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Microsoft Interview experience | Set 100 (On Campus for Internship on IDC and IT)

- Difficulty Level :\nHard
- Last Updated :\n28 Jun, 2021

Microsoft Visited our campus \xc2\xa0for Internship selections on IDC and IT profile.\xc2\xa0There were three rounds for the selection process of IDC profile

First Round :Coding round
3 Questions were asked in different sets . Out of which people who solved 2 and more are shortlisted . People who solved 3 were shortlisted for Personal Interview , while the one\xe2\x80\x99s who solved 2 were shortlisted for Group fly round.

Questions were :

1. You will be given buildings of certain height that lie adjacent to each other . Sun starts falling from left side. If there is a building of certain Height, all the buildings right of it having lesser heights cannot see the sun . You need to find the total number of such buildings that receive sunlight .
   Find the increasing subsequence (Not strictly) with 1st building as the starting building.
   Solution: GeeksforGeeks Link
2. You will be given two arrays of equal size and you need to maximize the first array with the second array elements (swap the first array elements with second array elements . Once swapped , you cannot use the element anymore)

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   For ex: A: 3 4 6 8 9 and A : 5 7 3 6 8
   \r\nB : 6 7 8 8 9 B : 3 4 6 9 10
   \r\nOp: 9 8 8 8 9 Op : 10 9 6 6 8
   ```

   Solution: GeeksforGeeks Link
   Sort the second array and start swapping if the a[i] < b[i] . else wait for the next a\xe2\x80\x99s element which is less than b[i] and swap (naive merge procedure)

3. You will be given two trees t1 and t2. You need to check if t2 is a subtree of t1. If it is a subtree ,you need to return the size of t2(number of nodes in it).
   If either of t1 or t2 are NULL, return -1 .
   If t2 is not a subtree of t1 , then also return -1
   Most Efficient Solution was :
   Any Tree has \xc2\xa02 unique traversals . (Either it be (preorder,inoder) ,(in,post) ,(post,pre)) .\xc2\xa0So , Traverse them and store any two traversals for both the trees \xc2\xa0Check first traversal of both trees (String Matching using KMP O(N+M)) and similarly for the second traversal.If they both come out to be true (I mean pattern exists in text). Then you are done . Else return -1
   This Complexity is O(N+M) and space O(N+M) .\xc2\xa0If you want to do without space , Try for the recursive approach which in worst case takes O(N*M) complexity

Apparently , I was shortlisted for Personal Interview , so I didn\xe2\x80\x99t attend the Group Fly round.

Personal Interview \xc2\xa0rounds\xc2\xa0
1st round(Technical) : \xc2\xa0\xc2\xa0
Interviewer was bit cool and asked me questions directly

1. [Find the median of an Unsorted array](#) . I told him to sort it and find it as per the parity of N(even or odd) . NLogN solution . He asked me to optimize it . Then I told him about the median of an unsorted array in worst case O(N) method \xe2\x80\xa6 (you can find it in gfg).He asked me if I can do it using Quick select .. I told him the way to do so and suggested him that the worst case might shoot up to O(N^2) \xc2\xa0.He told me its fine and asked me to \xc2\xa0write the code. My code was bit tedious but I was able to get correct code finally .
2. Then he asked me regarding [hashing](#) (chaining and open addressing \xe2\x80\x93 Insertions ,deletions etc) and [c++ maps](#) and their complexities

2nd Round(Technical)\xc2\xa0

Interviewer was very cool and asked me questions regarding my project and I explained him briefly .Then he asked me coding questions .

1. \xc2\xa0You are given an unsorted array where any element can repeat any number of times. Elements ranges are > size . N is too high (10^7) .So , I Gave him O(N)time \xc2\xa0and O(N)space \xc2\xa0hashing solution using unordered_map solution . He was satisfied .
2. Next the question is to [validate a date so that it is in the format expected](#) \xc2\xa0and should be 20 years less than current date. You need to throw exception \xc2\xa0if it is invalid.\xc2\xa0First , I encountered all possible exceptions and after that I wrote an accepting method. \xc2\xa0He asked me to write code. This time I wrote a clean code covering all \xc2\xa0 \xc2\xa0 \xc2\xa0 possible \xc2\xa0exceptions . He was satisfied. and told me that the motto of these technical rounds are to check if we can write correct codes and can grasp basics and analyse our strength in them.

3rd Round(HR round)

The manager was very very cool and asked me questions like . Why do you want to join microsoft? Why should we hire you and related stuff about me\xc2\xa0and he asked me to solve this question.\xc2\xa0[Find the majority Element](#) (element that repeats more than (N/2) times in an array . If it doesn\xe2\x80\x99t exist , return -1.\xc2\xa0I told him the way to solve it in O(N) time and O(1) space using Moore\xe2\x80\x99s voting algorithm\xc2\xa0And after these rounds , I was given offer for the Internship for IDC profile.

Though I was selected for GolmanSachs Interview too , I had to take up this offer and I didn\xe2\x80\x99t sit for GS personal Interview.

Thanks to GeeksforGeeks for helping me revise all the concepts and practice them with the help of\xc2\xa0[**practice.geeksforgeeks.org**](#)\xc2\xa0.\xc2\xa0My Last 15 days before the Intern were completely spent solving problems and revising them in GeeksforGeeks.

A Big Thanks to the team!!
If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to review-team@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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[**All Practice Problems for Microsoft**](#) !

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