



Core Java Course Content

Course Duration: 2–3 Months

Level: Beginner to Intermediate

Fee: 6500/ INR

Prerequisites: Basic Computer Knowledge

Module 1: Introduction to Java

Lesson 1: Introduction to Programming

- What is Programming?
- Programming Languages Overview
- Compiler vs Interpreter
- Features of Java
- Java Editions (SE, EE, ME)

Lesson 2: Java Development Environment

- Installing JDK
- Setting Environment Variables
- Installing IntelliJ IDEA / Eclipse / VS Code
- Creating Your First Java Program
- Java Program Structure

Lesson 3: Java Basics

- Java Syntax
 - Keywords and Identifiers
 - Variables and Constants
 - Data Types
 - Comments
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Module 2: Operators & Control Statements

Lesson 1: Operators

- Arithmetic Operators
- Assignment Operators
- Relational Operators
- Logical Operators
- Bitwise Operators
- Unary Operators
- Ternary Operator

Lesson 2: Conditional Statements

- if Statement
- if-else
- Nested if
- else-if Ladder
- switch Statement

Lesson 3: Looping Statements

- for Loop
- while Loop
- do-while Loop
- Enhanced for Loop
- Nested Loops
- break & continue

Module 3: Object-Oriented Programming (OOP)

Lesson 1: OOP Concepts





- Classes & Objects
- Methods
- Constructors
- this Keyword
- static Keyword

Lesson 2: Encapsulation

- Private Members
- Getter & Setter Methods
- Data Hiding

Lesson 3: Inheritance

- Types of Inheritance
- extends Keyword
- Method Overriding
- super Keyword

Lesson 4: Polymorphism

- Method Overloading
- Method Overriding
- Dynamic Method Dispatch

Lesson 5: Abstraction

- Abstract Classes
- Abstract Methods

Lesson 6: Interfaces

- Interface Basics
- Multiple Inheritance
- Default Methods
- Functional Interfaces





Module 4: Arrays & Strings

Lesson 1: Arrays

- One-Dimensional Arrays
- Multi-Dimensional Arrays
- Array Operations
- Array Algorithms

Lesson 2: String Class

- String Methods
- String Comparison
- String Manipulation
- String Formatting

Lesson 3: StringBuilder & StringBuffer

- Mutable Strings
- Performance Comparison

Module 5: Exception Handling

Lesson 1: Exception Basics

- Types of Exceptions
- Checked vs Unchecked Exceptions

Lesson 2: Exception Handling

- try-catch
- finally
- throw
- throws





- Creating User-Defined Exceptions
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Module 6: Packages & Access Modifiers

Lesson 1: Packages

- Creating Packages
- Import Statements
- Package Structure

Lesson 2: Access Modifiers

- public
 - private
 - protected
 - default
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Module 7: Collections Framework

Lesson 1: Introduction to Collections

- Collection Framework Overview
- Iterable Interface

Lesson 2: List Collection

- ArrayList
- LinkedList
- Vector
- Stack

Lesson 3: Set Collection

- HashSet



- LinkedHashSet
- TreeSet

Lesson 4: Queue

- Queue Interface
- PriorityQueue
- Deque

Lesson 5: Map Collection

- HashMap
- LinkedHashMap
- TreeMap
- Hashtable

Lesson 6: Iterator

- Iterator
- ListIterator
- Enhanced for Loop

Module 8: Java Generics

Lesson 1: Generic Classes

- Generic Methods
- Type Parameters
- Wildcards

Module 9: Multithreading





Lesson 1: Threads

- Creating Threads
- Thread Lifecycle
- Runnable Interface

Lesson 2: Thread Synchronization

- synchronized Keyword
- Deadlock
- Thread Communication

Lesson 3: Executor Framework

- Thread Pool
 - Executors
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Module 10: File Handling

Lesson 1: File Operations

- File Class
- Reading Files
- Writing Files

Lesson 2: Streams

- InputStream
- OutputStream
- Buffered Streams

Lesson 3: Serialization

- Serializable Interface
- Object Streams





Module 11: Java 8 Features

Lesson 1: Lambda Expressions

- Functional Programming
- Lambda Syntax

Lesson 2: Functional Interfaces

- Predicate
- Consumer
- Supplier
- Function

Lesson 3: Stream API

- Filtering
- Mapping
- Sorting
- Collectors

Lesson 4: Optional Class

- Handling Null Values

Lesson 5: Date & Time API

- LocalDate
- LocalTime
- LocalDateTime

Module 12: Basic Database Connectivity (JDBC)

Lesson 1: JDBC Introduction





- JDBC Architecture
- JDBC Drivers

Lesson 2: Database Connection

- Connecting Java with MySQL
- Connection Object
- Statement
- PreparedStatement

Lesson 3: CRUD Operations

- Insert Data
- Update Data
- Delete Data
- Retrieve Data

Module 13: Debugging & Best Practices

Lesson 1: Debugging

- IDE Debugger
- Breakpoints
- Watches

Lesson 2: Coding Standards

- Naming Conventions
- Code Formatting
- Documentation
- Exception Best Practices

Module 14: Live Projects





Projects

- Student Management System (Console Based)
- Bank Management System
- Library Management System
- Employee Payroll System
- Inventory Management System

Project 6 (Capstone)

College Management System with Java Collections, File Handling, Exception Handling, and JDBC

Tools & Technologies Covered

- Java SE (Latest LTS Version)
 - IntelliJ IDEA / Eclipse
 - VS Code
 - JDK
 - JVM & JRE
 - Java Collections Framework
 - Java Generics
 - Java Streams API
 - Java Lambda Expressions
 - Multithreading
 - File Handling
 - Exception Handling
 - JDBC
 - MySQL
 - Git & GitHub
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Learning Outcomes





By the end of this course, students will be able to:

- Understand Java syntax, programming fundamentals, and object-oriented programming concepts.
- Develop modular and reusable Java applications using classes, objects, inheritance, polymorphism, abstraction, and interfaces.
- Work efficiently with arrays, strings, collections, generics, multithreading, and exception handling.
- Read from and write to files, connect Java applications to MySQL using JDBC, and perform CRUD operations.
- Apply Java 8 features such as lambda expressions, the Stream API, functional interfaces, and the Date & Time API.
- Build real-world console-based applications and gain a strong foundation for learning advanced Java, Spring Boot, and full-stack Java development.



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