

Java Learning Guide: Beginner to Expert

LEVEL 1: Java Basics (Beginner)

- What is Java, JDK, JVM, JRE
- Writing your first Java program
- Variables and Data Types
- Type Casting (Implicit & Explicit)
- Operators (Arithmetic, Relational, Logical, Bitwise)
- Input using Scanner class
- Conditional Statements: if, else, switch
- Looping: for, while, do-while
- Arrays: One-Dimensional and Two-Dimensional

LEVEL 2: Object-Oriented Programming (OOP)

- Encapsulation
- Inheritance
- Polymorphism
- Abstraction
- Classes and Objects
- Constructors (Default & Parameterized)
- this and super keywords
- Access Modifiers: private, public, protected, default

LEVEL 3: Intermediate Java

- static keyword (methods, variables, blocks)
- final keyword (methods, classes, variables)
- Wrapper Classes (Integer, Double, etc.)
- String Handling and Manipulation

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- Enums
- Exception Handling: try, catch, finally, throw, throws
- Java Packages and import usage

LEVEL 4: Collections Framework

- List: ArrayList, LinkedList
- Set: HashSet, TreeSet
- Map: HashMap, TreeMap
- Queue: PriorityQueue, Deque
- Stack (legacy class)
- Iteration: For-each loop, Iterator
- Sorting with Collections.sort()
- Comparator vs Comparable

LEVEL 5: Advanced Java Concepts

- Multithreading: Thread class, Runnable interface, synchronization
- File Handling: File operations, BufferedReader, FileWriter, Scanner
- Serialization and Deserialization
- JDBC: DriverManager, Connection, Statement, ResultSet, PreparedStatement
- Java 8 Features: Lambda Expressions, Functional Interfaces, Stream API
- Annotations
- Java Memory Management and Garbage Collection

LEVEL 6: Java for Interviews

- OOPs concepts with real-world understanding
- Java keywords: static, final, transient, volatile

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- String vs StringBuilder vs StringBuffer
- Interface vs Abstract class
- == vs .equals()
- ArrayList vs LinkedList
- HashMap vs TreeMap
- throw vs throws
- JVM architecture & Class loading process
- Object Lifecycle and Memory Leaks

Mini Project Ideas

1. Student Management System
2. Library Book Tracker
3. ATM Banking Simulation
4. User Login System using JDBC
5. To-Do List using Collections Framework

Interview Practice Questions

1. What is JVM and how does it work?
2. What are the four pillars of OOP in Java?
3. What is the difference between ArrayList and LinkedList?
4. Explain method overloading vs method overriding.
5. How does exception handling work in Java?
6. What is the use of final keyword?
7. How are abstract classes different from interfaces?
8. What are the differences between String, StringBuilder, and StringBuffer?
9. What are lambda expressions and where are they used?
10. How do you connect Java to a database?

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Personal Learning Progress Tracker

Topic	Status
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Java Basics	[]
OOP Concepts	[]
Exception Handling	[]
String & Wrapper Classes	[]
Collections Framework	[]
Multithreading	[]
JDBC & Database	[]
Java 8 Features	[]
Mini Project Practice	[]
Interview Preparation	[]