Java Roadmap for DSA

Step 1: Learn Core Java

- Variables & Operators (+, -, %, /, *)
- Control Flow: if-else, switch, loops (for, while, do-while)
- Basic Syntax & Data Types (int, double, String, char)
- Functions & Recursion
- Exception Handling (try-catch-finally)
- Basic I/O (Scanner, BufferedReader)

Step 2: Master Object-Oriented Programming (OOP)

- Classes & Objects
- Encapsulation, Inheritance, Polymorphism, Abstraction
- this and super keywords
- Static & Final Keywords
- Inner Classes

Basic Data Structures

✅ Arrays (1D, 2D, Dynamic Arrays)
✅ Strings (String, StringBuilder, StringBuffer)
✅ Linked List (Singly, Doubly, Circular)
✅ Stacks (Stack class, Array-based & Linked List-based)
✅ Queues (Queue, Deque, Priority Queue)

Advanced Data Structures

✅ Hashing (HashMap, HashSet, TreeMap, TreeSet)
✅ Trees (Binary Tree, Binary Search Tree, AVL Tree, Trie)
✅ Graphs (Adjacency List & Matrix, BFS, DFS, Dijkstra's Algorithm)

Step 4: Algorithms

✅ Sorting (Bubble, Selection, Insertion, Merge, Quick, Counting)
✅ Searching (Binary Search, Linear Search)
✅ Recursion & Backtracking (Sudoku Solver, N-Queens)
✅ Dynamic Programming (Knapsack, LCS, LIS, Coin Change)
✅ Greedy Algorithms (Activity Selection, Huffman Coding)
✅ Graph Algorithms (Dijkstra, Floyd Warshall, MST)