

Amazon DSA Previous Year Questions

Easy

- Write the code for this: First Bad Version
(Using an API `isBadVersion(v)`, find the first bad version in $[1 \dots n]$ with minimal calls.)
- Write the code for this: Kth Missing Positive Number
(In a sorted positive array, find the k^{th} missing integer.)
- Write the code for this: Find the Team Size
(Given a “Team” table, return each team’s member count.)
- Write the code for this: N-ary Tree Postorder Traversal
(Return the postorder (children $\rightarrow$ root) traversal of an N-ary tree.)
- Write the code for this: Increasing Decreasing String
(Reorder a string by alternately picking smallest then largest unused characters.)
- Write the code for this: Can Place Flowers
(Given a `flowerbed` array and n , check if you can plant n flowers without adjacent plots.)

- Write the code for this: Split a String in Balanced Strings
(Given a string of 'L'/'R', count the maximum substrings with equal L and R.)
- Write the code for this: Decrypt String from Alphabet to Integer Mapping
(Decode digits/'#' sequences to letters: "10#" → 'j', etc.)
- Write the code for this: Sum of All Odd Length Subarrays
(Given an array, sum every subarray of odd length.)
- Write the code for this: Find Mode in Binary Search Tree
(Find the value(s) that appear most frequently in a BST.)
- Write the code for this: Binary Search
(Implement standard binary search over a sorted array.)
- Write the code for this: Kids With the Greatest Number of Candies
(Given candy counts and extraCandies, report who can have the max.)
- Write the code for this: Image Smoother
(Smooth a 2D image by replacing each pixel with the average of its neighbors.)

- Write the code for this: Number of Steps to Reduce a Number to Zero
(Count steps: if even, divide by 2; if odd, subtract 1.)
- Write the code for this: Monotonic Array
(Check if an array is entirely non-increasing or non-decreasing.)
- Write the code for this: Product's Price for Each Store
(From Sales table, show each store's product prices.)
- Write the code for this: Average Time of Process per Machine
(From Logs table, compute avg processing time per machine.)
- Write the code for this: Monotone Increasing Digits
(Given a non-negative integer, find the largest number $\leq$ it with digits in non-decreasing order.)
- Write the code for this: List the Products Ordered in a Period
(From Orders, list products sold between two dates.)
- Write the code for this: String Matching in an Array
(Count how many patterns appear as substrings in a list of words.)
- Write the code for this: Flipping an Image
(Flip a binary matrix horizontally and then invert it.)

- Write the code for this: Find Smallest Letter Greater Than Target
(Given sorted letters and a target, find the smallest letter > target, wrap around.)
- Write the code for this: Average Salary Excluding the Minimum and Maximum Salary
(Compute the average salary after dropping the lowest and highest.)
- Write the code for this: Actors and Directors Who Cooperated At Least Three Times
(From Cast & Direct tables, find pairs with ≥ 3 collaborations.)
- Write the code for this: Univalued Binary Tree
(Check if all nodes in a binary tree have the same value.)
- Write the code for this: Rising Temperature
(From Weather table, find days with higher temperature than the next day.)
- Write the code for this: Find Customer Referee
(From Customer table with referrer_id, list customers who referred someone.)
- Write the code for this: Sorting the Sentence
(Reorder words in a sentence based on the trailing position digit.)

- Write the code for this: N-th Tribonacci Number
(Compute the n^{th} Tribonacci number with $T_0=0$, $T_1=1$, $T_2=1$.)
- Write the code for this: Assign Cookies
(Given greed and size arrays, maximize number of content children.)
- Write the code for this: Set Mismatch
(Find the duplicate and missing numbers in $1 \dots n$ given one swap.)
- Write the code for this: Find N Unique Integers Sum up to Zero
(Return n distinct integers that sum to zero.)
- Write the code for this: Construct String from Binary Tree
(Serialize a binary tree to a string using preorder with parentheses.)
- Write the code for this: Find the Difference
(Given two strings where $t = s + \text{one extra char}$, find that extra char.)
- Write the code for this: Range Sum Query - Immutable
(Preprocess an array to answer $\text{sumRange}(i, j)$ queries in $O(1)$.)
- Write the code for this: Build Array from Permutation
(Given perm, return an array where $\text{ans}[i] = \text{perm}[\text{perm}[i]]$.)

- Write the code for this: All Valid Triplets That Can Represent a Country
(From Sales/Customers, list triples meeting some condition.)
 - Write the code for this: Find Nearest Point That Has the Same X or Y Coordinate
(From a list of points and a target, find the closest by Manhattan distance sharing x or y.)
 - Write the code for this: Sum of All Subset XOR Totals
(Compute the sum of XOR totals of all subsets of an array.)
 - Write the code for this: Determine Whether Matrix Can Be Obtained By Rotation
(Check if one matrix can be rotated 0° , 90° , 180° , or 270° to match another.)
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Medium

- Write the code for this: Replace Words
(Given a dictionary of roots and a sentence, replace words with shortest matching root.)
- Write the code for this: Subarray Product Less Than K
(Count subarrays whose product is less than k.)

- Write the code for this: XOR Queries of a Subarray
(Given an array and queries $[l, r]$, return XOR of subarray $l \dots r$.)
- Write the code for this: Flip String to Monotone Increasing
(Flip $0 \rightarrow 1$ or $1 \rightarrow 0$ to make a binary string monotone increasing.)
- Write the code for this: Maximum Number of Vowels in a Substring of Given Length
(Find the maximum count of vowels in any substring of length k .)
- Write the code for this: Min Cost to Connect All Points
(Given points, connect them all with minimum total edge cost.)
- Write the code for this: Minimum Increment to Make Array Unique
(Increment elements to ensure all are unique with minimal total increments.)
- Write the code for this: Maximum Length of Subarray With Positive Product
(Find longest subarray where the product of all elements is positive.)
- Write the code for this: Print FooBar Alternately
(Use two threads to print “foo” and “bar” alternately n times.)

- Write the code for this: Maximum Non Negative Product in a Matrix
(In a grid, find the maximum non-negative product path from top-left to bottom-right.)
- Write the code for this: Greatest Sum Divisible by Three
(Given an array, remove the fewest elements so that the sum is divisible by 3.)
- Write the code for this: Frequency of the Most Frequent Element
(In an array, find the longest subarray you can make where $|a_i - a_j| \leq k$ by incrementing elements.)
- Write the code for this: Letter Case Permutation
(Generate all strings by toggling letter cases in the input.)
- Write the code for this: Minimum Time Difference
(Given time points, find the minimum difference between any two times.)
- Write the code for this: Merge In Between Linked Lists
(Splice one linked list into another between positions a and b.)
- Write the code for this: Course Schedule IV
(Answer reachability queries given course prerequisites.)

- Write the code for this: Design Browser History
(Implement browser history with visit, back, and forward operations.)
- Write the code for this: Max Consecutive Ones II
(Find the longest sequence of 1's you can get by flipping at most one 0.)
- Write the code for this: Customers Who Bought All Products
(From sales data, list customers who purchased every product.)
- Write the code for this: Can Make Palindrome from Substring
(Given queries [l,r], check if substring can be rearranged into a palindrome.)
- Write the code for this: Ones and Zeroes
(Select the largest subset of binary strings with $\leq m$ zeros and n ones.)
- Write the code for this: Building H₂O
(Use threads to output "H" twice and "O" once to form H₂O molecules.)
- Write the code for this: Construct Binary Tree from String
(Given a string with parentheses, build the binary tree it represents.)

- Write the code for this: Find Interview Candidates
(From Interview and Candidate tables, list candidates who applied.)
- Write the code for this: Longest String Chain
(Given words, find the length of the longest chain where you add one letter each step.)
- Write the code for this: Group Shifted Strings
(Group strings that belong to the same shifting sequence.)
- Write the code for this: Most Stones Removed with Same Row or Column
(Remove as many stones as possible if they share a row or column.)
- Write the code for this: Integer Break
(Break n into at least two positive integers to maximize their product.)
- Write the code for this: Maximum Length of a Concatenated String with Unique Characters
(Choose strings to concatenate so that all characters are unique, maximizing total length.)
- Write the code for this: Rearrange Words in a Sentence
(Reorder words by their length or original position indicated in the word.)

- Write the code for this: Friend Requests II: Who Has the Most Friends (From FriendRequests table, find the user(s) with the highest friend count.)
- Write the code for this: Find And Replace in String (In a string S, replace occurrences of various sources at given indices with targets.)
- Write the code for this: Grand Slam Titles (From TennisMatches table, count how many grand slams each player has won.)
- Write the code for this: Web Crawler Multithreaded (Crawl all reachable URLs from a start URL using multiple threads.)
- Write the code for this: Find Eventual Safe States (In a directed graph, find nodes that eventually lead to a terminal node.)
- Write the code for this: Number of Operations to Make Network Connected (Given n computers and edges, find min additions to connect all.)
- Write the code for this: Lowest Common Ancestor of a Binary Tree IV (Answer LCA queries on a dynamic tree.)

- Write the code for this: Expressive Words
(Count words that can be expanded to match the target by repeating letters.)
- Write the code for this: Find a Corresponding Node of a Binary Tree in a Clone
(Given a tree and its clone, locate in the clone the node corresponding to a target.)
- Write the code for this: Maximum Alternating Subsequence Sum
(For an array, pick a subsequence to maximize alternating sum of signs.)
- Write the code for this: Minimum Garden Perimeter to Collect Enough Apples
(Given apple counts in a grid, find the smallest square perimeter to collect $\geq X$ apples.)
- Write the code for this: Previous Permutation With One Swap
(Generate the lexicographically largest permutation smaller than the input by one swap.)
- Write the code for this: Nested List Weight Sum II
(Compute the sum of integers in a nested list weighted by inverse depth.)

- Write the code for this: Remove Zero Sum Consecutive Nodes from Linked List
(Delete sublists whose sum is zero, repeatedly until none remain.)
- Write the code for this: Count Good Meals
(Count pairs of deliciousness where the sum is a power of two.)
- Write the code for this: Minimum Deletions to Make Character Frequencies Unique
(Delete as few chars as possible so that no two letters have the same frequency.)
- Write the code for this: Minimum Add to Make Parentheses Valid
(Add the fewest parentheses to make a string valid.)
- Write the code for this: Rotate Function
(Compute the maximum rotation function value for an array.)
- Write the code for this: Maximum Points You Can Obtain from Cards
(Pick k cards from either end of an array to maximize your score.)
- Write the code for this: Count Sorted Vowel Strings
(Count lexicographically sorted strings of vowels of length n.)

- Write the code for this: Distant Barcodes
(Rearrange barcodes so no two adjacent are equal.)
- Write the code for this: Product Sales Analysis III
(From Sales and Products tables, compute advanced sales metrics.)
- Write the code for this: Insufficient Nodes in Root to Leaf Paths
(Delete nodes that do not lie on any root-to-leaf path of length $\geq$ limit.)
- Write the code for this: Remove Covered Intervals
(From a list of intervals, remove those covered by others and count remaining.)
- Write the code for this: Closest Divisors
(Given an integer, find two divisors closest in value.)
- Write the code for this: Diet Plan Performance
(Given calorie changes and k, count subarrays with sum >0 .)
- Write the code for this: Number of Steps to Reduce a Number in Binary Representation to One
(Count steps to reduce a binary string to "1" with allowed ops.)

- Write the code for this: Queries on a Permutation With Key
(Simulate queries on a permuted list by moving accessed elements to front.)
- Write the code for this: NPV Queries
(Compute net present value for given cash flows and discount rate.)
- Write the code for this: Pseudo-Palindromic Paths in a Binary Tree
(Count root-to-leaf paths whose node values form a pseudo-palindrome.)
- Write the code for this: Minimum Numbers of Function Calls to Make Target Array
(Min operations to build a target array using increment and doubling.)
- Write the code for this: Find the Index of the Large Integer
(Interactively find the position of a hidden large number in a table.)
- Write the code for this: Make Sum Divisible by P
(Remove the shortest subarray so that the total sum is divisible by P.)
- Write the code for this: Number of Sets of K Non-Overlapping Line Segments
(Count ways to draw k disjoint line segments on n points.)

- Write the code for this: Find the Missing IDs
(From an IDs table, list the IDs in a range that have no record.)
- Write the code for this: Add Two Polynomials Represented as Linked Lists
(Add two polynomials, each given as a linked list of terms.)
- Write the code for this: Concatenation of Consecutive Binary Numbers
(Concatenate binary representations of $1 \dots n$ and return as an integer.)
- Write the code for this: Decode XORed Permutation
(Given encoded array where $\text{encoded}[i] = \text{perm}[i] \text{ XOR } \text{perm}[i+1]$, recover perm.)
- Write the code for this: Form Array by Concatenating Subarrays of Another Array
(Check if target can be formed by concatenating subarrays from pieces.)
- Write the code for this: Distinct Numbers in Each Subarray
(For each window of size k , count the distinct elements.)
- Write the code for this: The Number of the Smallest Unoccupied Chair

(Simulate people sitting at chairs; return the chair occupied by a target person.)

- Write the code for this: Maximum of Minimum Values in All Subarrays
(For every window size k , find the maximum among all window minimums.)
 - Write the code for this: Check if Move is Legal
(Given board and a move, determine if it's legal under game rules.)
 - Write the code for this: Minimize the Difference Between Target and Chosen Elements
(Pick one element from each row of a matrix to minimize $|\text{sum} - \text{target}|$.)
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Hard

- Write the code for this: Kth Ancestor of a Tree Node
(Preprocess a tree to answer queries: "What's the k^{th} ancestor of node x ?".)
- Write the code for this: Count of Range Sum
(Count the number of subarray sums in $[\text{lower}, \text{upper}]$ in $O(n \log n)$.)
- Write the code for this: Find Minimum Time to Finish All Jobs
(Assign jobs to workers to minimize the maximum workload.)

- Write the code for this: Maximum Number of Visible Points
(From an observer and a list of points, find the max you can see within a given angle.)
- Write the code for this: Valid Palindrome III
(Given a string, find the minimum insertions/deletions so it can become a palindrome.)
- Write the code for this: Find in Mountain Array
(Interactively find a target in a bitonic (first increasing then decreasing) array.)
- Write the code for this: Patching Array
(Given an array and a max n, find the minimum patches needed so all sums $1 \dots n$ are formable.)
- Write the code for this: Reachable Nodes In Subdivided Graph
(Given edges subdivided into m segments, count reachable nodes within max steps.)
- Write the code for this: Orderly Queue
(Perform k-rotations/swaps to find lexicographically smallest string.)
- Write the code for this: Numbers At Most N Given Digit Set
(Count integers $\leq N$ that can be formed from a given digit set.)

- Write the code for this: Digit Count in Range
(Count digit occurrences in all numbers from 1 to n.)
- Write the code for this: Handshakes That Don't Cross
(Count ways for pairs to shake hands around a table without crossing arms.)
- Write the code for this: Largest Multiple of Three
(Remove the fewest digits so the remaining number is divisible by 3.)
- Write the code for this: Count Ways to Make Array With Product
(Count ways to assign +/- to make the product of array elements equal to target.)
- Write the code for this: Closest Room
(Given room sizes and queries, find the room with minimum size $\geq$ prefixed size within ID range.)
- Write the code for this: Next Palindrome Using Same Digits
(Rearrange digits to form the next greater palindrome, if possible.)
- Write the code for this: Maximize the Beauty of the Garden
(Increase flowers' heights with operations to maximize min height minus watering time.)

- Write the code for this: Count Number of Special Subsequences
(Count subsequences matching a specific pattern under modulo.)
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