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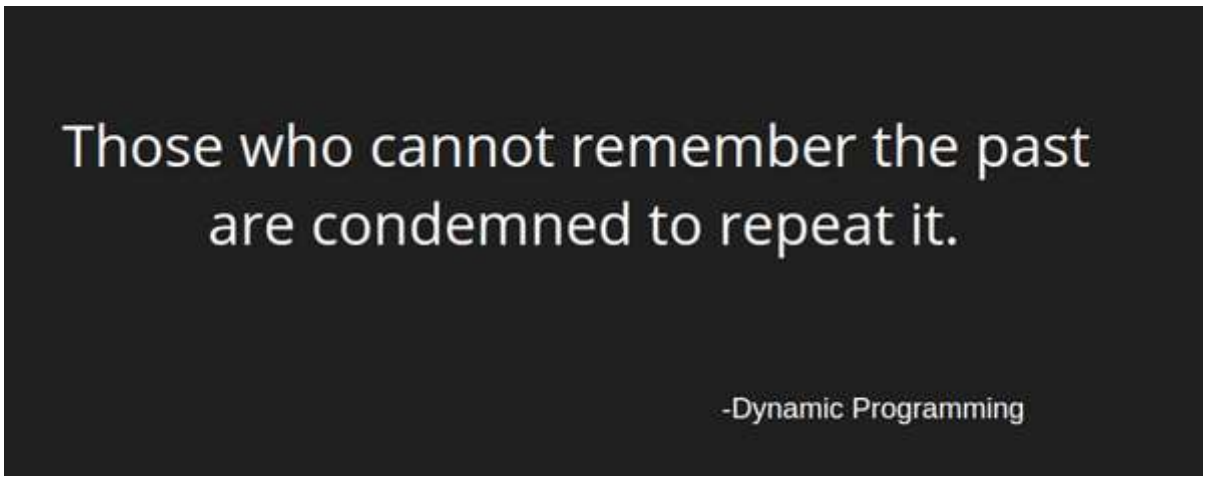
Top 50 Dynamic Programming Practice Problems



Dynamic Programming is a method for solving a complex problem by breaking it down into a collection of simpler subproblems, solving each of those subproblems just once, and storing their solutions using a memory-based data structure (array, map,etc). Each of the subproblem solutions is indexed in some way, typically based on the values of its input parameters, so as to facilitate its lookup. So the next time the same subproblem occurs, instead of recomputing its solution, one simply looks up the previously computed solution, thereby saving computation time. This technique of storing solutions to subproblems instead of recomputing them is called memoization.

Here's brilliant explanation on concept of Dynamic Programming on Quora Jonathan

1. Longest Common Subsequence | Intr
2. Longest Common Subsequence | Fin
3. Longest Common Substring problem
4. Longest Palindromic Subsequence us
5. Longest Repeated Subsequence Prob
6. Implement Diff Utility
7. Shortest Common Supersequence | Introduction & SCS Length
8. Shortest Common Supersequence | Finding all SCS
9. Longest Increasing Subsequence using Dynamic Programming
10. Longest Bitonic Subsequence
11. Increasing Subsequence with Maximum Sum
12. The Levenshtein distance (Edit distance) problem
13. Find size of largest square sub-matrix of 1's present in given binary matrix
14. Matrix Chain Multiplication using Dynamic Programming
15. Find the minimum cost to reach last cell of the matrix from its first cell
16. Find longest sequence formed by adjacent numbers in the matrix
17. Count number of paths in a matrix with given cost to reach destination cell
18. 0–1 Knapsack problem
19. Maximize the Value of an Expression
20. Partition problem | Dynamic Programming Solution

23. Find all N-digit binary strings withou
24. Rod Cutting Problem
25. Maximum Product Rod Cutting
26. Coin change-making problem (unlim
27. Coin Change Problem (Total number
28. Longest Alternating Subsequence Problem
29. Count number of times a pattern appears in given string as a subsequence
30. Collect maximum points in a matrix by satisfying given constraints
31. Count total possible combinations of N-digit numbers in a mobile keypad
32. Find Optimal Cost to Construct Binary Search Tree
33. Word Break Problem | Dynamic Programming
34. Word Break Problem | Using Trie Data Structure
35. Total possible solutions to linear equation of k variables
36. Wildcard Pattern Matching
37. Find Probability that a Person is Alive after Taking N steps on an Island

38. Calculate sum of all elements in nstant time
39. Find Maximum Sum Submatrix in a given matrix
40. Find Maximum Sum Submatrix present in a given matrix
41. Find maximum sum of subsequence with no adjacent elements
42. Maximum Subarray Problem (Kadane's algorithm)

45. Pots of Gold Game using Dynamic Pr
46. Find minimum cuts needed for palin
47. Maximum Length Snake Sequence
48. 3-Partition Problem
49. Calculate size of the largest plus of 1'
50. Check if given string is interleaving of two other given strings