1   CheatSheet: Leetcode For Code Interview   Languages

- PDF Link: cheatsheet-leetcode-A4.pdf, Category: languages

- Blog URL: `https://cheatsheet.dennyzhang.com/cheatsheet-leetcode-A4`

- Related posts: CheatSheet: System Design For Code Interview, #denny-cheatsheets

File me Issues or star this repo.

1.1   Top 25 Code Templates

Num	Category/Tag	Example
1	#bfs	Leetcode: Binary Tree Level Order Traversal
2	#dfs	Leetcode: Island Perimeter
3	#binarysearch	Leetcode: Search Insert Position
4	#twopointer	Leetcode: Two Sum
5	#twopointer, #mergetwolist	Leetcode: Merge Two Sorted Lists
6	#backtracking, #subset	Leetcode: Subsets II
7	#linkedlist, #presum	Leetcode: Remove Zero Sum Consecutive Nodes from Linked List
8	#unionfind	Leetcode: Accounts Merge
9	#trie	Leetcode: Longest Word in Dictionary
10	#heap	Leetcode: Top K Frequent Elements
11	#editdistance, #dynamicprogramming	Leetcode: Longest Common Subsequence
12	#interval	Leetcode: Meeting Rooms, Leetcode: Course Schedule
13	#monotone	Leetcode: Daily Temperatures
14	#knapsack	Leetcode: Coin Change
15	#sortbyfunction	Leetcode: Relative Sort Array
16	#slidingwindow	Leetcode: Longest Substring Without Repeating Characters
17	#divideconquer, #recursive	
18	#treetraversal	
19	quicksort/quickselection	
20	topological sort	
21	dijkstra	Dijkstra's Shortest Path First algorithm
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23		
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1.2   Top 20 Graph Problems

Num	Problem	Category/Tag	Summary
1	Graph Connectivity: Count islands in a 2D matrix	#dfs, #unionfind	Leetcode: Number of Island
2	Get the size of the largest island	#dfs	Leetcode: Max Area of Isla
3	Whether a graph is a tree	#unionfind, #bfs	Leetcode: Graph Valid Tre
4	Whether an undirected graph has a loop		
5	Whether a directed graph has a loop		Leetcode: Redundant Conn
6	Shortest path for two nodes in a weighted graph - Dijkstra's Algorithm		
7	Minimum spanning tree of a weighted graph - Kruskal's algorithm	#unionfind	Leetcode: Connecting Citie
8	Update a specific region		Leetcode: Flood Fill
9	Update regions for a given rule		Leetcode: Surrounded Regi
10	Mark levels		Leetcode: 01 Matrix
11	Duplicate edges		Leetcode: Reconstruct Itin
12	Find a certain node in a graph	#unionfind	Leetcode: Find the Celebrit
13	Find a certain path from source to destination in a graph		Leetcode: Path With Maxir
14	Find the minimum steps from point1 to point2		Leetcode: Word Ladder, Le
15	Find all minimum paths from point1 to point2		Leetcode: Word Ladder II
16	All Paths from Source Lead to Destination		Leetcode: All Paths from S
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https://cdn.dennyzhang.com/images/brain/denny$_{\text{leetcode.png}}$

1.3   Top 10 Binarysearch Problems

Num	Problem	Category/Tag	Summary
1	Find a first failing version		Leetcode: First Bad Version
2	Search Insert Position		Leetcode: Search Insert Position, Leetcode: Time Based Key-Value Store
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1.4   Top 10 Dynamic Programming Problems

Num	Problem	Category/Tag	Summary
1	LIS - Longest increasing subsequence	#string, #lis	Leetcode: Longest Increasing Subsequence
4	LCS - Longest Common Subsequence	#editdistance, #lcs	Leetcode: Longest Common Subsequence
3	Maximum subarray problem		Leetcode: Maximum Subarray
2	Edit distance of two strings	#editdistance	Leetcode: Edit Distance
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1.5   Top 10 BinaryTree Problems

Num	Problem	Category/Tag	Summary
1	Binary Tree Level Order Traversal	#bfs	Leetcode: Binary Tree Right Side View
2	Height of binary tree	#dfs	Leetcode: Balanced Binary Tree
3	LCA - Lowest Common Ancestor of a Binary Tree	#dfs	Leetcode: Lowest Common Ancestor of a Binary Tr
4	Construct binary tree		Leetcode: Construct Binary Tree from Preorder and
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1.6   Top 10 String Problems

Num	Problem	Category/Tag	Summary
1	Reserve words in string		Leetcode: Reverse Words in a String III

1.7   Top 5 Math Problems

Num	Problem	Category/Tag	Summary
1	Check prime - Sieve of Eratosthenes	#prime	Leetcode: Count Primes
2	Check leap year		
3	Rectangle	#rectangle	
4	gcd	#gcd	
5			

1.8   Top 50 General Problems

Num	Problem	Category/Tag	Example
1	Reverse words in an sentence	#string	Leetcode: Reverse Words in
2	Split string	#string	Leetcode: License Key For
3	Two pointers	#twosum, #twopointer	Leetcode: Two Sum
4	Sort one array based on another array	#sortbyfunction	Leetcode: Relative Sort Ar
5	Buy stock for maximum profit list	#array, #greedy, #buystock	Leetcode: Best Time to Bu
6	Prefix search from a list of strings	#trie	Leetcode: Longest Word in
7	LCS - Longest Common Subsequence	#dynamicprogramming, #string	Leetcode: Longest Commor
8	Longest substring with at most K distinct characters	#slidingwindow, #atmostkdistinct	Leetcode: Longest Substrin
9	Longest subarray with maximum K 0s	#slidingwindow	Leetcode: Max Consecutive
10	Get all possibilities of subsets	#subset, #backtracking	Leetcode: Subsets II, Leetc
11	Choose k numbers from a list	#combination, #backtracking	Leetcode: Combination Sur
12	Combination from multiple segments	#combination, #backtracking	Leetcode: Letter Combinat
13	Factor Combinations	#combination, #backtracking	Leetcode: Factor Combinat
14	Permutation without duplicates	#permutation, #backtracking	Leetcode: Palindrome Pern
15	Int to string or string to int	#bitmanipulation	
16	Convert a number into negative base representation	#bitmanipulation	Leetcode: Convert to Base
17	Remove nodes from linked list	#linkedlist, #presum	Leetcode: Remove Zero Su
18	Check whether a linked list has a loop		
19	Network connectivity	#unionfind	Leetcode: Friend Circles
20	Build relationship among different sets	#unionfind	Leetcode: Accounts Merge
21	Knapsack problem to maximize benefits	#knapsack	Leetcode: Coin Change
22	Find the next greater value	#monotone	Leetcode: Daily Temperatu
23	Meeting conflict	#interval	Leetcode: Meeting Rooms,
24	TopK problem	#heap	Leetcode: Top K Frequent
25	Quick slow pointers	#twopointer	LintCode: Middle of Linke
26	Longest Repeating Character with at most K changes	#slidingwindow	Leetcode: Longest Repeatir
27	Prefix and Suffix Search	#trie	Leetcode: Prefix and Suffix
28		#minmax, #dynamicprogramming	Leetcode: Predict the Winr
29			Travelling salesman probler
30			Leetcode: Remove Duplica
31			Leetcode: Min Stack
32	Topological Sort		
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1.9   Common Tips For Clean Code

Num	Name	Summary
1	Caculate sum of a range quickly	#presum,Leetcode: Maximum Subarray
2	Move in four directions for a matrix	Leetcode: Sliding Puzzle
3	Split string by multiple seperator	Leetcode: Brace Expansion
4	Add a dummy tailing element to simplify code	Leetcode: Brace Expansion
5	Fast slow pointers	LintCode: Middle of Linked List
6	Deep copy an array	Leetcode: Combination Sum
7	Use array instead of hashmap, if possible	Leetcode: Number of Days in a Month
8	Control the order of dfs	Leetcode: Subsets II
9	Avoid inserting into the head of an array	Leetcode: Path In Zigzag Labelled Binary Tree
10	From right to left, instead of left to right	Leetcode: Merge Sorted Array
11	Think the other way around	`Add Items` vs `Remove Items`, `Increase Counter` vs `Decreas`
12	Avoid uncessary if...else...	res[i] = (diff/2 <= k), Leetcode: Can Make Palindrome from
13	To get the case of K, solve: at most K - at most (K-1)	Leetcode: Subarrays with K Different Integers
14	Instead of deleting entry from hashmap, decrease counter	Leetcode: Longest Substring with At Most K Distinct Charac
15	Find the max/min; If not found, return 0	Leetcode: Minimum Area Rectangle
16	With helper function vs without helper function	Leetcode: Longest Repeating Character Replacement
17	Instead of adding a character, try to delete one	Leetcode: Longest String Chain
18	One pass instead of two pass	
19	Avoid unnecessary precheck	
20	Swiping line algorithm	
21	Add a dummy head node for linked list	
22	Hide details which are irrelevant	

1.10   Review Problems By Category

Num	Name	Summary
1	#binarytree	Review: Binary Tree Problems
2	#linkedlist	Review: Linked List Problems
3	#binarysearch	Review: Binary Search Problems
4	#dynamicprogramming	Review: Dynamic Programming Problems
5	#twopointer	Review: TwoPointers Problems
6	#trie	Review: Trie Tree Problems
7	#string	Review: String Problems
8	#stack	Review: Stack Problems
9	#bfs	Review: BFS Problems
10	#dfs	Review: DFS Problems
11	#array	Review: Array/SubArray Problems
12	#hashmap	Review: Hashmap Problems
13	#monotone	Review: Monotone Stack Or Monotone Queue Problems
14	#knapsack	Review: Knapsack Problems
15	#heap	Review: Heap Problems
16	#divideconquer	Review: Divide And Conquer Problems
17	#backtracking	Review: Backtracking Problems
18	#unionfind	Review: Union Find Problems
19	#greedy	Review: Greedy Problems
20	#gcd	Review: GCD Problems
21	#interval	Review: Interval Problems
22	#combination	Review: Combinations and Permutations Problems
23	#sql	Review: SQL Problems
24	#sqrt	Review: sqrt Problems

1.11   Golang Tips

Name	Summary
Golang return a tuple	`func dfs(root *TreeNode, max *float64) (sum int, cnt int)`, Leetcode:
Use strings.Builder, instead of string	Leetcode: Unique Email Addresses
Variable Conversion	`float64(x_int/y_int)` != `float64(x_int)/float64(y_int)`, Leetcode: Maxi
For a list of objects, pass by value or reference	`f(l []*TreeNode)` vs `f(l *[]*TreeNode)`, Leetcode: Lowest Common Ancesto

1.12   Resource For Code Problems

Name	Summary
Leetcode summary	Link: Top Google Questions, Link: Top 100 Liked Questions, Link: Top Interview Questions
Online test websites	hackerrank.com, hackerrank - hard
Online test websites	spoj.com
Online test websites	codeforces.com, poj.org
Online test websites	acm.hdu.edu.cn, acm.zju.edu.cn, acm.timus.ru, uva.onlinejudge.org
Reference	geeksforgeeks.org
Reference	Youtube: Abdul Bari - Algorithm

1.13   More Resources

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    `https://www.cs.princeton.edu/~rs/AlgsDS07/`