

Data Structures & Algorithms

50 Problems to Crack Any Interview

Focus on **DSA challenges**
for data scientists



1 Two Sum

Practice basic array manipulations



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2 Subarray Sum Equals K

Find the total number of continuous subarrays whose sum equals K



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3 Maximum Product Subarray

Find the subarray with the largest product.



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4 Kadane's Algorithm

Find the maximum sum subarray



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5 Merge Intervals

Merge overlapping intervals.



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CONTINUE



Dynamic Programming

6 Climbing Stairs

Find the number of ways to climb a staircase with n steps



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7 Longest Increasing Subsequence

Find the length of the longest increasing subsequence.



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8 0/1 Knapsack

Determine the maximum value in a knapsack



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9 Coin Change

Find the minimum number of coins to make up a given amount.



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10 Edit Distance

Calculate the minimum edit operations to convert one string to another



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Graph Algorithms

11 Depth First Search (DFS)

Traverse a graph using DFS



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12 Breadth First Search (BFS)

Traverse a graph using BFS.



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13 Dijkstra's Shortest Path

Find the shortest path in a weighted graph



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14 Topological Sort

Order vertices in a Directed Acyclic Graph (DAG).

[LeetCode Link](#)**15** Detect Cycle in a Graph

Check if a cycle exists in a directed graph.

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String Problems

16 Longest Palindromic Substring

Find the longest substring that is a palindrome.



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17 Anagrams in a String

Find all anagrams of a pattern in a string.



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18 Longest Common Subsequence

Find the length of the longest subsequence common to two strings



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19 String Compression

Compress a string using basic string compression techniques



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20 Minimum Window Substring

Find the smallest substring of s containing all characters of t.



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CONTINUE



Tree and Binary Search Tree

21 Inorder Traversal

Perform an inorder traversal of a binary tree



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22 Level Order Traversal

Traverse a binary tree level by level.



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23 Lowest Common Ancestor

Find the lowest common ancestor of two nodes in a BST.



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24 Binary Tree Maximum Path Sum

Find the maximum path sum in a binary tree.



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25 Check if a Tree is Balanced

Determine if a binary tree is height-balanced.



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CONTINUE



Heap and Priority Queue

26 Kth Largest Element in an Array

Find the kth largest element in an array.



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27 Top K Frequent Elements

Find the top k most frequent elements in an array.



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28 Merge K Sorted Lists

Merge k sorted linked lists into one sorted lis



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29

Median of Two Sorted Arrays

Find the median of two sorted arrays.



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30

Find Median from Data Stream

Maintain a running median as numbers are added.



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Bit Manipulation

31 Single Number

Find the number that appears only once in an array



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32 Counting Bits

Count the number of 1s in binary representations of numbers.



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33 Power of Two

Check if a number is a power of two



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34 Hamming Distance

Calculate the Hamming distance between two integers.



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35 Reverse Bits

Reverse the bits of a given 32-bit unsigned integer



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CONTINUE



Greedy Algorithms

36 Jump Game

Determine if you can reach the last index in an array.



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37 Gas Station

Find the starting gas station to complete a circular route.



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38 Assign Cookies

Distribute cookies to children to maximize satisfaction.



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39 Can Place Flowers

Determine if a certain number of flowers can be planted



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40 Non-overlapping Intervals

Find the minimum number of intervals to remove to make the rest non-overlapping.



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CONTINUE



Others

41 LRU Cache

Design a data structure for an LRU Cache



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42 Min Stack

Design a stack that supports push, pop, top, and retrieving the minimum element



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43 Design Twitter

Design a simplified version of Twitter



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44 Word Search

Find a word in a 2D grid.



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45 Rotting Oranges

Calculate the time required to rot all oranges in a grid



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46 Trapping Rain Water

Calculate how much rainwater can be trapped



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47 Valid Parentheses

Check if a string of parentheses is valid.



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48 Generate Parentheses

Generate all valid combinations of parentheses



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49 Container With Most Water

Find two lines that form a container with the most water.



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50 Game of Life

Implement Conway's Game of Life.



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