Learn DSA in 100 days

ZERO to HERO

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Day 1-5

Introduction to Programming

Introduction to programming languages,compilers, and IDEs Basic syntax, data types, and operators.

Control structures: loops and conditional statements

Functions, arrays, and strings

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Day 6-10

Introduction to Data Structures

What are data structures?

Types of data structures

Arrays, linked lists, stacks, and queues
Trees and graphs

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Day 11-15

Time and Space Complexity Analysis

Understanding Big-O notation

Time complexity analysis of basic algorithms

Space complexity analysis

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Day 16-20

Sorting Algorithms

Bubble sort, Selection sort, and Insertion sort

Merge sort and Quick sort

Radix sort and Heap sort

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Day 21-25

Searching Algorithms

Linear search and Binary search

Hashing and Hash tables

Depth-first search and Breadth-first search

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Day 26-30

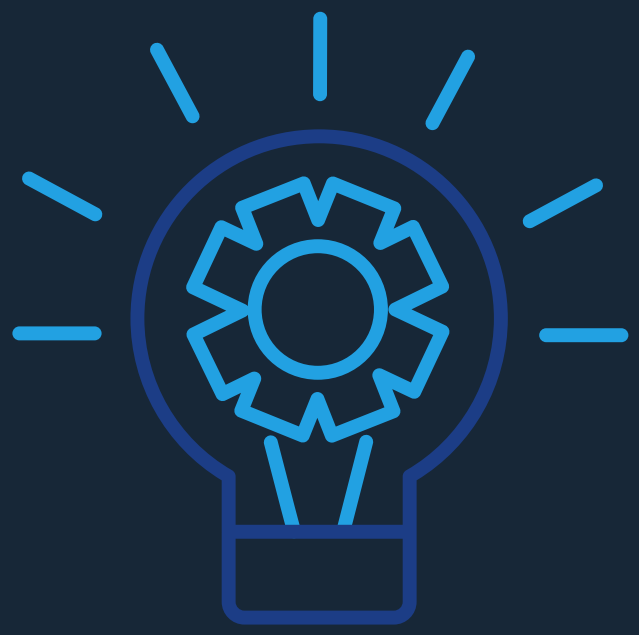
Recursion and Backtracking

Understanding recursion

Recursion vs iteration

Applications of recursion

Backtracking and N-queens problem



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Day 31-35

Dynamic Programming

Introduction to dynamic programming

Memoization vs Tabulation

Fibonacci series using dynamic programming

Knapsack problem and Longest Common Subsequence problem

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Day 36-40

Greedy Algorithms

Introduction to greedy algorithms

Kruskal's algorithm for minimum spanning tree

Dijkstra's algorithm for shortest path

Huffman coding

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Day 41-45

String Algorithms

Pattern searching: Naive and KMP algorithm

String manipulation: Reversal, Rotation, and Palindrome check

Trie data structure and its applications

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Day 46-50

Graph Algorithms

Graph representation: Adjacency list and matrix

Depth-first search and Breadth-first search
Topological sort

Shortest path algorithms: Bellman-Ford, Dijkstra, and Floyd Warshall

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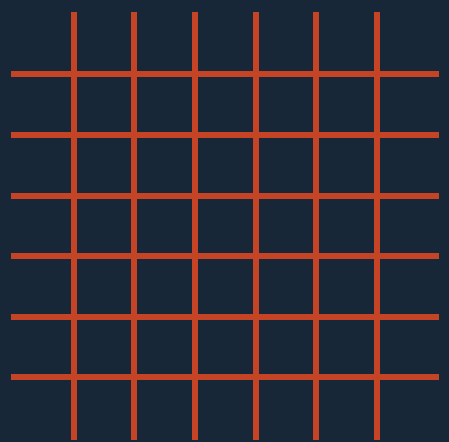

Day 51-55

Advanced Data Structures

Segment trees

Binary Indexed Trees (BIT)

Disjoint Set Union (DSU)

Fenwick Trees

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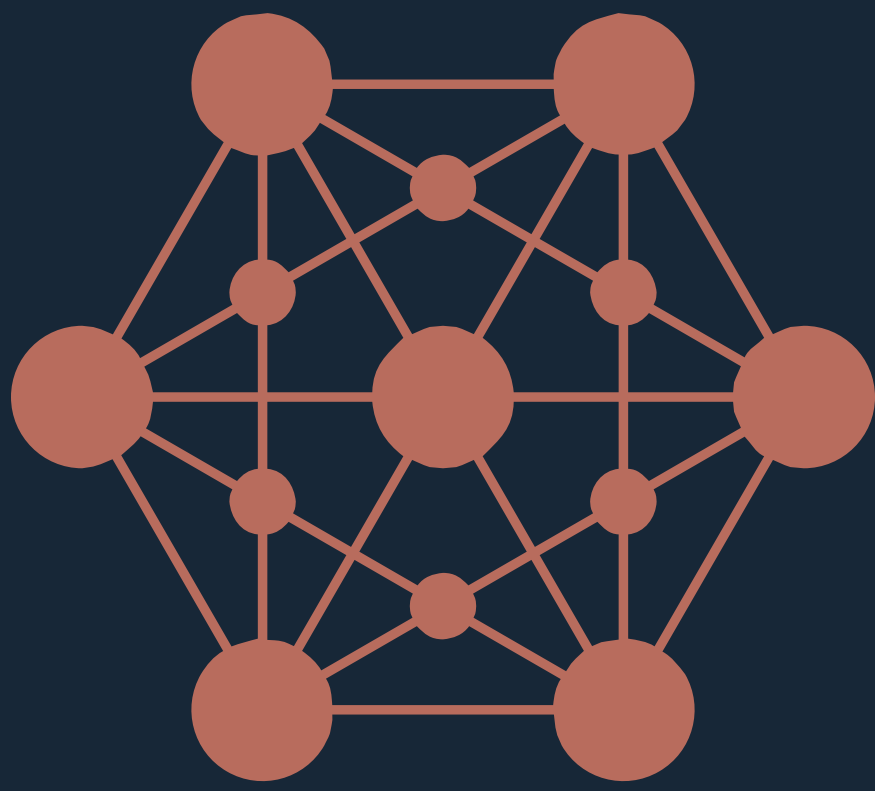

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Day 56-60

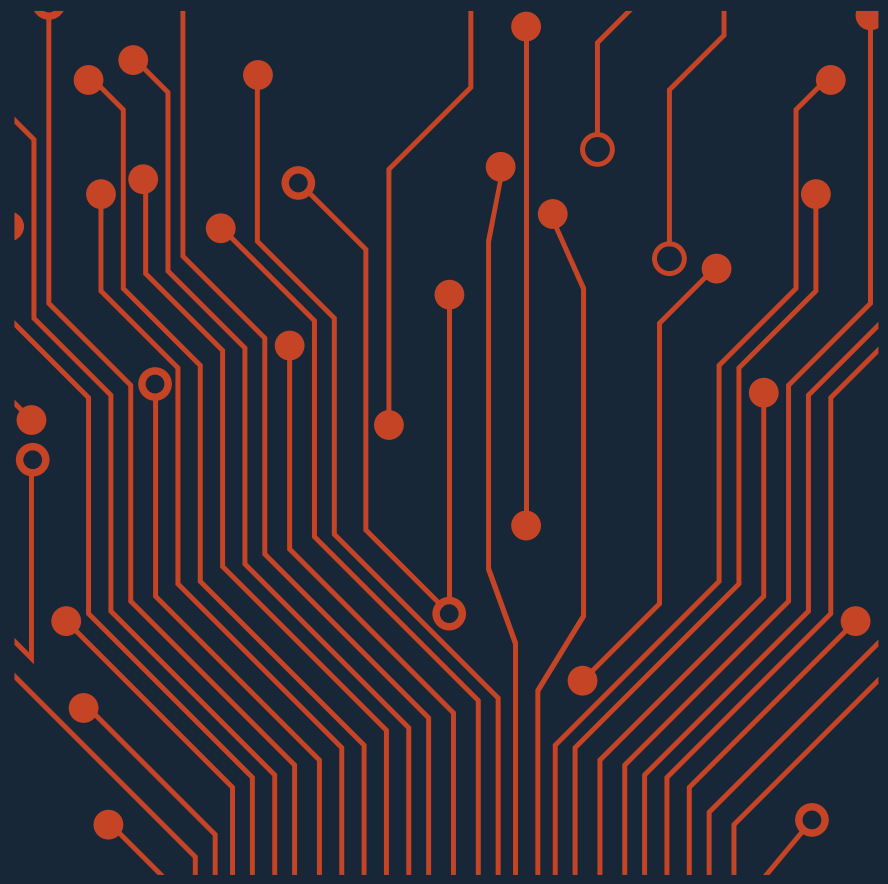
Computational Geometry

Convex Hull

Line Intersection

Sweepline Algorithm

Voronoi Diagram



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Day 61-65

System Design

System design concepts

Scalability and reliability

Caching and load balancing

Message queue and distributed systems

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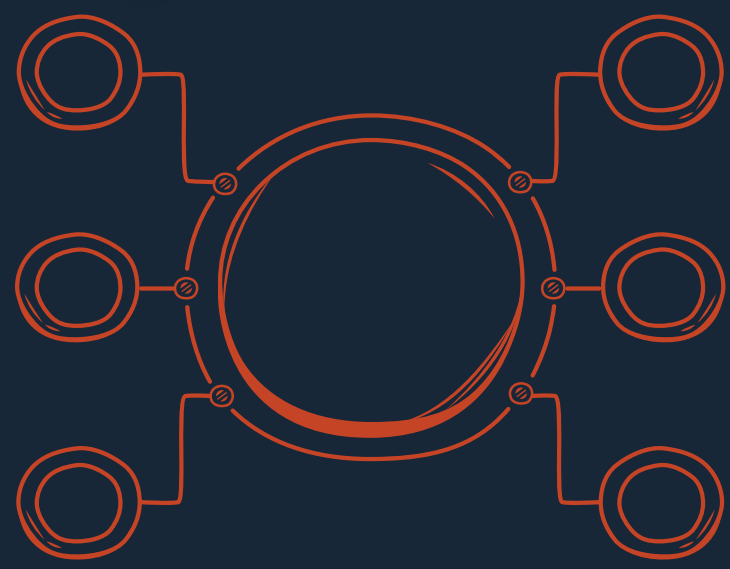

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Day 66-70

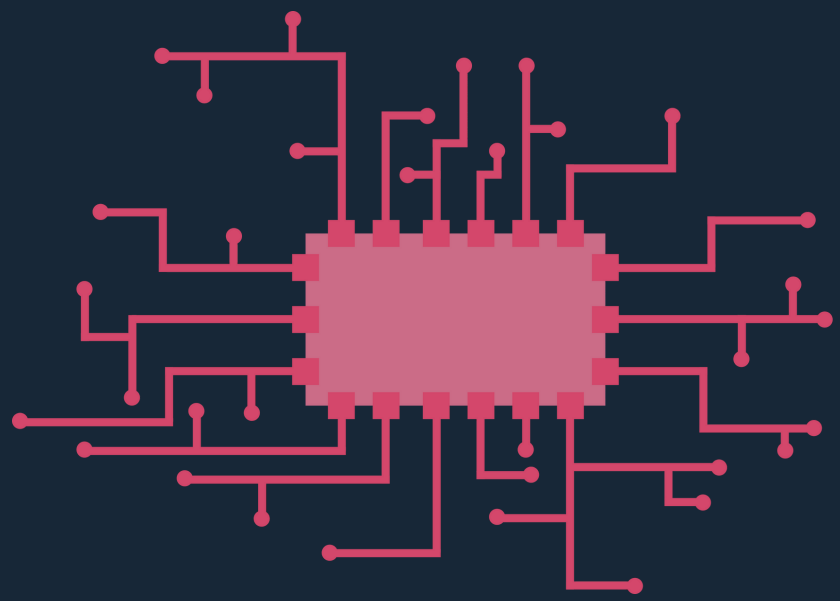
Operating System Concepts

Processes and Threads

Memory management

File systems

Scheduling algorithms



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Day 71-75

Database Concepts

Relational databases

Indexing and querying

Normalization

NoSQL databases

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Day 76-80

Practice Problems

Leetcode, HackerRank, Codeforces, and other coding platforms

Solve at least 3 problems per day

Try to solve problems using different data structures and algorithms

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Day 81-85

Mock Interviews

Practice mock interviews with friends or mentors

Analyze feedback and improve your weaknesses

Focus on communication and problem-solving skills

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Day 86-90

Competitive Programming

Participate in online coding contests

Solve challenging problems

Learn from other participants and their approaches

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Day 86-95

Project Development

Work on a personal or team project

Apply DSA concepts to solve real-world problems

Use version control and documentation

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Day 96-100

Revision and Review

Review DSA concepts

Solve practice problems

Identify and focus on weak areas

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