



Enclosure: Session-wise Course Plan (Modern Java Mastery for Engineers)

Day 1 - Java Fundamentals

Session 1: Pre-Assessment & Java Basics

- Pre-Assessment (MCQs + short coding test)
- Java Architecture (JVM, JRE, JDK)
- Data Types, Variables, Operators
- Control Flow Statements
- Basic logic building exercises

Session 2: Methods, Strings & Arrays

- Methods and Method Overloading
- String handling and immutability
- Arrays (1D & 2D)
- Common programming problems using arrays and strings

Day 2 - Object-Oriented Programming

Session 3: OOPS Concepts

- Classes and Objects
- Constructors
- Inheritance
- Polymorphism
- Real-world object modeling

Session 4: Abstraction & Exception Handling

- Abstract Classes and Interfaces
- Encapsulation and Access Modifiers
- Exception Handling (Checked & Unchecked)
- Best practices for robust Java programs



Day 3 – Java Collections Framework

Session 5: Collections Framework

- Collection hierarchy
- List, Set, and Map interfaces
- ArrayList vs LinkedList
- HashSet vs TreeSet
- HashMap vs TreeMap

Session 6: Collections with Custom Objects

- Iterators and enhanced for-loop
- Comparable vs Comparator
- Sorting and searching in Collections
- Real-time use cases using Collections

Day 4 – JDBC & Database Integration

Session 7: JDBC Fundamentals

- Introduction to Databases and SQL
- JDBC Architecture and Driver Types
- Establishing JDBC Connections
- Statement vs PreparedStatement
- ResultSet handling

Session 8: JDBC with Collections

- Mapping ResultSet to Java Objects
- Storing database records in:
 - ArrayList
 - HashMap
- CRUD operations using Collections
- Batch processing using Collections



Day 5 – Backend Logic & DSA Session

Session 09: Data Structures & Algorithms using Java (DSA Session)

- Importance of DSA in technical interviews
- Time and Space Complexity basics
- Arrays, Strings, and Collections-based problems
- Sorting and searching techniques
- Interview-oriented coding practice

Session 10: Introduction to Web Programming using Java Servlets

- Overview of Web Applications
- Client–Server Architecture
- HTTP Protocol and Request–Response Model
- HTTP Methods: GET and POST
- Introduction to Java Servlets
- Servlet Architecture and Life Cycle

Day 6 – Servlets & Assessment

Session 11: Integrating Servlets, JDBC, and Collections

- Handling client requests using Servlets
- Connecting Servlets with database using JDBC
- Fetching database records and storing them in Java Collections
- Processing data in memory using Collections
- Displaying processed results through Servlets
- End-to-end backend request flow

Session 12: Post-Assessment & Interview Readiness

- Post-Assessment (MCQs + coding test)
- Recap of Core Java, Collections, JDBC, and Servlets



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- Common backend interview questions
- Coding test patterns and strategies
- Feedback & Certification

Course Outcomes

- ✓ Strong foundation in **Core Java & OOPS**
- ✓ Practical understanding of **Collections with JDBC**
- ✓ Backend development exposure using **Servlets**
- ✓ Essential **DSA skills for interviews**
- ✓ Industry-ready backend programming competence