), MAX()
- String Functions: CONCAT(), LENGTH(), LOWER(), UPPER(), SUBSTRING()
- Date / Time Functions: NOW(), CURDATE, DATEDIFF(), DATE_FORMAT()
- Mathematical Functions: ROUND(), FLOOR(), CEIL(), MOD()

19. Grouping & Filtering

- GROUP BY
- HAVING Clause
- Grouping With Aggregate Functions
- Difference Between WHERE & HAVING

20. Joins (Combining Tables)

- INNER JOIN
- LEFT JOIN / LEFT OUTER JOIN
- RIGHT JOIN
- FULL OUTER JOIN
- CROSS JOIN
- Self Joins

21. Subqueries & Nested Queries

- Scalar Subqueries
- Correlated Vs Non-Correlated Subqueries
- IN, EXISTS, ANY, ALL In Subqueries

22. Set Operations

- UNION, UNION ALL
- INTERSECT (if supported)
- MINUS / EXCEPT

23. Views, Indexes & Transactions

- Views: CREATE VIEW, ALTER, DROP VIEW
- Indexes: CREATE INDEX, UNIQUE INDEX, DROP INDEX
- Transactions:
 - BEGIN, COMMIT, ROLLBACK
 - SAVEPOINT
 - ACID Properties

24. SQL Constraints & Keys

- Primary Key, Foreign Key
- Unique, Not Null, Default, Check
- Composite Key
- Referential Integrity

25. Normalization (Theory)

- 1NF, 2NF, 3NF (Basic Understanding)
- Functional Dependencies
- Denormalization (For Performance Tuning)

26. SQL Interview & Practice Topics

- Top 50 Practice Queries (real-world)
- Join-based queries
- Aggregate + GROUP BY Challenges
- Window Functions (optional)

Trainer	Er Kuldeep Parida
Discounted Fee	₹ 12,999
Duration	6 Months