ZERO TO HERO
IN DSA
75 DAYS CODING CHALLENGE

AlgoTutor

Day 1 — Concatenation of Array

Given an integer array nums of length n, you want to create an array ans of length 2n where ans[i] == nums[i] and ans[i + n] == nums[i] for 0 <= i < n (0-indexed).

Specifically, ans is the concatenation of two nums arrays.

Return the array ans.

Practice

Day 2 — Shuffle the Array

Given the array nums consisting of 2n elements in the form [x1,x2,...,xn,y1,y2,...,yn].

Return the array in the form [x1,y1,x2,y2,...,xn,yn].

Practice

Day 3 — Number of Good Pairs

Given an array of integers nums, return the number of good pairs.

A pair (i, j) is called good if nums[i] == nums[j] and i < j.

Practice

Day 4 Pascal's Triangle

Given an integer numRows, return the first numRows of Pascal's triangle.

In Pascal's triangle, each number is the sum of the two numbers directly above it

Practice

Day 5 Maximum Subarray

Given an integer array nums, find the subarray

with the largest sum, and return its sum.

Practice

Day 6 Best Time to Buy and Sell Stock

You are given an array prices where prices[i] is the price of a given stock on the ith day.

You want to maximize your profit by choosing a single day to buy one stock and choosing a different day in the future to sell that stock.

Practice

Day 7 — Reverse Words in a String

Given an input string s, reverse the order of the words.

A word is defined as a sequence of non-space characters. The words in s will be separated by at least one space.

Practice

Day 8 — Longest Palindromic Substring

Given a string s, return the longest palindromic substring in s.

Practice

Day 9 — Longest Common Prefix

Write a function to find the longest common prefix string amongst an array of strings.

If there is no common prefix, return an empty string "".

Practice

Day 10 — Valid Anagram

Given two strings s and t, return true if t is an anagram of s, and false otherwise.

An Anagram is a word or phrase formed by rearranging the letters of a different word or phrase, typically using all the original letters exactly once.

Practice

Day 11 — Repeated String Match

Given two strings a and b, return the minimum number of times you should repeat string a so that string b is a substring of it. If it is impossible for b to be a substring of a after repeating it, return -1.
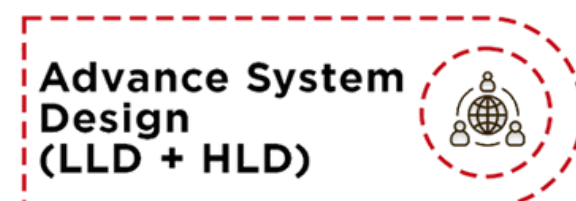
Practice

Day 12 — Roman to Integer

Roman numerals are represented by seven different symbols: I, V, X, L, C, D and M.

Practice

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Day 13 Subsets II

Given an integer array nums that may contain duplicates, return all possible subsets (the power set).

The solution set must not contain duplicate subsets. Return the solution in any order.

Practice

Day 14 Palindrome Partitioning

Given a string s, partition s such that every substring of the partition is a palindrome.

647 solved it

Return all possible palindrome partitioning of s.

Practice

Day 15 Combination Sum II

Given a collection of candidate numbers (candidates) and a target number (target), find all unique combinations in candidates where the candidate numbers sum to target.

Each number in candidates may only be used once in the combination.

Practice

Day 16 Power of Two

Given an integer n, return true if it is a power of two. Otherwise, return false.

An integer n is a power of two, if there exists an integer x such that n == 2x.

Practice

Day 17 Different Ways to Add Parentheses

Given a string expression of numbers and operators, return all possible results from computing all the different possible ways to group numbers and operators. You may return the answer in any order.

Practice

Day 18 Sudoku Solver

Write a program to solve a Sudoku puzzle by filling the empty cells.

A sudoku solution must satisfy all of the following rules:

Practice

Day 19 — Reverse Linked List

Given the head of a singly linked list, reverse the list, and return the reversed list.

Practice

Day 20 — Middle of the Linked List

Given the head of a singly linked list, return the middle node of the linked list.

If there are two middle nodes, return the second middle node.

Practice

Day 21 — Merge Two Sorted Lists

You are given the heads of two sorted linked lists list1 and list2.

Merge the two lists in a one sorted list. The list should be made by splicing together the nodes of the first two lists.

Return the head of the merged linked list.

Practice

Day 22   Add Two Numbers

You are given two non-empty linked lists representing two non-negative integers. The digits are stored in reverse order, and each of their nodes contains a single digit. Add the two numbers and return the sum as a linked list.

You may assume the two numbers do not contain any leading zero, except the number 0 itself.

Practice

Day 23   Linked List Cycle

Given head, the head of a linked list, determine if the linked list has a cycle in it.

Practice

Day 24   Palindrome Linked List

Given the head of a singly linked list, return true if it is a palindrome or false otherwise.

Practice

Day 25   Single Element in a Sorted Array

You are given a sorted array consisting of only integers where every element appears exactly twice, except for one element which appears exactly once.

Return the single element that appears only once.

Practice

Day 26   Median of Two Sorted Arrays

Given two sorted arrays nums1 and nums2 of size m and n respectively, return the median of the two sorted arrays.

The overall run time complexity should be O(log (m+n)).

Practice

Day 27   Search in Rotated Sorted Array

There is an integer array nums sorted in ascending order (with distinct values).

Prior to being passed to your function, nums is possibly rotated at an unknown pivot index k (1 <= k < nums.length)

Practice

Day 28 **Kth Largest Element in an Array**

Given an integer array nums and an integer k, return the kth largest element in the array.

Note that it is the kth largest element in the sorted order, not the kth distinct element.

Practice

Day 29 **Find Median from Data Stream**

The median is the middle value in an ordered integer list. If the size of the list is even, there is no middle value, and the median is the mean of the two middle values.

Practice

Day 30 **Top K Frequent Elements**

Given an integer array nums and an integer k, return the k most frequent elements. You may return the answer in any order.

Practice

Day 31 — Implement Stack using Queues

Implement a last-in-first-out (LIFO) stack using only two queues. The implemented stack should support all the functions of a normal stack (push, top, pop, and empty).

Practice

Day 32 — Implement Queue using Stacks

Implement a first in first out (FIFO) queue using only two stacks. The implemented queue should support all the functions of a normal queue (push, peek, pop, and empty).

Practice

Day 33 — Valid Parentheses

Given a string s containing just the characters '(', ')', '{', '}', '[' and ']', determine if the input string is valid.

An input string is valid if:
- Open brackets must be closed by the same type of brackets.
- Open brackets must be closed in the correct order.
Every close bracket has a corresponding open bracket of the same type.

Practice

Day 34 ## LRU Cache

Design a data structure that follows the constraints of a Least Recently Used (LRU) cache.

Practice

Day 35 ## LFU Cache

Design and implement a data structure for a Least Frequently Used (LFU) cache.

Practice

Day 36 ## Largest Rectangle in Histogram

Given an array of integers heights representing the histogram's bar height where the width of each bar is 1, return the area of the largest rectangle in the histogram.

Practice

Maximal

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Day 37 # Sliding Window Maximum

You are given an array of integers nums, there is a sliding window of size k which is moving from the very left of the array to the very right. You can only see the k numbers in the window. Each time the sliding window moves right by one position.

Return the max sliding window.

Practice

Day 38 # Min Stack

Design a stack that supports push, pop, top, and retrieving the minimum element in constant time.

Practice

Day 39 # Rotting Oranges

You are given an m x n grid where each cell can have one of three values:
- 0 representing an empty cell,
- 1 representing a fresh orange
- 2 representing a rotten orange.

Practice

Day 40 Binary Tree Inorder Traversal

Given the root of a binary tree, return the inorder traversal of its nodes' values.

Practice

Sum of leaves
Sum of Left Leaves

Day 41 Binary Tree Preorder Traversal

Given the root of a binary tree, return the preorder traversal of its nodes' values.

Path Sum

Practice

Evaluate Boolean Binary Tree

Day 42 Binary Tree Postorder Traversal

Given the root of a binary tree, return the postorder traversal of its nodes' values.

129. Sum Root to Leaf Numbers

Practice

Delete Leaves With a Given Value

Day 42 Maximum Width of Binary Tree

Given the root of a binary tree, return the maximum width of the given tree.

Practice

Distribute Coins in Binary Tree

Day 43   Binary Tree Level Order Traversal

Given the root of a binary tree, return the level order traversal of its nodes' values. (i.e., from left to right, level by level).

Practice

Day 44   Maximum Depth of Binary Tree

Given the root of a binary tree, return its maximum depth.

A binary tree's maximum depth is the number of nodes along the longest path from the root node down to the farthest leaf node.

Practice

Day 45   Balanced Binary Tree

Given a binary tree, determine if it is height-balanced.

Practice

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Day 46 ## Vertical Order Traversal of a Binary Tree

Given the root of a binary tree, calculate the vertical order traversal of the binary tree.

Practice

Day 47 ## Maximum Width of Binary Tree

Given the root of a binary tree, return the maximum width of the given tree.

The maximum width of a tree is the maximum width among all levels.

Practice

Day 48 ## Binary Tree Level Order Traversal

Given the root of a binary tree, return the level order traversal of its nodes' values. (i.e., from left to right, level by level).

Practice

Day 49 **Binary Tree Zigzag Level Order Traversal**

Given the root of a binary tree, return the zigzag level order traversal of its nodes' values. (i.e., from left to right, then right to left for the next level and alternate between).

Practice

Day 50 **Same Tree**

Given the roots of two binary trees p and q, write a function to check if they are the same or not.

Two binary trees are considered the same if they are structurally identical, and the nodes have the same value.

Practice

Day 51 **Lowest Common Ancestor of a Binary Tree**

Given a binary tree, find the lowest common ancestor (LCA) of two given nodes in the tree.

Practice

Day 52 — Course Schedule

There are a total of numCourses courses you have to take, labeled from 0 to numCourses - 1. You are given an array prerequisites.

where prerequisites[i] = [ai, bi] indicates that you must take course bi first if you want to take course ai.

Practice

Day 53 — Topological Sort BFS

Given a Directed Acyclic Graph (DAG) with V vertices and E edges, Find any Topological Sorting of that Graph.

Practice

Day 54 — Topological Sort DFS

Given a Directed Acyclic Graph (DAG) with V vertices and E edges, Find any Topological Sorting of that Graph.

Practice

Day 55   Kosaraju algorithm O(N)

Model this question as graph problem.

If there is a character 'b' between the first and last occurrence of character 'a', then it means we must include 'b' in the substring if we want to include 'a', so we can create an edge from 'a' to 'b'.

Practice

Day 56   Implementing Dijkstra Algorithm

Given a weighted, undirected and connected graph of V vertices and an adjacency list adj.

where adj[i] is a list of lists containing two integers where the first integer of each list j denotes there is edge between i and j , second integers corresponds to the weight of that edge .

You are given the source vertex S and You to Find the shortest distance of all the vertex's from the source vertex S. You have to return a list of integers denoting shortest distance between each node and Source vertex S.

Practice

Day 57 Bellman-Ford Algorithm

Given a weighted, directed and connected graph of V vertices and E edges, Find the shortest distance of all the vertex's from the source vertex S.

Practice

Day 58 Floyd Warshall

The problem is to find the shortest distances between every pair of vertices in a given edge-weighted directed graph.

The graph is represented as an adjacency matrix of size n*n.

Matrix[i][j] denotes the weight of the edge from i to j.
If Matrix[i][j]=-1, it means there is no edge from i to j.

Practice

Day 59 Minimum Spanning Tree

Given a weighted, undirected and connected graph of V vertices and E edges. The task is to find the sum of weights of the edges of the Minimum Spanning Tree.

Practice

Day 60 Maximum Product Subarray

Given an integer array nums, find a subarray that has the largest product, and return the product.

The test cases are generated so that the answer will fit in a 32-bit integer.

Practice

Day 61 Longest Common Subsequence

Given two strings text1 and text2, return the length of their longest common subsequence. If there is no common subsequence, return 0.

Practice

Day 62 0 - 1 Knapsack Problem

You are given weights and values of N items, put these items in a knapsack of capacity W to get the maximum total value in the knapsack.

Practice

Day 63 Edit Distance

Given two strings word1 and word2, return the minimum number of operations required to convert word1 to word2.

You have the following three operations permitted on a word:
- Insert a character
- Delete a character
- Replace a character

Practice

Day 64 Matrix Chain Multiplication

Given a sequence of matrices, find the most efficient way to multiply these matrices together. The efficient way is the one that involves the least number of multiplications.

The dimensions of the matrices are given in an array arr[] of size N (such that N = number of matrices + 1) where the ith matrix has the dimensions (arr[i-1] x arr[i]).

Practice

Day 65 Minimum Path Sum

Given a m x n grid filled with non-negative numbers, find a path from top left to bottom right, which minimizes the sum of all numbers along its path.
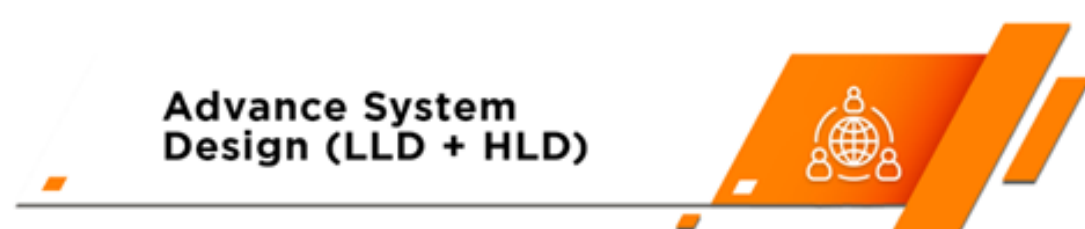
Practice

Day 66 Coin Change

You are given an integer array coins representing coins of different denominations and an integer amount representing a total amount of money.

Return the fewest number of coins that you need to make up that amount. If that amount of money cannot be made up by any combination of the coins, return -1.

You may assume that you have an infinite number of each kind of coin.

Practice

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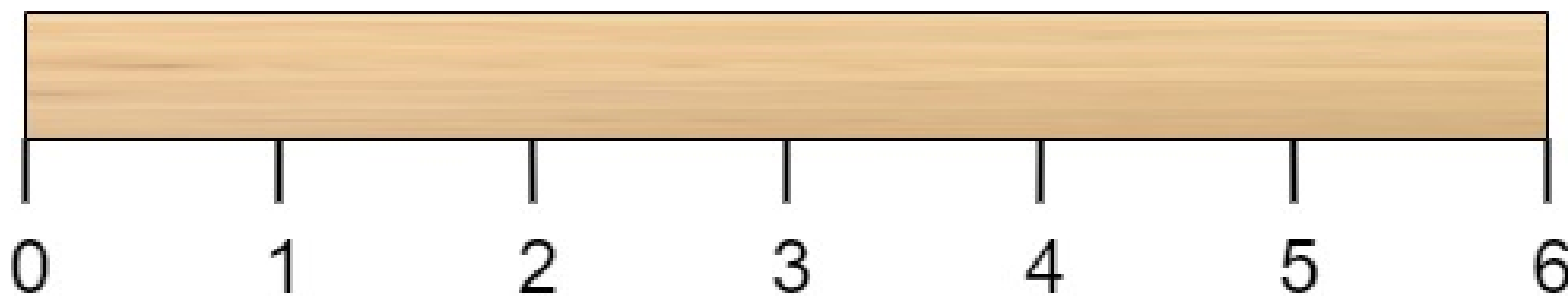Advance System Design (LLD + HLD)

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Day 67 — Partition Equal Subset Sum

Given an integer array nums, return true if you can partition the array into two subsets such that the sum of the elements in both subsets is equal or false otherwise.

Practice

Day 68 — Minimum Cost to Cut a Stick

Given a wooden stick of length n units. The stick is labelled from 0 to n. For example, a stick of length 6 is labelled as follows:

Practice

Day 69 — Egg Dropping Puzzle

You are given N identical eggs and you have access to a K-floored building from 1 to K.
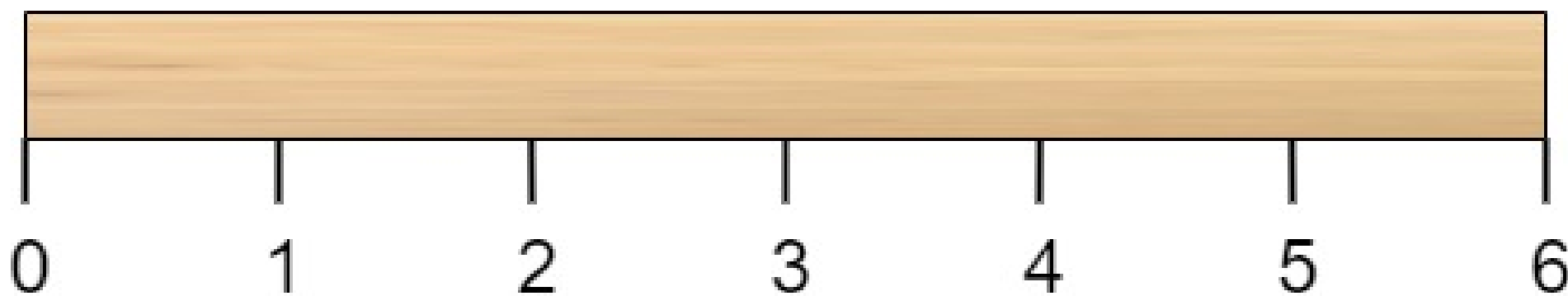
Practice

Day 70 Word Break

Given a string s and a dictionary of strings wordDict, return true if s can be segmented into a space-separated sequence of one or more dictionary words.

Practice

Day 68 Minimum Cost to Cut a Stick

Given a wooden stick of length n units. The stick is labelled from 0 to n. For example, a stick of length 6 is labelled as follows:

Practice

Day 69 Egg Dropping Puzzle

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Practice

Day 70 # Word Break

Given a string s and a dictionary of strings wordDict, return true if s can be segmented into a space-separated sequence of one or more dictionary words.

Practice

Day 71 # Palindromic Partitioning

Given a string str, a partitioning of the string is a palindrome partitioning if every sub-string of the partition is a palindrome.

Determine the fewest cuts needed for palindrome partitioning of the given string.

Practice

Day 72 # Job Sequencing Problem

Given a set of N jobs where each jobi has a deadline and profit associated with it.

Practice

Day 73 ## Power Set

Given a string S, Find all the possible subsequences of the String in lexicographically-sorted order.

Practice

Day 74 ## Maximum XOR of Two Numbers in an Array

Given an integer array nums, return the maximum result of nums[i] XOR nums[j], where 0 <= i <= j < n.

Practice

Day 75 ## Implement Trie (Prefix Tree)

A trie (pronounced as "try") or prefix tree is a tree data structure used to efficiently store and retrieve keys in a dataset of strings.

There are various applications of this data structure, such as autocomplete and spellchecker.

Practice

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