

Full Syllabus for Core Java with Java 8

◆ **Module 1: Introduction to Java**

- ✓ History & Features of Java
 - ✓ JDK, JRE, and JVM
 - ✓ Java Virtual Machine (JVM) Architecture
 - ✓ Java Program Execution Flow
 - ✓ Setting up Java Development Environment
 - ✓ Writing & Running First Java Program
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◆ **Module 2: Java Fundamentals**

- ✓ Data Types, Variables, and Operators
 - ✓ Control Statements (if, else, switch)
 - ✓ Loops (for, while, do-while)
 - ✓ Arrays – Single & Multi-dimensional
 - ✓ Type Casting and Type Promotion
 - ✓ Command-Line Arguments
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◆ **Module 3: Object-Oriented Programming (OOPs) in Java**

- ✓ Classes & Objects
 - ✓ Constructors and Initialization Blocks
 - ✓ Method Overloading & Method Overriding
 - ✓ Static vs Non-static Members
 - ✓ Encapsulation, Inheritance, Polymorphism, and Abstraction
 - ✓ Interfaces and Abstract Classes
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◆ **Module 4: Java Memory Management & Exception Handling**

- ✓ Stack, Heap & Garbage Collection
 - ✓ Exception Handling (try-catch, finally)
 - ✓ Checked & Unchecked Exceptions
 - ✓ Custom Exceptions
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◆ **Module 5: Strings, StringBuffer, & StringBuilder**

- ✓ String Methods and Manipulations
 - ✓ Immutable Strings
 - ✓ StringBuffer & StringBuilder Performance Comparison
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◆ **Module 6: Java Collections Framework (JCF)**

- ✓ Collection Interfaces and Implementations
 - ✓ List (ArrayList, LinkedList, Vector, Stack)
 - ✓ Set (HashSet, LinkedHashSet, TreeSet)
 - ✓ Map (HashMap, LinkedHashMap, TreeMap, Hashtable)
 - ✓ Queue (PriorityQueue, Deque, ArrayDeque)
 - ✓ Iterator, Enumeration, and Streams in Collections
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◆ **Module 7: Multithreading in Java**

- ✓ Thread Lifecycle & States
 - ✓ Creating Threads (Extending Thread Class & Implementing Runnable)
 - ✓ Thread Synchronization & Locks
 - ✓ Inter-Thread Communication
 - ✓ Executors & Thread Pooling
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◆ **Module 8: File Handling & I/O in Java**

- ✓ File Handling (FileReader, FileWriter, BufferedReader, BufferedWriter)
 - ✓ Serialization & Deserialization
 - ✓ Working with Properties File
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◆ **Module 9: Java 8 Features**

- ✓ Introduction to Functional Programming
- ✓ Lambda Expressions & Functional Interfaces
- ✓ Stream API (Intermediate & Terminal Operations)
- ✓ Default & Static Methods in Interfaces
- ✓ Method References
- ✓ Optional Class (Avoiding NullPointerException)

- ✓ Collectors & GroupingBy
 - ✓ New Date & Time API (java.time package)
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◆ **Module 10: JDBC (Java Database Connectivity)**

- ✓ JDBC Architecture & Steps
 - ✓ Connecting Java with MySQL/PostgreSQL
 - ✓ CRUD Operations Using JDBC
 - ✓ JDBC Statement vs PreparedStatement vs CallableStatement
 - ✓ Connection Pooling
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◆ **Module 11: Java Annotations & Reflection**

- ✓ Built-in Annotations (Override, SuppressWarnings, FunctionalInterface)
 - ✓ Custom Annotations
 - ✓ Reflection API
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◆ **Module 12: Advanced Topics (Optional)**

- ✓ Java Networking (Socket Programming, HTTP Requests)
- ✓ Java Security (Encryption & Decryption)
- ✓ Design Patterns (Singleton, Factory, Observer)
- ✓ Microservices with Spring Boot & Java 8