

Algorithms Review for Job Interview

deepwaterooo

January 24, 2015

Contents

| | | |
|-----------|---|----------|
| 1 | 1/24/2015, Saturday | 1 |
| 1.1 | Other things | 1 |
| 2 | 1/23/2015, Friday | 1 |
| 2.1 | worked on 6 problems, 173/175: 4 left | 1 |
| 2.2 | Other things | 1 |
| 3 | 1/22/2015, Thursday | 2 |
| 3.1 | worked on 6 problems, 167/175: | 2 |
| 3.2 | Other things | 2 |
| 4 | 1/21/2015, Wednesday | 2 |
| 4.1 | worked on 8 problems, 161/175: | 2 |
| 4.2 | Other things | 2 |
| 5 | 1/20/2015, Tuesday | 3 |
| 5.1 | worked on 6 problems, 153/173: | 3 |
| 5.2 | Other things | 3 |
| 6 | 1/19/2015, Monday | 3 |
| 6.1 | worked on 8 problems, 147/173: | 3 |
| 6.2 | Other things | 3 |
| 7 | 1/18/2015, Sunday | 3 |
| 7.1 | worked on 10 problems, 139/173: | 3 |
| 7.2 | Other things | 4 |
| 8 | 1/17/2015, Saturday | 4 |
| 8.1 | worked on 12 problems, 129/173: | 4 |
| 8.2 | Other things | 4 |
| 9 | 1/16/2015, Friday | 5 |
| 9.1 | worked on 9 problems, 117/173: | 5 |
| 9.2 | Other things | 5 |
| 10 | 1/15/2015, Thursday | 5 |
| 10.1 | worked on 10 problems, 108/173: | 5 |
| 11 | 1/14/2015, Wednesday | 6 |
| 11.1 | worked on 8 problems, 98/173: | 6 |
| 11.2 | Other things | 6 |
| 12 | 1/13/2015, Tuesday | 6 |
| 12.1 | worked on 4 problems, 90/173: | 6 |
| 12.2 | Other things | 6 |

| | |
|--|-----------|
| 13 1/12/2015, Monday | 6 |
| 13.1 worked on 6 problems, 86/173: | 6 |
| 13.2 Other things | 6 |
| 14 1/11/2015, Sunday | 7 |
| 14.1 worked on 7 problems, 80/173: | 7 |
| 15 1/10/2015, Saturday | 7 |
| 15.1 worked on 3 problems, 73/173: | 7 |
| 16 1/9/2015, Friday | 7 |
| 16.1 worked on 2 problems, 70/173: | 7 |
| 17 1/8/2015, Thursday | 7 |
| 17.1 worked on 9 problems, 68/173: | 7 |
| 18 1/7/2015, Wednesday | 8 |
| 18.1 worked on 12 problems, 59/173: | 8 |
| 19 1/6/2015, Tuesday | 8 |
| 19.1 worked on 5 problems, 47/173: | 8 |
| 20 1/5/2015, Monday | 8 |
| 20.1 Other things | 8 |
| 21 1/4/2015, Sunday | 8 |
| 21.1 worked on 2 problems, 42/173: | 8 |
| 21.2 Other things | 8 |
| 22 1/3/2015, Saturday | 9 |
| 22.1 worked on 5 problems, 40/173: | 9 |
| 22.2 Other things | 9 |
| 23 1/2/2015, Friday | 9 |
| 23.1 worked on 7 problems, 35/173: | 9 |
| 23.2 Other things | 9 |
| 24 1/1/2015, Thursday | 10 |
| 24.1 worked on 8 problems, 28/173 : | 10 |
| 25 12/31/2014, Wednesday | 10 |
| 26 12/30/2014, Tuesday | 10 |
| 27 12/20/2014, Saturday | 11 |
| 28 12/21/2014, Sunday | 11 |
| 29 12/22/2014, Monday | 11 |
| 30 12/23/2014, Tuesday | 11 |
| 31 12/24/2014, Wednesday | 12 |
| 32 12/25/2014, Thursday | 14 |
| 33 12/26/2014, Friday | 14 |
| 34 12/29/2014, Monday | 14 |

1 1/24/2015, Saturday

- Sudoku Solver, half done

1.1 Other things

- [illegible]

2 1/23/2015, Friday

2.1 worked on 6 problems, 173/175: 4 left

- find substring idxes
- sort Colors
- distinct Sequence
- Interleaving Sequence
- Scramble String
- Candy

2.2 Other things

- Sudoku Solver
- regular expression matching
- Wildcard Matching
- connect next Right
- (4:00~4:30) ~ 11:30
- I think I got sick today, fever, 3-3:30 & 6:30-7:30 rest almost fall asleep

3 1/22/2015, Thursday

3.1 worked on 6 problems, 167/175:

- 50, 69, 4,, 119, 65, 174
- sqrt(x)
- pow(x)
- Median of Two Sorted Arrays
- Pascal's Triangle II
- valid number, god...
- Dungeon Game

3.2 Other things

- (5:30~6:00) ~ 12:00, headache!!!
- have rest after dinner, do as much as I can for today~!!

4 1/21/2015, Wednesday

4.1 worked on 8 problems, 161/175:

- 114,, 31, 41, 32, 9, 7, 26, 80
- Flatten binary tree to Preorder all Right nodes
- Next Permutation
- First Missing Positive
- Longest Valid Parentheses
- Palindrome Number
- Reverse Integer
- Remove Duplicates from Sorted Array
- Remove Duplicates from Sorted Array II

4.2 Other things

- 8:00 - 2:38pm
- C-cC-vC-c C-cC-vC-r C-xC-c terminate without prompt, but still seeking a way to kill subprocesses without kill emacs;
- It maybe Difficult, but so far tolerate it, only one tree/list problem left anyway~
- 10 hard ones left untouched ~!!

5 1/20/2015, Tuesday

5.1 worked on 6 problems, 153/173:

- 28, 140,, 126, 132, 5, 105, 106
- strStr
- word break II
- word ladder II
- Palindrom Partitioning II
- longest Palindrom
- Preorder Inorder build tree
- Inorder Postorder build tree

5.2 Other things

- (2:30~2:45) ~ 11:55
- still, somebody else's mind in my body today, so not me~
- 3:00-5:00, go campus, try to meet advisor, stubborn evening...
- will work coming week when docs processed ready. so try finish this round as soon as possible

6 1/19/2015, Monday

6.1 worked on 8 problems, 147/173:

- 84, 42, 85, 11, 131, 179, 127,, 28
- Largest Rectangle in Histogram
- Trapping Rain Water
- Maximal Rectangle
- Container With Most Water
- Palindrome Partitioning
- Largest Number
- Word Ladder

6.2 Other things

- (3:30~4:00) ~ 11:05

7 1/18/2015, Sunday

7.1 worked on 10 problems, 139/173:

- 78, 90, 77, 46, 47,, 133, 152, 89, 72, 55, 45
- Subsets
- Subsets II
- Combinations
- Permutations
- Permutations II
- Clone Graph
- Maximum Product Subarray
- Gray Code
- Edit Distance
- Jump Game
- Jump Game II

7.2 Other things

- 5:00 - 10:44, mind is NOT in the brain today, do only easy ones, no touching greedy nor array...
- eat earlier, eat more to make it easier to fall asleep after dinner, evening depends...
- should be able to fall asleep before 5am tonight then;

8 1/17/2015, Saturday

8.1 worked on 12 problems, 129/173:

- 120, 128, 96, 95, 70, 53, 91,, 66, 8, 60, 39, 40
- Triangle
- Longest Consecutive Sequence
- Unique Binary Search Trees
- Unique Binary Search Trees II
- Climbing Stairs
- Maximum Subarray
- Decode Ways
- Plus One
- String to Integer (atoi)
- Permutation Sequence
- Combination Sum
- Combination Sum II

8.2 Other things

- 4:00 - 8:58, woke up for 2 min, fall back asleep in 2 mins after surfing internet for 2 mins;
- wake up 11:48, better mind today, tried couple of dp, but how could I efficiently fall asleep before 4 tonight?
1 cup coffee at ard 4pm alrdy after 20 mins nap
- Need try greedy method some other time when mind is clear, all painful & bad memories about TLE...
- Can't believe I am so sleepy, headache around eleven... try fall asleep around two... long way to go...

9 1/16/2015, Friday

9.1 worked on 9 problems, 117/173:

- 49, 81, 51, 52, 22, (39), 82, 108, 109, 149
- Anagrams
- search in rotated sorted array with dup II: wrote mid = end - 1 in the morning ~;
- N-Queens
- N-Queens II
- Generate Parentheses
- **Combination Sum**: don't know how to make it run faster
- Remove Duplicates from Sorted List II
- Convert Sorted Array to Binary Search Tree
- Convert Sorted List to Binary Search Tree
- Max Points on a Line, **Double** map key, (double)/(doule) == (double)(int/int) ???

9.2 Other things

- Wanted to **swipe** bottom up from 17?, but apparantly I am **NOT proficient enough** to solve the Difficult ones yet, so take my time to solve them gradually~
- do NOT work in it any more tonight,
- got especially headache this week, go grocery to get my water, have rest earlier & expecting tomorrow to work in DP ~!

10 1/15/2015, Thursday

10.1 worked on 10 problems, 108/173:

- Simplify Path
- Search in Rotated Sorted Array
- Restore IP Addresses
- Populating Next Right Pointers in Each Node
- **Populating Next Right Pointers in Each Node II**: You may only use constant extra space
- Minimum Window Substring, repeats,
- Sum Root to Leaf Numbers
- Binary Tree Inorder Traversal
- Binary Tree Preorder Traversal
- Binary Tree Postorder Traversal
- Merge K sorted List

11 1/14/2015, Wednesday

11.1 worked on 8 problems, 98/173:

- tree series: 102, 103, 104, 107, 110, 111, 112, 113
- binary tree Level order Traversal
- binary tree Level order Traversal II
- binary tree Level Zigzag order Traversal
- Maximum Depth of binary tree
- Minimum Depth of binary tree
- Balanced binary tree
- path sum
- path sum II

11.2 Other things

- a matter get it done as soon as possible, 7-12,
- didn't do anything in the evening, better not behave this way any more~!

12 1/13/2015, Tuesday

12.1 worked on 4 problems, 90/173:

- 98, 99, 100, 101
- Validate binary search tree
- Recover binary search tree
- same tree
- Symmetric tree

12.2 Other things

- got very headache and 3:30-6:00pm food court training

13 1/12/2015, Monday

13.1 worked on 6 problems, 86/173:

- 73, 74, 79, 83, 86, 92
- Set Matrix Zeroes
- Search a 2D matrix
- Word Search
- Remove Duplicates from Sorted Lists
- Partition list
- Reverse Linked List II

13.2 Other things

- wrote quite a few nippets for java-mode, works quite great~!

14 1/11/2015, Sunday

14.1 worked on 7 problems, 80/173:

- Spiral matrix II
- rotate list
- Unique paths
- Unique paths II
- Minimum path sum
- add binary
- Text Justification

15 1/10/2015, Saturday

15.1 worked on 3 problems, 73/173:

- Spiral matrix
- merge Interval
- insert Interval
- udgrade jdk from 1.6 to be 1.8, Emacs 1.6 to be 1.8 as well, don't have wired errors like Arrays.asList(), Collections.sort() any more, nice!

16 1/9/2015, Friday

16.1 worked on 2 problems, 70/173:

- Permutation: Arrays.asList() not working in 1.6, spent hours here, figured it should be the openjde-1 too outdated for being openjde-1.6
- retate Image

17 1/8/2015, Thursday

17.1 worked on 9 problems, 68/173:

- remove element
- search for a range
- search insert position
- valid sudoku
- count and say
- Multiply string
- Length of last word
- Pascal's Triangle
- merge sorted array

18 1/7/2015, Wednesday

18.1 worked on 12 problems, 59/173:

- Integer to roman
- roman to Integer
- Longest Common Prefix
- 3Sum
- 3Sum closest
- letter Combination of a phone number
- 4Sum
- remove nth node from end of list
- Valid Parentheses

- merge two sorted list
- swap nodes in pairs
- reverse nodes in k-Group

19 1/6/2015, Tuesday

19.1 worked on 5 problems, 47/173:

- sorrounded region
- two sum
- add two numbers
- longest substring without Repeating characters
- ZigZag conversion string

20 1/5/2015, Monday

- worked on 0 succeed problems

20.1 Other things

- Go to a on 1/14/2015, Wednesday

21 1/4/2015, Sunday

21.1 worked on 2 problems, 42/173:

- binary tree Maximum path sum
- Valid Palindrom

21.2 Other things

- want to look into them and got JUnit framework for leetcode ready
- <http://www.vogella.com/tutorials/JUnit/article.html>
- <http://junit.org/>

22 1/3/2015, Saturday

22.1 worked on 5 problems, 40/173:

- copy list with random pointer, failed on tmp to move to next yesterday;
- word break; **word break II** TLE DP not thinking
- best time to buy and sell stock
- best time to buy and sell stock II
- best time to buy and sell stock III

22.2 Other things

- finally got the package working now with the help from online;
- These two days, especially bad sleep. 7(8)~12:30pm last night, feeling can fall asleep now at 1:00am, hope tomorrow will be another day.
- only 5 today, Left all those slightly challenged ones for tomorrow.

23 1/2/2015, Friday

23.1 worked on 7 problems, 35/173:

- LRU Cache, need to rework on it sometime, doubly-linked list to maintain frequency not proficient;
- Insertion sort list, straight forward
- sort list, merge sort, when break it down into pieces, it's not that hard;
- evaluate reverse polish notation
- gas station
- single number
- single number II, half done, most basic, but needs the perfect method, **tomorrow**
- **Now:** I am not afraid of lists, or even trees, but still don't feel comfortable with DP yet. Need some quality time on couple of questions of that type. For Graphics as well. I will not touch them when I am headache, but will work on them when I have a mind.
- **undone:** binary tree Preorder Traversal - iterative method still thinking

23.2 Other things

- When thought about sth, cannot fall asleep, fall asleep at 8:00am, and waked up at 12:00, so today would be filled with tedious things;
- The haircut store was closed during Christmas (I went to the store most probably on 12/26 on the afternoon after I met the two who were leaving for CA on 24th, but I don't really remember. The door was closed and the note on door said they would open today), and I called today and they did, so I spent \$7+\$1 tip and half an hour in store got my hair cut, but still spent 1 hours at home to redo it to thin the hair layers; Cut hair has nothing to do with love life, but rather that I don't want to waste time on the hair at this semester;
- try to organize previous courses contents, get the projects done better, and upload into github, and so far keep them secret until the time I need them in case in war;
- need to work on the appointment with professor web scheduling projects, because it is important, and sure will be beaten if I fail in case in war;
- target for fall asleep at 4:00am, but target for 8-10 easier algorithms problems be done before sleep; Time is so limited, I need change my schedule and use time more efficiently.

24 1/1/2015, Thursday

24.1 worked on 8 problems, 28/173:

- intersection of two linked list
- reverse words in string
- find Minimum in rotated sorted array
- find Minimum in rotated sorted array with Duplicates
- min stack

- linked list cycle
- linked list cycle II find start
- Reorder list
- binary tree Preorder Traversal - iterative method still thinking

25 12/31/2014, Wednesday

- java-mode autofill functions and yasnippets snippets, while keeping tab-indent block are all working now, like the emacs environment;
- worked on **9?10** problems, **19/173**:
 - Longest substring with at most 2 distinct characters, took my effort to rewrite it, sth can be done;
 - binary search tree iterator, understand theory, feels like just got Java environment ready;
 - excel sheet column number
 - factorial training zeroes
 - find peak element
 - maximum gap **dont like**
 - fraction to recurring decimal
 - excel sheet column title
 - majority element

26 12/30/2014, Tuesday

- get Emacs JDEE environment ready, can compile and run inside emacs now, convenient than using terminal jc j;
- worked on **5** problems, **9/173**:
 - binary tree upside down
 - missing ranges
 - two sum II
 - one edit distance
 - **DONT LIKE**: read n characters given read4 II

27 12/20/2014, Saturday

- Website (github), program highlight, and chinese input environment all good now;
- Will configure Linux Mint Java environment later, prefer emacs;
- 145/168 done before new season review, begin to work on these questions from today.
- Just got 4 easiest done: **149/168**
 - min stack,
 - excel sheet column title,
 - compare version number, and
 - intersection of two linked list,

28 12/21/2014, Sunday

- Only three got done today: **152/169**
 - maximum gap
 - fraction to recurring decimal
 - majority element
- Don't feel my mind is clear today at all, will look into job searing instead, hopefully tomorrow I can solve more problems, and slightly complicated ones;

29 12/22/2014, Monday

- So far got four done: **156/169**
 - sort list
 - merge k sorted list
 - trapping rain water
 - recovery binary search tree
- am going to work on the rest 6 tonight, so that hopefully tomorrow I would be able to work on the new 10 questions;
 - **word ladder II**: spent hours on this one, but got really sick with it! I should have solved my problems gradually, like solve the clone graph to understand graph first before touch this one, but I will get this one done later when I have clear mind.
 - regular expression matching
 - divide two integers
 - clone graph
 - find peak element

30 12/23/2014, Tuesday

- Meet IPO staff this morning got coming semester plans clear at 8:30am in the morning;
- Will most probably meet some friend and have dinner together; changed to be **tomorrow noon**
- Hopefully by this morning's interruption meeting staff, I could change back my regular schedule instead of 5am-13:30 day time sleeping, target for tonight fall asleep before 12:00am; fall asleep from 10:00-15:30, seems I will change my schedule back as expected tonight~!
- Will not work on Algorithms for today, but work on it hard tomorrow. I have my confidence that I can figure them out, and do great job summarize the questions during my Java round, no worries!
- so far Got 2 done: **158/169**
 - find peak element
 - maximal rectangle

31 12/24/2014, Wednesday

- 2:00(3:00am?)-11:00am, expect 2:00-9:00am schedule tonight;
- Don't know why old account doesn't work any more, use new account; from **158/169** to **0/169** using **Java**
- Worked on the following questions: **1/169**
 - divide two integers, just got the Java environment ready
 - regular expression matching: **working on it!**. require understanding and summarizing

| Tags | Counts | |
|----------------------|--------|----------------------|
| Heap | 1 | Merge k Sorted Lists |
| Graph | 1 | Clone Graph |
| Data Structure | 3 | |
| Bit Manipulation | 4 | |
| Divide and Conquer | 4 | |
| Greedy | 6 | |
| Sort | 6 | |
| Breadth-first Search | 7 (32) | |
| Stack | 11 | |
| Binary Search | 13 | |
| Hash Table | 16 | |
| Math | 17 | |
| Linked List | 19 | |
| Depth-first Search | 19 | |
| Backtracking | 21 | |
| Two Pointers | 22 | |
| Dynamic Programming | 23 | |
| Tree | 26 | |
| String | 38 | |
| Array | 56 | |

- Detailed Questions:

| Tags | Counts | # | Title | Accepted |
|----------------------|--------|-----|--|----------|
| Heap | 1 | 23 | Merge k Sorted Lists | 21.0% |
| Graph | 1 | 133 | Clone Graph | 23.3% |
| Data Structure | 3 | 170 | Two Sum III - Data structure design | 19.2% |
| | | 155 | Min Stack | 14.6% |
| | | 146 | LRU Cache | 14.3% |
| Bit Manipulation | 4 | 78 | Subsets | 27.9% |
| | | 136 | Single Number | 46.0% |
| | | 137 | Single Number II | 34.0% |
| | | 169 | Majority Element | 31.6% |
| Divide and Conquer | 4 | 23 | Merge k Sorted Lists | 21.0% |
| | | 4 | Median of Two Sorted Arrays | 17.6% |
| | | 53 | Maximum Subarray | 34.2% |
| | | 169 | Majority Element | 31.7% |
| Greedy | 6 | 44 | Wildcard Matching | 14.6% |
| | | 55 | Jump Game | 27.2% |
| | | 45 | Jump Game II | 24.6% |
| | | 134 | Gas Station | 26.0% |
| | | 135 | Candy | 19.5% |
| | | 122 | Best Time to Buy and Sell Stock II | 37.0% |
| Sort | 6 | 148 | Sort List | 20.9% |
| | | 75 | Sort Colors | 32.3% |
| | | 56 | Merge Intervals | 21.2% |
| | | 164 | Maximum Gap | 23.1% |
| | | 147 | Insertion Sort List | 25.5% |
| | | 57 | Insert Interval | 20.7% |
| Breadth-first Search | 7 (32) | 127 | Word Ladder | 18.4% |
| | | 126 | Word Ladder II | 11.8% |
| | | 130 | Surrounded Regions | 14.3% |
| | | 133 | Clone Graph | 23.3% |
| | | 103 | Binary Tree Zigzag Level Order Traversal | 26.5% |
| | | 102 | Binary Tree Level Order Traversal | 29.9% |
| | | 107 | Binary Tree Level Order Traversal II | 30.4% |
| Stack | 11 | 20 | Valid Parentheses | 27.9% |
| | | 42 | Trapping Rain Water | 29.4% |
| | | 71 | Simplify Path | 19.8% |
| | | 155 | Min Stack | 14.6% |
| | | 85 | Maximal Rectangle | 21.4% |
| | | 84 | Largest Rectangle in Histogram | 21.8% |
| | | 150 | Evaluate Reverse Polish Notation | 20.1% |
| | | 103 | Binary Tree Zigzag Level Order Traversal | 26.5% |
| | | 144 | Binary Tree Preorder Traversal | 35.8% |
| | | 145 | Binary Tree Postorder Traversal | 31.3% |
| | | 94 | Binary Tree Inorder Traversal | 35.7% |
| Binary Search | 13 | 167 | Two Sum II - Input array is sorted | 45.1% |
| | | 69 | Sqrt(x) | 22.5% |
| | | 35 | Search Insert Position | 35.0% |
| | | 33 | Search in Rotated Sorted Array | 28.7% |
| | | 81 | Search in Rotated Sorted Array II | 31.2% |
| | | 34 | Search for a Range | 27.6% |
| | | 74 | Search a 2D Matrix | 31.2% |
| | | 50 | Pow(x, n) | 26.2% |
| | | 4 | Median of Two Sorted Arrays | 17.6% |
| | | 162 | Find Peak Element | 31.7% |
| | | 153 | Find Minimum in Rotated Sorted Array | 32.2% |
| | | 154 | Find Minimum in Rotated Sorted Array II | 29.9% |
| | | 29 | Divide Two Integers | 16.5% |
| Hash Table | 16 | 36 | Valid Sudoku | 27.3% |
| | | 1 | Two Sum | 18.3% |

32 12/25/2014, Thursday

- List a detailed plan of working on the algorithms; **Question Tags** according to the Website:
- Sent about 10 applications/interns;

33 12/26/2014, Friday

- two sum III

34 12/29/2014, Monday

- read N characters given read4