

Amazon 群里面经

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Fuzz Buzz (如何优化)

<https://discuss.leetcode.com/topic/78329/java-fuzz-buzz-follow-up-no-if-else-and-extendable-use-stack-to-implement-queue>

bst & hash table comparison

(1. bst property, hash map property; 2. bst & hash table insert search average and worst time complexity; 3. bst can be used to store sorted data, hash table is unordered)

(bst <-> map, hash table <-> unordered map)

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基础: hash table, hashmap 原理, 排序算法

intersection of two linked list (lc 160)

follow up: 怎样避免两个 linkedlist 长度不同时多次循环才能找到 intersection

hint: 先获得两个 length, 然后大的链表先移动, 同时递减长度, 直到长度相等的时候一起动

two sum

three sum

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single number

给一个数组求所有数平均数

(problem: overflow, empty input, 返回值要求 double)

(hint: 叠加时用 long)

罗马数字转整数

lc84

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lc85 maximal rectangle

用 DP 更新每一行 height 单调栈计算 update 每一行 max

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CTCI ood: parking lot, deck

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expression tree

wiggle sort

(hint: 每加进一个数 不合要求就和前一个调换)

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abstract class vs interface

interface > abstract class

two ways to implement hash map

open hashing: single element /close hashing: linked list

given several files, each file includes a string, consists of words, punctuation, and space,
find the top n frequent word

(string split, map reduce, replace all,

(Symantec: substring + loop --> valid anagram)

<http://www.geeksforgeeks.org/find-the-maximum-repeating-number-in-ok-time/>

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基本位运算

hash table, polymorphism, extends, implements

bfs traversal

package company: box and letter

implement: addBox, addLetter, removeBox, removeLetter, removeAny

remove:FIFO

(use one or two queue)

(for removeAny: give time stamp?)

find k largest in hash map: minHeap?

product except for curr (lc 238, O(n), prefix product)

string anagram

prefix: longest substring in s

suffix: longest common substring

lc 242

group anagram, remove linked list element, difference between array list and linked list
(lc 49)

given a list, return the third last node

given a BST, given an int, find the node with closet value to the int and return (lc 270)

follow up: time complexity

bst inorder traversal

of 1 bit in a int (no negative number)
get avg of random number (follow up: median--> use heap, logN, lc295)

linux shell command, use shell to read files
write a regex (match a phone number)
name a function (function: whether a number is the power of 2)
merge sorted array, merge sort

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给一个字符的二维数组，以及一个 string 的数组
在字符串数组里对角线方向找，看 string 有没有在数组里的对角线方向出现过，如果出现
return
followup: 反对角线 或 允许 string 反序出现

lc88

2sum
longest length of sequence in matrix
<http://poj.org/problem?id=1088> (lc329)

find 100 nearest point (find k points)
time complexity, edge cases (小土豆)
<https://leetcode.com/problems/kth-largest-element-in-an-array/>

一个数组找出所有重复数字，print 出每个数以及出现次数
判断一棵树是否左右对称(lc101)

set the nth bit of an integer to 1
given an array, find the element with the smallest index that appears at least k times

OOD: build a video player
(play, stop, random play..)
exception

delete duplicates 1 + 2

MRU

merge sorted arrays

two sum: 返回所有 pair, 有可能没有
设计画图 app

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integer to english word (lc 273)

reverse word

word ladder (time complexity)

实现 insert, search, delete 使用什么数据结构?

hashmap, heap, balanced BST...

(compare time complexity)

lc17

when you did not have enough info when you get the requirement how did you solve that

given a dict, want to convert nums to real english word, data structure?

hashset, trie

3 sum, follow up: hashmap

data structure

difference between linkedlist, vector, hashmap, bst

lc155 $O(1)$

treetop?

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validate BST

Symmetric Tree

implement a queue using an array (dequeue, enqueue)

tree zigzag traversal

sql and no sql difference

write a function that takes as input an array of objects/strings

the objects will be either integers or character representations of +, -, and *

return the result by applying the arithmetical operations defined in postfix notation

打印一个带规律的 matrix:

1,2,3;2,4,6;3,6,9;

two files with integers (can be repeated), not sorted

use linux command to find out the repeated numbers

follow up: $O(n)$ time complexity? what if files too large?

OOD: design a zoo

difference between linked list and array list

判断 integer 某个 bit 是不是 1

lc373

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Swap the nth element from the beginning with the nth element from the end of the linked list (2 次)

面经：第一题，打印 matrix， $matrix[i][j] = (i+1) * (j+1)$ ，

第二题，单向链表找倒数第 k 个，然后 follow up 是就遍历一遍找到

最后一问是 ood，关于用户在不用餐厅订餐，要有 user，restaurant，menu，order，payment 等类，然后设计……

1. Linux: print 一个文件里所有数字的和 (awk)

2. MaxStack: push pop getMax $O(1)$ ，不能用 java 的 stack 类

3. 设计一个 online book reader store

lc155 follow-up: missing 不止一个，开头不一定是 0，不能用 xor，比 $O(n)$ 更好的办法，what if input is linkedlist (skiplist?)

```
/**
 * Create a class (or classes) to represent a pile of standard playing cards.
 *
 * A playing card has a face value and a suit. There are 13 distinct face values:
 2,3,4,5,6,7,8,9,10,Jack,Queen,King,Ace. There
 * are 4 distinct suits: Hearts, Clubs, Diamonds, and Spades. That results in  $4 \times 13 = 52$  distinct
 cards.
 *
 * A pile should be initially created as empty.
 *
 * The pile should have methods to:
 * 1) Initialize it to a full deck of cards.
 * 2) Shuffle it, without changing the cards in the pile, make their order completely random.
 * 3) Remove and return the top card from the pile.
 * 4) Put a card onto the top of the pile.
 */ (3 times)
```

给一个树,把同一层的所有 treeNode 连起来 followup: 把这个树打印出来(lc 116)
card, most popular element

返回两个 linkedlist 里的重复 node (value)

BST kth largest element

lc116, followup: 1. order traversal, 2. 优化 treenode class interface

(优化: 把 subtree 信息存在当前 node 里)

2sum, followup: 1. no sort, 2. no map

(可以用 set。。)

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给一个每行都是数字的文件的文件名,求数字的和

(follow up: 如果这个文件超大内存存不下怎么解决)

awk '{s+=\$1} END {print s}' filename

<http://blog.csdn.net/mxgsgtc/article/details/12048919> 切割文件

awk '{for (i=1; i<NF; i++) sum+=\$i} END (print"sum="sum)}' test

给了一个文件名格式: p_{project_name}_{company_name}.{ext}, 找出:

project_name=beta, company={google, Amazon}, ext={h,txt}的所有文件, 只能用 linux 语句来完成。

awk '\$1 ~ /^beta_(google|Amazon)\.(h|txt)\$/' filenames 这样不知道可不可以 如果已经有文件名都存在一个 file 里的话

Given an array Array[0,n-1], find an efficient way to answer query Gcd Query(l,r), where $l \geq 0$,

$r \geq l$, $r, l \leq n-1$

poj1195, 线段树

优化: 二维数组把结果存下来 (dp?)

给一个 array 和 target 找到 subarray 的和等于 target lc325

(hash map)

world ladder 2

merge k sorted list (情景)

给 List<String> exceptions, 输出每个分钟出现多少次 SomeException, 没有的不算, Mon

2/16/2017 10:15 [ERROR] SomeException

Mon 2/16/2017 10:15 [ERROR] SomeException

Mon 2/16/2017 10:16 [INFO] No problems

Mon 2/16/2017 10:20 [ERROR] SomeException

Mon 2/16/2017 10:30 [ERROR] SomeException

Mon 2/16/2017 10:30 [ERROR] AnotherException

Mon 2/16/2017 10:16 [WARN] OtherException

15 -> 2

20 -> 1

30 -> 1

2sum, merge sort

map, set, implementation 区别

time complexity

逐层打印 tree

处理亚马逊员工数据(OOD)

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(fisher shuffle)

2sum, countprime, tight ddl 怎么办

string array, 查找 array --> binary search, sorted

OOD, data structure

扫雷

(reservoir sampling, $m \times n$ matrix, n bombs)

bfs 更新爆炸区域

给一个 hour minute, 输出夹角

vector arraylist 区别

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array 找 duplicate (1-n, 只有一个 duplicate)

(twice)

文件找 phone number(lc 193)

star list, 100 个最接近地球的 star (k closest point)

(priority queue)

lc242 valid anagram

list<string>a, string b, 找出 a 中所有 b 的 anagram

follow up: a 中可能有重复的, a 的字符是 unicode

思路:

一开始用 int[] 存字符出现的次数 arraylist 存结果

不重复就把 arraylist 改成 hashset

要求 unicode 就把 int[] 改成 hashmap

lc287

lc116

binary tree zigzag traverse

input:abc, output: a,b,c,ab,ac,bc,abc. (没有顺序要求: $ab==ba$)

followup: input aac,如何消除重复(e.g.:ac, ac)

top k frequent elements

subsets of string

construct heap

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什么时候用 set, set 有哪些 function, 然后 implement a set with the functions (add,remove,contains,size)

基本 data structure: array, linkedlist

coding: LRU

file 里查找电话号码

设计一个电梯 缩短等待时间

给一个数组, 奇偶分离, 要求 $O(1)$ space

老姐的题:

1. base class, sub class 用 virtual function 来实现 overwriting 的 demo

(问题: overloading, stack, queue definition)

2.logrecord, 是一堆人进入和走出大楼的时间, 问是否存在一个时刻 楼里人数 ≥ 60

3. matrix replace (替换一个 entry)

(followup: 替换所有它可以通达的旧值相同的位置的数)

4. 设计一个 ferry.trip 管理系统

add 2 number for two linkedlist

给一个 array 找出里面出现奇数次的数字。no extra space

一个数出现 odd times 其他 even times 找这个数 实现 2 种方法

follow up: integer 换成 object,所以不能用异或, 这种不用 hashCode 用什么才能 no extra space?

find and replace phone number in 100000 web pages.

detect linked list cycle.

如何向 beginner 解释 OOP

有 duplicate 的 2-sum

follow up:不用 hash table

design elevator (思路)

分享一下 quora 上关于电梯设计题的讨论: <https://www.quora.com/What-is-the-best-answer-to-Design-an-elevator-system>

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1. print all the possible string of length k that can be found in a given set

2. Remove deplorable node in a linked list

3. Design Twitter(思路)

Given the heads of two linked lists, return a new list that contains nodes with all the values that appear in both lists.

(follow up: sorted list)

ispalindrome

first unique character