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Microsoft IDC Interview Experience

- Difficulty Level :\nHard
- Last Updated :\n25 Oct, 2018

Test:

- Find first non-repeating character in the string.
  Input: \xe2\x80\x9caabcbd\xe2\x80\x9d
  Output: c
- K-reverse linked list
  Input: 1 2 3 4 5 -1\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0\xc2\xa0 k = 3
  Output: 3 2 1 5 4
- Cut short binary search tree in the range of given integers.
  Input: 7 5 10 4 6 8 -1 2 -1 -1 -1 -1 9 1 3 -1 -1 -1 -1 -1 -1 (level order input)
  Lower range = 4 upper range = 8
  Output:
  7: 5, 8
  5: 4, 6
  8: -1, 9
  4: -1, -1
  6: -1, -1
  9: -1, -1

Around 200-300 people gave this round and 80 were able to clear it.

Group fly round:

- Remove and replace the character \xe2\x80\x98c\xe2\x80\x99 from a given input string by double characters \xe2\x80\x9c**\xe2\x80\x9d
  Input: \xe2\x80\x9ccalcic\xe2\x80\x9d
  Output: **al**i**
- Given a binary tree whose structure is as below

  ```
  Class BSTspecial{\r\npublic:\r\n  BSTspecial* parent = NULL;\r\n  BSTspecial* left = NULL;\r\n  BSTspecial* right =
  ```

  Given a node (note it can be either of nodes of the tree whether it is root or not) you need to find its immediate right sibling/cousin if any or return NULL if not present.

  Input:
  1 2 3 4 5 -1 6 -1 -1 -1 -1 -1 -1(level order input)
  For node \xe2\x80\x985\xe2\x80\x99 answer is \xe2\x80\x986\xe2\x80\x99
  For node \xe2\x80\x984\xe2\x80\x99 answer is \xe2\x80\x985\xe2\x80\x99
  For node \xe2\x80\x986\xe2\x80\x99 answer is -1
  For node \xe2\x80\x981\xe2\x80\x99 answer is -1

Out of 80 people, 14 were shortlisted for interviews.

Interview:

Round #1:

- What do you understand by time complexity? And what was your time complexity for the question which were asked in group fly?
- You are given n strings and a string joining function which takes two arguments (both strings) its time complexity is such than it is the sum of lengths of both the strings.
  If s1 is k units long and s2 is l units long T.C = O(k + l)

  Now, you are required to generate an algorithm such that minimal time is taken to join n strings.

  Strings: s1, s2, s3, s4,
  \xe2\x80\xa6, sn.

  Lengths: l1, l2, l3, l4,
  \xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6\xe2\x80\xa6., ln.

  Hint: O(log(n)*(l1 + l2 + l3 + \xe2\x80\xa6\xe2\x80\xa6.. + ln)) might not be the best way, this only works for\xc2\xa0 strings with almost equal length.

- Find whether a given linked list is palindrome or not.
  Without extra space in O(n) and not breaking any links.

  Note: recursion\xe2\x80\x99s stack space will be ignored.

Round #2:

- Return a data structure from a given tree such that all the children of each\xc2\xa0node point towards their respective parent and root node towards NULL.

  Discuss the time complexity of the approach.

  And then I was asked to improve it.

Due to late night Round #3 and HR were clubbed we were only 4 people, but I was asked to leave.

My Personal Notes\n*narrow_drop_up*

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