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# Microsoft Interview | Set 1

Following are the details of my Microsoft interviews.

**Date of Interviews:** 30th July, 31st July and 3rd August, 2012

**No of Rounds:** 1 aptitude test, 1 coding round and 4 PIs

**Type of Interviews:** Campus Interview for freshers

**Aptitude Test(60 mins) (30-7-12)**  
 It was an online test. It consisted of 50 questions, of which 30 were aptitude based and 20 were technical.  
 30 aptitude based questions consisted of speed-time based, probability, etc.  
 20 technical question included C outputs, flowchart, finding correct code for prime no, Fibonacci no, etc.

**Coding Round(60 mins)(31-7-12)**  
 Three questions were there  
 **Question 1:** You have to rotate an n\*n array right by 90 degree.  
 **Question 2:** Given a linked list containing 0s,1s or 2s. Sort it.  
 **Question 3:** Two elements of BST are swapped by mistake. You have to restore the tree without changing its structure.  
 Note that you don’t have to write a function only, as happens in Amazon. Instead you are expected to write it from scratch along with main function and all the helping functions.  
 My advice: Screw the instruction, write the function you are expected to write for all the three questions, then go for helping functions and main function.

**Personal Interview(3-8-12)**

**Round 1(40 mins):**  
 A binary tree is given. You have to check whether left node data is greater than right node data for all nodes.  
 My Query: What if either one of the left or right subtree is not present.  
 Clarification: You can then assume max possible value for left data, if absent and min value for right node data.  
 I was asked to dry run my code for a tree. Also test cases were asked to check my code.

**Round 2(80 mins):**  
 **Question 1:** To find Inorder successor of a node in a binary tree, provided you have parent pointer.  
 **Question 2:** To find Inorder successor of a node in a binary tree,provided you do not have parent pointer. Test cases for both of them were asked.  
 **Question 3:** Given a linked list a random ptr also exists. Clone the original linked list. Also give the test cases.  
 **Question 4:** Construct a data structure which can push, pop and find minimum in O(1) time. Was asked to code it. Test cases were also asked and was asked to ensure that it works for duplicate elements also.

**Round 3(80 mins):**  
 **Question 1:** A file consists of numerous words in it. You have to print the 10 most frequent words. Data structures to be used were asked and was asked to finally code it.  
 **Question 2:** Test cases were asked for a railway portal.  
 **Question 3:** A function was there which accepts a number k and a linked list and deletes every kth node of that list. A function to test the correctness of the above function was expected to be coded.  
 **Question 4:** An extension of Question 3. What if function accepted an array of numbers instead of just one number and deleted multiples of array elements.

**Round 4(40 mins):**  
 This round was easiest of all.  
 **Question 1:** Write a modified strcmp function which ignores cases and returns -1 if s1 < s2, 0 if s1 = s2, else returns 1. Test cases were asked, as usual.

**Question 2:** Write a function which checks whether the tree is height balanced or not. Give test cases also.

To my great relief, this time I was hired……….finally……. 😀  
 This article is compiled by **Vinay Khetan**. Many Many congratulations to Vinay for his selection. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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<http://www.geeksforgeeks.org/microsoft-interview-set-1/>

# Microsoft Interview | Set 2

Please find the details of my Microsoft Interview below.

**Date Of Interview:** 3rd August,2012

**No. of Rounds:** 2 online exams + 4 rounds of PI

**Type of Interview:** Campus Interview for freshers

**1st Online Test:** Time 1 hour  
 30 MCQs on basic Mathematical and Logical problems and 20 MCQs on C programming.

**2nd Online Test:** Time 1 hour  
 3 programs were to be written. They wanted full length program, not just the functions. Language: C/C++

**1.** Given the head pointer of a linked list, each node having data value only 0/1/2, properly sort the linked list and return the head pointer.

**2.** Given a picture with pixels arranged in an N\*N matrix, right rotate the picture by 90 degree.

**3.** Two of the nodes of a BST are swapped. Correct the BST.

**Interview Round 1:** Time 30-40 minutes.

**1.** Given a Binary tree, where each node has also its parent pointer pointing to its parent, apart from two usual child pointers. Write the function for inorder successor. Discuss all possible test cases for this function and whether your function can handle all those test cases.

**2.** How can you check whether a binary tree is BST or not, in the most space optimised manner.

**Interview Round 2:** Time 30-40 minutes.

**1.** Given two sorted linked list, create a third list which contains only those elements of first list, which are not common with second list. Do this with O(n) time. Discuss all possible test cases for this function and whether your function can handle all those test cases.

**Interview Round 3:** Time 30-40 minutes.

**1.** If your friend writes a text editor software and gives it to you for testing, what are the tests you will perform on the software to ensure it meets the basic requirements of a naive user?

**2.** Given two linked lists, how do you check whether the two lists intersect at some node with O(n) time? Discuss all possible test cases for this function and whether your function can handle all those test cases.

**Interview Round 4:** Time 30-40 minutes.

**1.** Given an array of unsorted integers, find all the pairs of numbers which sum to a given N. Discuss all possible test cases for this function and whether your function can handle all those test cases.

**2.** Given three points a, b and c, write a function to find what type of triangle they construct or whether a triangle can be made at all. Discuss all possible test cases for this function and whether your function can handle all those test cases.

**HIRED!!** 

This article is compiled by **Shreyasee Nandy**. Many Many congratulations to Shreyasee.  
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# Microsoft Interview | Set 3

I would like to thank GEEKSFORGEEKS team that they made my confidence level high when it comes to coding. I finished my interview today, hope this could be of help to others.

**Date Of Interview:** 25th Aug, 3rd Sept, and 4th Sept 2012

**No. of Rounds:** 2 online exams + 6 rounds of PI

**Type of Interview:** Campus Interview for fresher’s

**25-08-2012:**  
 Online test conducted by some PARIKSHA LITE company (outsourced)

**TEST 1:** There were 15 questions to be done in 30 min. 6-7 of them were basic calculations and program output easy ones.

**TEST 2:**  
 **A)** There were 3 questions to be coded for IDC test:  
 ….1) Check whether a linked list is a palindrome or not  
 ….2) Whether a given sting is a new arrangement of main string (eg COXX is XXOC but not XOC)  
 ….3) Convert a given sorted dynamic linked list to balanced binary search tree.  
 **B)** There were 4 question in MSIT test:  
 ….1) Write merging two arrays code or pseudo code.  
 ….2) Reverse a string of characters.  
 ….3) Print binary representation of a given number.  
 ….4) Given a control tower for aeroplane how will you make sure it does not fail. (Basically designing question )

**03-09-2012:**  
 **Round1:**  
 **Q1)** A thread waiting at while(1) and thread waiting at wait(wrt), what is the difference?

**Q2)** Output of following C program.

#include   
#include   
int main()  
{  
 unsigned int a, b, c;  
 a = rand();  
 b = rand();  
 c = a + b;  
 if( c   
Q3) Write code to find Nth node from the last of a linked lists, and write test cases for the same.  
Round2:   
  
Q1) Write code to implement a command called 'tail -5 filename' in unix file using file pointers and also write test cases (HINT using fread and fseek command)  
Q2) Write pseudo code to implement LRU in real time OS.  
Round3:  
  
Q1) Write code to convert given number into words (eg 1234 as input should output one thousand two hundred and thirty four)  
Q2) Write test cases for the same question mentioned above.  
Round4:  
  
Q1) Write anagrams code when you are given an isWord() function in the fastest possible ways and also write test cases for that. After this the HR asked me to come on next day  
  
  
04-09-2012  
  
Round5:   
  
Q1) Design a database schema for college elections and how will you make sure at database end that one user can vote for one person standing for one post only.  
Q2) Write code to detect deadlocks and prevent deadlocks and implement as two separate functions.  
Q3) Write Singleton pattern code and state places with usage of keyword static and virtual.  
Q4) given two processes one that updates a database in 2 min and other in 5 min. Together they take 7 min. Design a method that can reduce this to minimum possible.  
Q5) Write code to count number of nodes of a tree, find depth of a tree, find width of the tree.  
Round6:  
  
Q1) Design a class diagram for students registering for a sport and competition being held based on which you can decide which guy wins or loses.  
Rest were sort of HR questions like why microsoft, your strengths etc but in the end she said we will send your feedback to the campus placement cell, Thank you.   
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# Microsoft Interview | Set 5

Hi everyone, I would like to share my experiance with MicroSoft, as i have been the lucky hire.

**Date:** 27th August 2012

**No. of Rounds:** 2 Written(online) + 4 rounds of PI( all Algo/Technical )

**Type of Interview:** Campus Interview for freshers

**Written (online)**  
 Objective(60 minutes) + Subjective(60 minutes)

Objective: Apptitude + Reasoning( 30 questions ) and technical( 20 questions, C/C++ programs, flow chart, identify correct function )

Subjective: 3 coding question( No in-build compiler in Web-Browser, simply you have to write your working code as a function/functions )  
 **1)** A number is given say n, find the minimum number which is greater than n and has same no. of set bits in it.

**2)** Binary search tree to Doubly linked list conversion( prefer in-place conversion )

**3)** Find the second maximum no. in an array

**Personal Interviews (4 rounds)**

**Round 1: ( 40-50 mins )**  
 **1)** Details about the project that i have listed in my resume, asked various question related to those projects.

**2)** details about q1 and q2 which is asked in the Subjective round, how you solve the problem and ask to write the same code I have written in Test and explain it.

**3)** question from OS:  
 ….**i)** You have 10 GB of RAM, and you load multiples instances of a program of size 1 GB( let’s say more than 10 instances), then what will happen, how the OS handle this situation and up to what extends?  
 ….**ii)** producer – consumer problem

**Round 2: ( 20-30 mins )**  
 **1)** You have given a number N, print all balanced parenthesis expression which can be generate using N pairs of open and close braces. For ex. for N=3, ((())),()()(),()(()),(())()  
 First i gave him a brute force solution(generate all possible combination and check for valid expression),then he ask me for optimized code and I was able to do it after little mess-up.also ask for complexity of my code.

**2)** You have given a adjacency matrix of a graph, find the number of connected component set of the graph.

**Round 3: ( 35-45 mins )**  
 **1)** A string str and two character a and b are given to a function, find out the minimum distance between these two given characters in the str. first I gave him a bruce force solution( O(n^2) ) then he ask to optimize it ( O(n) ) and finally somehow i was able to do it.

**2)** You have n processes and m available resources, explain each step of OS in the execution of those process along with which data structure will be suitable at a condition, which scheduling algorithm will suit best, also in case of preepmtive scheduling, waiting queue etc.. its take a long time to explain him. but finally he is satisfied with my answers.

**3)** Write a modified strcmp function which ignores cases and returns -1 if s1 4) iterative inorder traversal.

**Round 4: ( 40-45 mins )**  
 **1)** Give a schema for college student database management( tables, attributes and relationships ), ask me to normlize it up to 3NF.

**2)** Some queries based upon schema:  
 Find the maximum score of each student in his/her last semestes math subject.(it also be possible that some student got year back and not promoted, handle all the cases).  
 I tried it hard, gave him 2-3 wrong answers, but not able to do it(as i’m not very good in DBMS).. but he was satisfied with given schema.

**3)** He ask me about favorite programming language, and why I like that language..

**4)** You have given a range in Integer(a to b), find all the prime number between a and b.  
 …..**i)** first i gave him the simple solution(check every no. whether it is prime or not).  
 …..**ii)** then he asked about Sieve and to implement it, and which on is better( first approach or seive)

**5)** what is most challenging moment in your B.Tech life. ?

**6)** Why do you want to join MicroSoft.?

**7)** Some question on my hobbies.

**8)** do you have any question for me.?  
 i asked 2-3 questions related to job profile(SDE/SDET) that they are offering,current projects and areas.

Finally…end of PIs and After 10-15 minutes, To my great relief, this time I was hired… 

Many Many congratulations to **Ajeet Kumar**. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Microsoft Interview | Set 6

I am a guy from CSE dept, IIT-BHU and currently in 4th year.  I am placed in microsoft now and all the credit goes to geeksforgeeks for sharpening and improving my coding skills. Thanks a lot guys for such a wonderful site.  Below is my interview experience, if its of any help to my fellow job seekers.

**Written Round 1 :**  
 50 multiple choice questions in 60 mins time. Had 2 sections – Aptitude and Programming Ability.

**Written Round 2 :** 3 coding questions in 1 hour.

**1.** Swap every consecutive odd and even positioned bit in a number.  
 Ex:- 10101011010101 = 01010111101010

**2.** Given a binary search tree . Convert it into a doubly linked list in place (no extra space) such that prev points to left child and next points to right child.

**3.** Given a linked list that contains 0,1 and 2 . Sort this linked such that it contains 0s first, then 1s and then 2s in O(n) time. Ex:- 2->2->1->0->0->2->1->1->0 = 0->0->0->1->1->1-2->2->2

**PI round 1 (Technical):**

**1.** About urself, most challenging project of all you have done and about ur internship.

**2.** Remove from string s1, all the characters that are present in string s2.  
 S1=”abcde” s2=”xyazbx” Ans. S1= ”cde”

**3.** Reverse alternate k nodes in an linked list.  
 Ex:- 1->2->3->4->5->6->7->8 if k=2; then return 2->1->3->4->6->5->7->8

**4.** Always ask some questions to the interviewer at the end. That’s a good gesture.

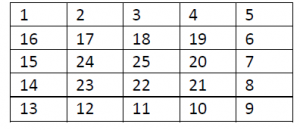
**5.** Write test cases for the programs above and see if ur program covers all the test cases or not.

**PI round 2 (Program manager)**

**1.** Design a tic-tac-toe game for multiplayer on a smartphone.

**2.** Design a vending machine for blind and deaf.

**PI round 3 (Technical)**

**1.** Add numbers from 1 to n^2 into a n X n matrix spirally.  
 [](http://d2hc1qfcrygj4j.cloudfront.net//wp-content/uploads/msi.png)

**2.** Remove duplicates from a string in place. Ex-microsoft -> microsft

**3.** Some question on recursive functions using memoization technique for optimization.

**PI round 4 (Testing)**

**1.** Given a func :: int \*strcmp(char \*s1,char \*s2);  
 Write test cases to check functionality and security issues and even automate the  
 generation of test cases.

**2.** Given a func :: int typeOfTriangle(int side1,int side2,int side3); (func gives a number for the type of triangle)  
 Write test cases to check functionality and security issues and even automate the generation of test cases.

**3.** WAP to reverse words in a sentence.  
 I am a good boy -> boy good a am i

**4.** WAP to get the next higher palindrome of a given number.  
 123 -> 131 1232 -> 1331  
 PS – Functional issues are test cases that check the functionality of the program and Security issues are the ones where the program may crash.

**PI round 5 (Technical)**  
 **1.** WAP to check if a binary tree is a BST or not.

**2.** WAP to find Least Common Ancestor of two nodes in a BST.

**3.** Reverse every two nodes in a linked iteratively and recursively.

PS- Whenever u write a program be sure to cover all the corner cases and write it in a proper indented way. As interviewers ask to write testcases for the program u have written and then check if ur program covers all the test cases.

**All the best fellas !!!**

Many Many congratulations to **Pritam Kumar Das**. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Microsoft Interview | Set 7

Recently I attended Microsoft Campus Interview and got selected. Below is my Interview Experience and I just wanna share it to GeeksforGeeks viewers.

**1st Round:**  
 Online Aptitude test:  
 Aptitude, logical questions and subjective Questions

**2nd Round:**  
 Online test  
 In this round we are asked to type the code in notepad and send (no compilers)

**3rd Round:**  
 It started wih introduce yourself and he introduced himself to me. Then he asked me about my project and it gone to some stuffs related wih memory. He asked me how a program is stored in memory

1) Write a program for beautificaion (proper indentation) of a program file in an IDE.  
 ex:

int main(){  
if(i10)  
prinf("Hi");else{};  
}else{}  
return 0;  
}

You are provided with getToken() which returns a token  
 ex: if(i>10) is a token  
 int main() is a token  
 {,} are tokens

so output should be

int main()  
{  
 if(i10)  
 printf("hi");  
 else  
 {  
 }  
 }  
 else  
 {  
 }  
 return 0;  
}

void beautify(char\* inputfile,char\* outputfile)

Give some testcases for the above program

**2)** Write a program to find the diameter of a binary tree and then he wanted to extend it for m-ary tree.

**4th Round:**  
 **1)** You are provided with a string which contains single byte as well as two byte characters. If a character is single byte char, it’s MSB is 0, if it’s a 2 byte char, it’s MSB is 1. Write a program to check whether the given string is palindrome or not.  
 Test cases for above program.

**2)** Write a program to print the n-nodes from tail of the linked list.  
 Test cases for above program.

**5th Round:**  
 **1)** Write a program to Validate an IPv4 Address.  
 Write test cases for above program.

**2)** Write a program to find all the possible paths from a starting point to dest point in a maze(2-D array).

ex: 1 0 1 0  
 1 1 1 1  
 0 1 0 1  
 0 0 1 1

If there is a block it’s represented by 0.  
 If there is a path it’s represented by 1.

**6th Round:(Final Round)**

Write a code for printing last n lines in a file (refer man page of tail command in linux). The file size may vary, it may be 1MB or it may be 100 GB.  
 Give top 10 test cases for the above program

Many Many congratulations to **Muniraj G**. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Microsoft Interview | Set 8

This about my experience of MS interview, which happened last day

Division: Microsoft Bing R&D  
 Rounds: Total 4 rounds (All face to face)  
 Location: Hyderabad.

**Tech Round 1**  
 **1.** Find the middle point of the linked list  
 **2.** Check whether loop exists or not in Linked List  
 **3.** How to calculate the size of the linked list  
 **4.** Given an unsorted array, how to divide them into two equal arrays whose difference of sum is minimum  
 -> First I proposed sorting and then distributing them to two buckets. She’s fine with that. However she doesn’t want to sort the array and asked if i can solve in O(n) time

**Tech Round 2.**  
 **1.** Given an array, rotate the elements of an array within O(n) time and with 0(1) space  
 -> This is the worst round for me. Made silly mistake. I felt very bad after coming out. couldn’t get an idea of continuous swapping

**Tech Round 3**  
 **1.** Given a sorted array, find the pair of elements whose sum can be equal or close to given sum  
 **2.** Given an array [a1b2c3d4] convert to [abcd1234] with 0(1) space and O(n) time

**Director Round 4**  
 **1.** Given Linked list, write heapify and delete methods.  
 **2.** Given two sorted arrays of any length, find out the median of them if they are sorted into single array.  
 –> Lost here. I couldn’t find good solution. I think it’s my bad luck  If i could have crossed this question, I would have been in MS by now.

Anyways, it’s a nice experience overall. First time I entered into MS campus and first interview with them. Learned lot. Needs to improve and get into that by next time 😉  
 They will give little hints and try to use them and make solution out of it.

Thanks to **Nitin Gurram** for sharing Microsoft Interview Questions. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks

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# Microsoft Interview | Set 9

I am Amit Dhaka. Following is my experience of MS IDC intern interview.

**Date of Written:** 9th September, 2012.  
 **Date of Interview:** 15 October, 2012.  
 **No. of Rounds:** 2 online exams + 4 rounds of PI  
 **Type of Interview:** Campus Interview.

**1st Online Test: Time 1/2 hour**  
 10 MCQs on basic Mathematical and Logical problems (mostly on P&C) and 5 MCQs on C programming.

**2nd Online Test: Time 1 hour**  
 3 programs were to be written.  
 **1.** Given a no. in in form of base 4, you have to convert into base 2. The no. is given as a String. Do it in place.  
 **2.** Given a sorted circular linked list. You have to insert an element in it.  
 **3.** Two BST’s are given. You have to print common nodes that are present in both of them.

**Interview Round 1:** Time 40-50 minutes.  
 **1.** Given a string, you have remove duplicates from it in O(n) time and O(1) space.  
 String can have ASCII characters. Try to use minimum extra space.  
 **2.** Given a binary tree, check if it is balanced or not.

**Interview Round 2:** Time 25-30 minutes.  
 **1.** Given two sorted arrays you have to merge them into single array.  
 **2**. Given an array, find all the pairs of elements whose sum is k.  
 **3.** Given an array, find a sub-array in which all pairs have their sum greater than k.

**Interview Round 3:** Time 30-40 minutes.  
 I was asked to tell something about myself. I spoke only a minute then he started asking problems.  
 **1.** Given an array, find the maximum contiguous sub-array with the maximum sum.  
 My query was can the array have negative values. He said yes.  
 **2.** Given two BST’s, find the least common ancestor.  
 **3.** Traverse a binary tree in a Zig-Zag order.

**Interview Round 4:** Time 30-40 minutes.  
 First he asked me if I have any queries for him. I asked 3 questions as asking questions is a good gesture. You can ask that what kind of work will you be getting. Then he started with the problems.  
 **1.** Given a sorted array and it has been rotated unknown times. You have to find minimum element of the array. I did in O(log n).  
 **2.** He asked about the test cases for spell checker of MS Word.  
 Then he asked questions related to my resume. My advice will be that you don’t write anything by which you can be doubted. Be confident about what you have done. If there is one thing you are good at then it is enough.

I was lucky, and got the intern!!

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# Microsoft Interview | Set 10

**Written Test**  
 It was online test which contains 20 MCQs on C & C++.

The coding round had two questions.

Given some text lines in one string, each line is separated by ‘\n’ character. Print the last ten lines. If number of lines is less than 10 then print all lines.

Do the level order traversal of complete binary tree. Given

1  
 2 3  
4 5 6 7

Print it as  
 1  
 2 3  
 4 5 6 7

**Technical Round 1**

First he asked me to tell him about any project which I have worked on.

Given an array of integers. Find consecutive elements in array which has maximum sum. I know the solution to this problem so I told him quickly.

Next he modified the question and asked me to find consecutive elements in array that have sum equals to zero. Taking some time, I told the answer to this question also.

Next he modified question again and asked me to find consecutive elements in array that have sum close to zero, given that there is no sub array with sum equals to zero. Also write test cases for it.

**Technical Round 2**

Given a linked list. How will I detect whether the list has cycle? Also write test cases for it.

He then asked me whether I have some knowledge of graphics programming. He asked me how I will implement ‘floodfill’ for graphics application. Write code and test cases for it.

**Technical Round 3**

Given a 2D array and a key value. Search this key value in array and turn all elements in row and column of this key to zero.

Given a sorted array of size n. Each element in array is unique and lies from 1 to n+1. Find the missing element. Write code and test cases for the same.

How will I keep track of number of visitors visited my web page?

**Technical/HR Round 4**

Given a string. Find a character with most number of occurrences. Write code and test case for same.

Why I want to join Microsoft?

What’s the most challenging task I did in my graduation life?

**HIRED 😀 😀**

I would like to thanks geeksforgeeks team for this wonderful site which helped me a lot and without which I would not be able to crack this interview.

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# Microsoft Interview | Set 11

Company – STB team, Microsoft IDC.  
 Location – Hyderabad.

**First interview**  
 **1.** A quick introduction.

**2.** Few questions on multi-threading like –  
 …**a.** What is race condition?  
 …**b.** What is critical section?

**3.** Write a code to find out longest substring without any repetition of characters with O(n) complexity.  
 Ex.  
 String – abcdefghaxyzpbn  
 Output string – bcdefghaxyzp

**4.** Two linked lists are merged at one point. Find the merging node.

**Second Interview**  
 **1.** A quick introduction

**2.** Few project related questions mentioned in resume.

**3.** If you have huge log file, you need to print last ‘n’ lines from the log file. Write a code for it assuming regular file read operations.  
 He was also expecting that the page hit is minimum.  
 I had provided a solution which would read the file one by one and then will store it in a ‘n’ size circular linked list.

**4.** If you have a m\*n floor, find out a ‘k’ size square tile which will take care of filling the complete floor without breaking of tile.  
 Use GCD logic.

**Third interview**  
 **1.** A quick introduction and he also asked what was asked in previous interviews.

**2.** We have a m\*n matrix, every element in row is in increasing order and every element in column is in increasing order. Find out a position of element ‘k’ from the matrix with O(m+n) complexity. Write a code for it.

**3.** We have a ‘n’ steps and a ball which take either 1 step at a time or 2 steps at a time. Find out the number of possible ways it covers exactly ‘n’ steps.

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# Microsoft Interview | 12

**Online Test:**  
 MCQs: Mostly comprise the following types: find the output, definitions of basic C/C++ concepts.

**Coding questions:**  
 **1)** Given a very large string, print the last ten lines.

**2)** Do a level order traversal of a binary tree.

**Interview Round 1:**  
 **1)** Find the output:

void print()  
{  
 char str[20] = “hello world\0”;  
 int i=0;  
 while (str[i]!=’\0’)  
 {  
 printf("%c", str[i]);  
 i++;  
 str[i] = str[i-1];  
 }  
}

There was a very detailed discussion on this question for nearly twenty minutes. I think I kind of screwed this one. Basically, I had to explain how and why does a segmentation fault occurs.

**2)** Suppose a linked list contains list of documents containing a particular word. You are given two such linked lists and you have to print names of all documents that contain both these words. [I gave an algorithm based on the assumption that the list contains document names in sorted order]. I was also asked to write the code regarding this. This operation can be classified as (A and B), where A and B are the words and they have lists associated with them. He then moved on to more complicated cases such as (A and B or C and (not D)). Brackets may or may not be presented. I was only asked to give an algorithm corresponding to this.

**3)** What are the steps that occur when you send an E-Mail. A detailed discussion was done regarding this wherein we also discussed about the layers of the OSI model, the protocol used for sending E-Mail, the layer to which it belongs to.

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Category: [Interview Experiences](http://www.geeksforgeeks.org/category/interview-experiences/) Tags: [Interview Experience](http://www.geeksforgeeks.org/tag/interview-experience/), [Microsoft](http://www.geeksforgeeks.org/tag/microsoft/)

# Microsoft Interview | 13

Microsoft has mainly 2 written test followed by 2/3 interview including HR round.

**1st Online Written Test:** This written test was easy, only C/C++ (easy questions) and some of OS and Microprocessor question were there, Total count was 20.

**2nd Online Test:** In Second round, there were two problem to code (they provide us editor, Pariksha Lite)

1. WAP to print last 10 lines of given string. If string has less than 10 lines then print whole string, lines are separated by ‘\n’ . [Ans. There are two app. (i) Top to down (ii) Bottom to up ( this is efficient ) ]

2. A Binary Tree is given, print nodes value, level by level separated by ‘\n’ [Ans. Level Order Traversal ]

**1st Face to face Interview**  
 My interview was good, following problem were asked me to do.

1. WAP to print the first unique character in a given string, make sure your program should run for all corner cases as well. {Ans. It is easy, use hashing with counting method, time and space complexity is O(n) and O(1)}  
 Then he told me how you will test your program followed by the test case.

2. You are given a square grid of nxn, you need to print the circle form by it in clockwise direction. for example  
 12  
 45  
 then output : 1254  
 123  
 456  
 789  
 then output: 2684  
 [Ans. It is easy to code using two successive loops. Have a look a similar question “Print element of matrix in Spiral Form”, Refer Geeksforgeeks]

3. Some question on new technology and you interest.

**2nd face to face interview**  
 Some questions on my project like what you have done, why you choose this project, how you will enhance your project etc.  
 Then he asked me some puzzles and aptitude question.

1. You are given a jar in which there are 99 % black balls and 1% white balls, draw some black balls out from jar such that there left 98% black and 2% white. How many black balls you drawn?  
 [Ans. Let there are total N balls so, black(b) = 99N/100 and white(w) = N/100 after drawing ‘x’ balls the percentage of white get increase to 2% so N/100 = 2\*(N-x)/100 => x = N/2 , so draw half black balls].

2. At 10:30 what is the angle between hour and minute needle. [ you can do it ]

3. Puzzle: you have two eggs and 100 story building; find the top floor from which both of the eggs get break.

4. WAP to word by word reverse a given string. Ex. Given string is “Hey hi how ru ?”. then print “? Ru how hi hey”. Test your program for corner cases. Write test cases for your code and what happens if the given string is too long without separated by space that cannot be accommodate in given memory . [easy to answer]

5. Convert Singly and Doubly sorted linked list to BST and optimize it.  
 [Can be solved in O(nlog(n)) and O(n)]

**3rd Face to face Interview (Final round)**  
 This round was combination of HR round and technical round.  
 He started with some general questions like about me, what is your area of interest followed by what’s your aim, why you want to join Microsoft etc. Then he asked me in which area you are passionate, I told him DS, Algo, C/C++ and OS. Then he asked me which operating system do you like / know about, after that, he asked me some question related to it. (around 5 question, and they were really tough one). He also asked me about Windows server edition (some deep questions). Then he gave following DS, Algo questions.

1. Wap to find paths from root to any leaf such that sum is equal to given sum.  
 {ans. It is easy to do, use logic of root to leaf path}. Rest I forgot..

This article is compiled by **Nitin Gupta**. Many Many congratulations to Nitin for his selction. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks

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# [TopTalent.in] Exclusive Interview with Ravi Kiran from BITS, Pilani who got placed in Google, Microsoft and Facebook

[](http://d2hc1qfcrygj4j.cloudfront.net//wp-content/uploads/Ravi-Kiran-Photo.png)  
 Even if we were to search around the world, it would be a truly difficult job to find someone like Ravi Kiran. As a Computer Science Graduate of BITS Pilani – Pilani Campus, he successfully bagged job offers from an astounding three companies – all being some of the best and most admired companies in the world – Google, Facebook and Microsoft. We, at [TopTalent.in](http://www.toptalent.in/), managed to talk to this amazingly humble genius, who hails from Hyderabad.

And before we forget, Ravi has also agreed to share his resume with our users so as to help them with their preparation. So don’t forget to [grab a copy](http://www.toptalent.in/jobseeker-login.php) by logging in. Here is the exclusive interview in its original form.

**Team TopTalent.in: What were the similarities and differences between Google, Microsoft and Facebook Interviews?**

**Ravi:**All three of them share the prestige of being some of the best tech companies in the world. As you would expect, their interviews are designed to ensure the recruitment of top talent. An obvious similarity amongst their interview processes (for undergraduates, at least) is them being vastly algorithmic in nature.

There are multiple interview rounds in each recruitment process. For Microsoft there were 4 while Facebook conducted 3. For Google, I was a previous intern and, hence, faced just 2 rounds. Another noticeable thing was the presence of design questions in one of the rounds by both Microsoft & Google. However, by no means, can this be a generalization to the interview process of any of the companies. At the end of the day, this only reflects how each of them is aiming to assess a candidate’s potential to the greatest amount in the shortest period of time.

**Team TopTalent.in: How did you choose between Google, Facebook and Microsoft?**

**Ravi:**The more thought I put in the decision making process, the more confused I got. One of the major things I believed was that none of them was going to be a bad decision, so it was always safe to pick any one of them and not go wrong. Ultimately I chose Google, since I liked it as a company. I must confess that it was mostly a gut-feeling based decision.

**Team TopTalent.in: What is the kind of skill-set that companies like these, are looking for in candidates?**

**Ravi:** Even though I’ll keep one of the companies in mind, that is Google, to answer the questions further on, I can safely say that this answer of mine applies vastly to the three of them. The skill-set sought out is that a candidate must be creative, so as to come up with smarter and newer solutions to problems, which are algorithmically very strong and don’t waste time solving already solved ones. The candidates are supposed to be, obviously, good at programming so that they can give shape to their ideas in the form of real code.

**Team TopTalent.in: What should one keep in mind while creating a resume for these tech companies?**

**Ravi:**There are a lot of good references on “What makes a very good resume?” I had searched the same, and stuck to whatever made the most sense. I highly recommend a 1-page crisp resume, so that it’s easier to make an impression when someone glances at it for about 3 seconds (I’m guessing that the time spent by a higher-up person on a single resume is nearly that)

In addition, it’s very important to make the resume highlight qualities and projects that provide enough reason to believe why you would make the perfect candidate for the job. Prior programming experience and other achievements would be useful to mention, to further your chances of making a good impression.

**Team TopTalent.in: Your advice to all the students out there who’re aspiring for job offers similar to yours?**

**Ravi:**I think it’s important to enjoy the field of work, and apply to only the companies that align with one’s interests. In the long run, it would be hard to work in case the work doesn’t go with your interests, even if the company is as nice as three mentioned above. I had never aimed to get into any of these companies, and it has only been a consequence of the activities that I was actively interested in (like competition programming, random problem/puzzle solving, etc) and thoroughly enjoyed.

**Team TopTalent.in: What’s the difference between the work allotted in the Indian Office and the US Office?**

**Ravi:**I will speak about this question with respect to Google, since I have an experience in both the offices. The work isn’t really any different across the offices. If you have a good project idea, you’re always welcome to begin on it, and take it forward irrespective of which office you are from. I myself have had the chance to intern with a very good team back in Bangalore. Work in MTV is going really great too. That being said, the US office has more diverse project choices to offer, merely owing to its larger size.

**Team TopTalent.in: How can freshers/pass outs apply to these tech giants off campus? What’s the process involved?**

**Ravi:**Applying off campus is usually a simple process in these days. Most of the companies have websites for application process, wherein one can just submit his/her resume, and expect to be shortlisted. It is important to highlight the efforts of other companies that are providing interview opportunities, through performance in online programming contests.

HR personnel of almost all companies are on a constant lookout for talented programmers, and students performing well in the online programming contests have great potential. A good chunk of people also get an interview call through the employee referral route.

**Team TopTalent.in: And lastly, what are you working on at Google and how has the experience been so far?**

**Ravi:**I work in the Search Infrastructure team at Google, and the journey has been great so far. Google’s a fun place to work for, and they ensure to provide one of the best work conditions possible for an employee. It is very surprising how they provide so many amenities – for having fun and indulging in non-work related activities and interests – but at the same time manage to provide some really challenging work.

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<http://www.geeksforgeeks.org/toptalent-in-exclusive-interview-with-ravi-kiran-from-bits-pilani-who-got-placed-in-google-microsoft-and-facebook/>

# Microsoft Interview | 14

My name is Ravi Chandra. Today I have attended Microsoft interview in Bangalore. I was referred by a consultant. Interviews were conducted for various positions in various teams in Hyderabad development center.

I was not able to clear the first round. But let me share the question I faced to the readers of geeksforgeeks.

Question:  
 All the phones stores contacts in some way. Primitive phones has less memory and less processing power. So design a data structure which stores the contacts. This should use as less memory as possible and support the algorithm to run efficiently. Basic operations on this data structure is given a number, how to lookup contact name and vice versa.

Initially I gave a hashmap solution. But he said hashmap operations are costly because of collisions etc… and asked me to provide a better solution. I proposed a linear search. But he wants a better search algorithm.

Unfortunately the better answer struck me when I came out of the interview room.

That solution is like this. Assume each contact record has unique index value. Let us maintain two sorted arrays of indices one based on phone numbers and one based on names. So the space used is less and search runs in O(log n).

***Here are some thoughts by moderators:***

*Since the phone is of limited features, the number of contacts are also limited, typically 500 to 1000 contacts. And the contact length will be limited, assume it is 64 characters.*

*A phone contains atleast two types of memory, flash and RAM. Flash stores software and persistent data. RAM is used for processing.*

*There are various data structures to implement efficient searching. Quantitatively, as per our hypothetical feature phone of 1000 contacts, each of 64 characters long, we need [1000 \* 64 \* Nodesize] for the trie (an approximation). It is in the order of few kilo bytes. Where as we usually have RAM of few mega bytes.*

*If trie seems to be costly to the planned RAM, we can use ternary trie or compressed trie. Or even we can use radix based searching as someone pointed.*

*Since RAM is costly, we can allocate fixed size (say 1000) continuous blocks in flash memory to store these contacts. All we need is a dynamic search feature to access these contacts.* [*Trie*](http://www.geeksforgeeks.org/trie-insert-and-search/) *can be built in RAM whenever the user initiates search feature. Or even, since the data is constant, trie can be stored statically inside flash memory itself. During contacts update, bring that trie to RAM when search feature is called.*

*Note that a contact means set of data, not just phone number. It also include person name, contact number (one or more), group, assigned speed dial number, picture, etc… Be data centric while designing data structures. In the current case, search is simple feature wrapped over this data structure. Every end of successful search in our trie data structure will point to matched contact structure stored in the flash memory.*

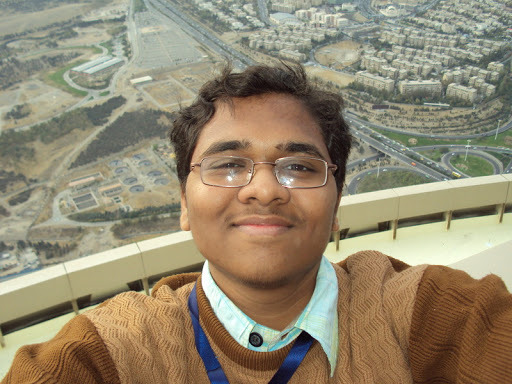
*It is purely hypothetical thinking. Actual implementation will be even more complex based on required features. I hope it will be enough for interview discussion. Get sufficient details of question from the interviewer before jumping to answer. If you are on right track, the interviewer will help with some hints.*

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# [TopTalent.in] Interview with Sujeet Gholap, placed in Microsoft, Google, Samsung, Goldman Sachs & Tower Research

[](http://d2hc1qfcrygj4j.cloudfront.net//wp-content/uploads/Sujeet.jpg)  
 It’s not every day that you come across a person who has achieved so much in life at a very young age which others can only dream of achieving in their entire lifetime. His simplicity and positive attitude speak volumes for his recent success after facing some tough times. This is the story of Sujeet Gholap, a IIT Madras grad who received record breaking 6 offers from some of the best companies in the world namely Google, Microsoft, Samsung (US), Samsung (IN), Goldman Sachs and Tower Research. We at [TopTalent.in](http://www.toptalent.in/) had a chance to interact with Sujeet about his success, preparation, interviews and some hardships. This interview is an excellent example of how a small town boy can achieve greatness and how you can do it too.

*Also, Sujeet has agreed to share his stellar resume with our users which can help you with your resume and preparation. So, don’t forget to*[***download***](http://www.toptalent.in/jobseeker-login.php)*his resume by logging in.*

**Team TopTalent: Can you tell us a bit about your background before joining IIT Madras?**

**Sujeet:**Sure. I hail from a small town called Kallam from Osmanabad district of Maharashtra. I studied in a local school in Marathi medium till 10th standard. I always thought people from cities would do much better than me as I studied every subject in Marathi. My mom and dad teach at a local college there. I am currently pursuing my B.Tech in Computer Science and Engineering at IIT Madras. In IITJEE 2009, I secured an all India rank of 184

**Team TopTalent: Can you give us a brief account of your interview experience for these companies?**

**Sujeet:**All my interviews (except a couple) were technical interviews. Almost in each one, I had to tell what I did during my internships at Yahoo! and Facebook, what projects I have worked on. Many questions followed a similar monotone : arrays of integers, do something with them, biased coins and their tosses, trees and recursive algorithms, writing code on paper and explaining it to the interviewer, solving mathematical and logical puzzles etc. Interviews varied from very easy to very challenging. Some interviewers were impressed by JEE rank and CGPA while some did not give it even a second glance. Some interviewers were interested in the projects I did and asked detailed questions about it, while some were just interested in whether I can solve the problem they have given me.

**Team TopTalent: So, how did it feel when you landed six massive offers on that day?**

**Sujeet:**It felt nice and gave an ego boost when people referred to me as “the guy with six offers”. People I barely knew, smiling at me and congratulating me! I was on an all-time-high. Jumping around and laughing all the time. It was such a kick that the next day, although it was a normal and fine day, as it was down compared to previous day’s high, I was actually a bit gloomy!

**Team TopTalent: What was going through your mind when you had to choose one out of those 6 offers?**

**Sujeet:**I was supposed to finalize on a company by afternoon and I was in the state of utter confusion. Whether to take Google, which is the dream job of most of the programmers or to take Samsung, whose software division is nascent and where my contribution and impact would be much larger, visible and maybe even play a key part in company’s direction or to take Goldman Sachs, the challenging job which I always wanted to get a taste of or to go with Tower Research, the highest paying Indian job (twice as high as the second highest) which also involves inviting challenges and lots of programming. I was realizing that it wasn’t really a good idea after all to go for so many options. I was wondering whether I would have been better off without a choice, as all these companies were such that I would have accepted the offer without giving it any thought at all had it been the only offer. I finally decided to go with Google.

*(Wasn’t really a surprise for us. Google seems to be the*[*first choice*](http://www.geeksforgeeks.org/toptalent-in-exclusive-interview-with-ravi-kiran-from-bits-pilani-who-got-placed-in-google-microsoft-and-facebook/)*for most Indian programmers)*

**Team TopTalent: How did you prepare for these interviews? What suggestions can you give to our users who might have similar interviews lined up?**

**Sujeet:**I was lucky that I had discussed about similar questions before, and hence was able to make it through the interviews. I was quite attentive in class which really helped me a lot. Any questions which were not algorithm intensive questions and were more or less straight knowledge based, I could just recall the answer straight from the class when the professor taught that particular topic! Being friends with the right people and forming a peer group with a common interest is something which was critical to my success. I used to solve coding challenges with Arijit who had a very good Topcoder Rank. I would think about how I would solve those problem, if I get it, I would call him up and discuss the answer and ask for more.

In terms of suggestions, I would say be an active member of topcoder, keep solving programming problems in other places too if you want like spoj, usaco. I wish I had taken these things seriously and honed my algorithmic programming skills. Be thorough with Introduction to Algorithms by CLRS and do problems on one of the above mentioned sites.

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# Microsoft Interview | 15

I recently had interview with Microsoft and i have been selected.

I am really thankful to geeksforgeeks site which provides preparation material for technical interviews at one place. And credit of my selection also goes to my friend “Ankit Tripathi” who helped me a lot in my preparation.

I have attached my interview experience file with this mail.

**Written Test:** 30 MCQs based on Algorithms & logical aptitude and 2 coding problems.

**Telephonic Interview:** All questions related to your resume & projects and some behavioral questions.

**Round 1:**  
 Ques1. Write code for run -length encoding of a given string in-place (without using any extra memory).  
 Sample Input: aaaaaaaaaabcccccc  
 Output: a10bc6

Ques2. Write code for a function which converts a given integer to a string. (Use only one for-loop).Check for all the boundary cases.

Ques3. Suppose you are going to organize a party from 9:00 am to 20:00 pm. You have invited ‘n’ number of guests for the party. You are given the arrival time and the departure time of all guests. Every time a new guest arrives, you give him a glass of wine and when he leaves, you take the glass back. If someone has left and returned the glass, you can give the same glass to a new guest who has just arrived.  
 Based on the given schedule for guests, determine the minimum number of glasses required for the party. A guest can come or leave at any time, but you are given the fixed schedule. Write code for the given problem.

**Round 2:**  
 Some questions related to resume and subjects studied in the curriculum.  
 Ques1. How can we do a Tree Traversal without using a stack (not even the stack for recursion). Write code for an in-order traversal without using stack. What would be the changes in the function if we want to do a pre-order or post-order traversal?

Ques2. Write code for finding loop in the singly linked list and fixing it.

Ques3. Given a linked list with two pointers, one is next pointer and another is a random pointer which can point to any node in the list (forward, backward or itself), you have to make a copy of this list without tempering the original list. Write the code for the same in O(n) time complexity.

**Round 3:**  
 Ques1. Give different possible approaches for Checking whether two strings are anagrams (with and without using hash tables). What are the possible advantages and drawbacks of each approach? Write code for the approach which involves first sorting the two strings and then matching character by character (O(nlogn) approach). Which sorting you will use and why? Write test cases also.

Ques2. Write code for counting the number of inversions in an array in the minimum time possible. What could be different possible approaches?

Ques3. Given two huge numbers represented as linked list, write a function to add them and return a number in the same format.  
 Ex: 950 represented as 9->5->0->NULL  
 150 represented as 1->5->0->NULL  
 then, the output should be 1->1->0->0->NULL

Ques4. We have ‘n’ people in a party, out of whom only one can be a celebrity. And he may or may not be present in the party. A celebrity is known to everyone but he does not know anyone. All other person may or may not know each other. If a person ‘A’ knows ‘B’, it does not implies that ‘B’ also knows ‘A’. You can ask only one question to someone ‘Do you know this (‘X’) person?’ and he can only reply in YES or NO. Your job is to find the celebrity in minimum number of questions.

**Round 4:**  
 First he asked general questions from resume.  
 Ques1. Write code for finding the least common ancestor of two given nodes in a binary tree. ( both recursive and iterative approach).

Ques2. Which data-structure you will use for implementing the ‘malloc’ and ‘free’ functions? (You have been given with a pointer which points to a large chunk of memory).Write full codes for implementing these two functions.

Each face-to-face round duration was approximately 1 hour. Results were declared after 4 days of interviews. Every interview was an eliminating round. Questions were not very hard but they were very keen on accuracy and efficiency of code (it should run on all possible input cases).

This article is compiled by **Monika Bisla**. Many Many congratulations to Monika for her selection. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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<http://www.geeksforgeeks.org/mircosoft-interview-15/>

# Microsoft Interview | 16

I was interviewed for Microsoft App-Ex Team. I was selected. I am really thankful to GeeksForGeeks site which provides preparation material for technical interviews organised so well at one place. I am fan of you guys 

**Round1:-**

a) Implement your own atoi() function(To convert string to integer) cover all the cases including negative integer.

b) LCA for Binary Tree.Write code for it.

c) WAP to Print last n lines of a big log file.

**Round2:-**

a) You are given an array containing only 3 type of characters let say a,b,c write a program to sort the array having these. Eg abcaacbbaaaaccc sort it. I gave standard 3 flag solution then he asked you are complicating it you can use other method then I gave counting method.He asked me to compare the complexity of both methods.then discuss leads to while calculating complexity we compare number of iteration only or total calculation in the program.

then he asked if we have let say k type of character then which method is good the count one or three flag one.

b) Implement T9 dictionary. how T9 works is : let say if I press 223 it should give all the possible valid words in suggestion Eg bad,cad,aad etc. give datastructure to store valid words etc.

**Round3:-**

This round was with hiring manager

a) Write code for merge two sorted LinkedList Inplace.

Then He gave a problem related to his team. In weather app, you have a number of weather stations, give datastructure and all to find the nearest weather station from a city.

Then He gave the brief about what his team work and all .

**Round4:-**

This was with GM of App-Ex team India.

a) It was a design question. You are given a list of components you have to write design for rendering those components in container.Layout can be left aligned, right aligned, center aligned. You design should be extendable means if new layout comes you should modify your code as least as possible. Use concept of OOPS.

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# Microsoft Interview | 17

Recently i was interviewed for Build Team Engg. role in Microsoft hyderabad. I was selected.  
 I am really thankful to GeeksForGeeks site which gave me motivation and will to prepare for the company, with the help of material on the site only I got selected.

**Written:-**  
 3 D.S questions  
 **Q1** – Rotate an array by K.  
 **Q2** – Reverse a link list. If you are able to reverse a link list than reverse the K node’s of link list.  
 **Q3** – Find the pair of values in the array whose sum is equal to K.

**First Round of interview –**  
 Was asked to come up to an optimal solution for all the above three questions in the written.

**Second Round –**  
 Some general discussion about my projects and some curriculum subjects.  
 **Q** – Two numbers are stored in link list, need to add those two number.  
 I was also asked to write the test case which breaks the code.  
 **Q** – how does the telephone directory search of nokia phone works. If i give a name it should get me the contact number and vice versa.

**Third round –**  
 Some general discussion on the projects.  
 **Q** – I was asked how search of windows work and asked to give a good indexing scheme for that.

**Fourth Round –**  
 Some general HR question like 1. why this company? 2. Why leaving your old company?  
 **Q1** – Given an array which contains a number in majority (i.e. A number occurs more than 50% times in the array) need to find it.  
 **Q2** – Given an array which is rotated N times(N is unknown),I need to search a number in it.

In each and every question they were looking for an efficient solution and if I was getting stuck somewhere they were also giving hints.

This article is compiled by Love Gupta . Many Many congratulations to Love for his selection. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Microsoft Interview | 18

Following is my experience of MS **intern** interview (location Hyderabad).

**No. of Rounds:** 3 rounds of PI

Microsoft short-listed candidates based on their Resume and there was no written test. Complete process included 3 interview rounds

**Interview Round 1:** Time 1 Hr. (Bing Team)  
 **1.**Implement a stack having **findMiddle** operation as well, which returns middle element of stack on O(1) time.  
 **2.** Given notes of different denominations ( 1,2,5,10) , WAP to find in how many ways can you make an amount ‘x’ ?

**Interview Round 2:** Time 1 Hr.. (Apex Team)  
 **1.** Given an array of size n, having numbers from 1..n , with one number missing and one occurring twice. Find the 2 numbers  
 **2**. Given a number having only one ‘1’ and all other ‘0’s in its binary representation, find position of bit which is ‘1’.  
 **3.**Code for Iterative in-order Traversal of a tree.  
 **4.**Questions from OS ( Physical Memory , Virtual Memory, Interrupts, message passing , etc.)

**Interview Round 3:** Time 15 Mins (Apex Team )  
 **1.** Code to remove alternate duplicate characters from given string.  
 **2.** Some HR like questions ( Why do you see yourself 5 yrs. down the line)

I was lucky, and got the intern!!

This article is compiled by Nitin Khandelwal. Many Many congratulations to Nitin for his selection. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# [TopTalent.in] Interview With Nandini from VNIT Who Bagged an Off Campus Job in Microsoft

[](http://d2hc1qfcrygj4j.cloudfront.net//wp-content/uploads/tt.png)It is not just intelligence but intelligence coupled with inherent confidence is what makes a person truly remarkable. It is these truly remarkable people who go that extra mile to achieve their dreams. Nandini Yeltiwar, a student of VNIT Nagpur, bagged a job in Microsoft India, not through campus placements but through the off-campus employee referral channel. She was happy to share her experience with [TopTalent](http://toptalent.in/) and gave us some interesting insight into how she landed a dream job in one of world’s top software companies.

So here is her interview where she talks about the Microsoft interview process and how she landed a job there. Don’t forget to [download her resume](http://toptalent.in/jobseeker-registration.php) by logging in to understand what makes her special.

**TopTalent: Can you describe the hiring process in detail?**

**Nandini:** We had applied off-campus through employee referral and we were initially shortlisted based on our resumes. The first two rounds were an aptitude test followed by a coding round test in which we were required to give syntactically correct code. The coding round had short basic coding problems. After each round some applicants were eliminated. People shortlisted from coding round had a phone interview which had mostly behavioral questions. They went through our resume and asked us questions on internships. Some of us were even asked technical questions in this round. Those of us who cleared the phone interview were called to the Microsoft IDC campus in Hyderabad for the technical rounds of interviews. There were three rounds which focused on each of the different positions for freshers which are Software Development Engineer and Software Development Engineer in Test. The technical interviews mainly stressed on data structures and algorithms. One round was entirely focused on testing. For each proposed code we need design test cases and hence verify the code.

**TopTalent: What skills according to you was the company looking for in candidates?**

**Nandini:**The company looks for candidates who are strong in algorithms and programming and have good problem solving ability. They’ll start off with simple problems and they’ll keep adding more conditions to the problem. They require you to be good at optimizing the answer and modify the solution after each condition that is added. You need to be good in communicating your logic to the interviewer. In case of testing, they expect you to cover all boundary and special conditions.

**TopTalent: What was that x-factor which might have helped you over others?**

**Nandini:**My final year project was on testing a software produced by a company. I feel that this made me a good fit for the testing profile since I studied quite a lot about testing due to the project. Apart from this, I had practiced a lot of coding questions, available on Internet and through various books, before the interview which helped me in clearing technical interviews successfully. I had given quite a few interviews at campus before appearing for Microsoft, which helped in handling interviews well.

**TopTalent: How important are resumes in the whole process?**

**Nandini:**The initial screening was based on our resume. However, the resume is not very important once you start the interview process, though a striking resume always helps. It’s alright if you do not have impressive internships and projects. They don’t expect rocket science from freshers. They do ask questions on the projects and internships listed on the resume in the phone interview so be well versed with all the projects you mention. You need not have a lengthy resume mentioning every small thing you did, but a short one having the major things. Whatever you mention in the resume you need to know it well in order to answer any type of questions on it.

**TopTalent: What tips you can give which might help others applying to similar jobs?**

**Nandini:**I would recommend practice. Improve and practice coding problems, basic data structures and algorithms. During the interview there won’t be any compiler or syntax highlighter, so be proficient in writing code on paper or a white-board. Always communicate your logic to the interviewer. Sometimes they may forgive stray syntax as long as your logic is sound. You will be asked some testing questions which you need to crack even if you aren’t interested in the Testing profile. For such problems, develop test cases based on the requirements of the software. During interview keep telling the interviewer the ideas or the way with which you are thinking to solve the problem, this is always appreciated and they can even help you in case you get diverted from the proper way of solving.

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<http://www.geeksforgeeks.org/toptalent-in-interview-with-nandini-from-vnit-who-bagged-an-off-campus-job-in-microsoft/>

# Microsoft Interview | Set 19

I recently got interviewed for a position in Microsoft, following is my interview experience.

**Round 1 (Telephonic):**  
 Started with my introduction followed by my work in existing company.  
 1. Given a circular doubly linked list, delete a given element. He was looking for all the corner cases

**Round 2**  
 1. Given an integer array find largest sum of elements which is continuous (kadane algorithm), Later asked to make code changes to find the array also. Also asked to give test cases for the same.  
 2. Given a design of an application, comment/recommend the changes to be done

**Round 3:**  
 1. Given two linked lists check if they intersect??  
 2. Test cases to test an ATM

**Round 4:**  
 1. Find least common ancestors of a binary tree ( I said I know this, he moved to next question)  
 2. Check if one array is subset of other ( discussed different methods like hashing, sorting ), asked to write a sorting function also  
 3. Design questions related to the team they were interviewing for.

Finally I got an offer from Microsoft, they are very pleased with my performance. All the interviewers are very friendly. Thanks a lot geeksforgeeks, with out your help this would not have been possible.

This article is compiled by Chandrakanth. Many Many congratulations to Chandrakanth for his selection. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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<http://www.geeksforgeeks.org/microsoft-interview-19/>

# Microsoft Interview | Set 20 (On-campus for Internship)

Hello everyone, I recently got selected for the internship at Microsoft IDC. GeeksForGeeks helped me a lot in preparing for the coding tests as well as for interviews. The positions that they were interviewing for were SDE and SDET(Testing).

**1st Round. – Online – 30 mins**  
 The first round was an online round which was hosted on cocubes.com . There were 20 MCQ questions. Questions were from a variety of topics like Algorithms, Data structures, C, C++, OOPs, Memory Management, Computer Architecture etc.

**2nd Round. – Online – 1 hour**  
 This was a coding round in which two problems were given.

*Problem – 1:* Given a word and a text, return the count of the occurences of anagrams of the word in the text.  
 For eg. word is “for” and the text is “forxxorfxdofr”, anagrams of “for” will be “ofr”, “orf”,”fro”, etc. So the answer would be 3 for this particular example.

*Problem – 2:* Given a binary tree with parent pointers, find the right sibling of a given node(pointer to the node will be given), if it doesn’t exist return null. Do it in O(1) space and O(n) time.

**3rd Round – Group Test – Code on paper – 45 mins**  
 First we had to discuss the solution with the assigned mentor and then we had to code it on paper(no pseudo code)

*Problem 1:* Given a BST, one of the nodes violates the BST property( left-child Problem 2: Two no.s having equal no. of digits were given in the form of singly linklist. (For eg.- 102 will be given as 1 -> 0 -> 2 ). Add these no.s and return the answer in the form of a singly linkllist. Do it in O(n) time, given n digit numbers

**4th Round – Interview**  
 I had to implement a T9 dictionary . insertWord function and populateWords were the two functions which I had to implement on paper(again no pseudo code).

First I have to dicuss the approach with the interviewer and then he asked me to code.

**5th Round – Interview**  
 He dicussed the work that I did in my last summer internship and after that he asked me to code the maximum subarray problem in one pass.

I and my friends who got internships at Adobe Research, Amazon, De-Shaw, Samsung would like to thanks GeeksForGeeks for mainting a high quality problem set for coding tests and interviews.

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

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<http://www.geeksforgeeks.org/microsoft-interview-set-20-campus-internship/>

# Microsoft Interview | Set 21

Hi, a brief documentation of my Microsoft experience is as follows:

**Group Activity:**  
 On the evening before the interview we had a group activity round. We were given to solve one question on our own, and the other one we had to solve discussing with Microsoft mentor allotted to you.

Q1. Insert an element in a sorted circular singly linked list. Pointer to any node of the LL will be given as input

Q2. A matrix m\*n is given. If a cell contains 0 (zero) make that row and column zero.

We had to discuss Q2 with Microsoft mentors. Discussion is important and they point out flaws and ask you to optimize algo.

**Interview Round 1:**  
 Q1. Asked me to solve Q2 of group activity without using extra space.

Q2. Given an array of digits, form two numbers from those digits such that sum of those two numbers are minimum

Q3. Given an array of numbers, find out the minimum distance and print all the pairs with minimum distance

**Interview Round 2:**  
 Q1. Two string S1 and S2 are given, check whether S1 is a shifted version of S2

Q2. Write KMP/ Rabin-Karp for substring matching

Q3. Given a pointer to a circular linked list, delete that node

**Interview Round 3:**  
 Q1. Given a set of rectangles of varying length and breadth, find out the maximum height stack you can form with them such that if rectangle R1 is on top of rectangle R2 then length(R1)

### Source

<http://www.geeksforgeeks.org/microsoft-interview-set-21/>

# Microsoft Interview | Set 22

Hi, PFB my on campus interview experience with Microsoft.

**Written Test:**  
 First round was an online test which contains 20 MCQs on C & C++. Based on this test, they shortlisted some students and the next round was taken. The next round was a coding round which had two questions:

Q1. Print last 10 lines of a very large string.

Q2. Trim all the nodes in a BST which are not in the range of (minValue, maxValue).

The codes were checked on their online compiler with their test cases.

**Group Activity:**  
 The night before the day of interview, we had a group activity round. We were given to solve one question on our own, and the other one we had to solve discussing with Microsoft mentor allotted to you.

Q1. Insert an element in a sorted circular singly linked list. Pointer to any node of the list (may be denoted as the head) and pointer to the new node will be given as input. Generate test cases for your code. Check for all corner cases.

Q2. An MxN matrix is given. If a cell contains 0 (zero) make that row and column zero. We had to discuss this question with Microsoft mentors. Discussion was important and they pointed out flaws and ask you to optimize algo (Space complexity).

**Interview Round-1:**  
 Q1. After a brief introduction the interviewer asked me to solve the puzzle of 100 bulbs. There are 100 bulbs (initially all switched off). At i-th iteration all the switches of i’s multiple are flipped. Finally, after 100 such iterations, how many bulbs will be still switched on?? I didn’t know the solution. The interviewer gave me a hint. Then after doing some maths, I finally gave him the solution (Perfect squares). Then he asked me to prove it. Somehow, I proved it (I was feeling lucky :P).

Q2. In continuum to the previous question, he asked me to write a function which will take a number as input and return all of it’s factors. I solved it in O(sqroot(N)). Then he asked me to check whether I missed any edge case. So, I put a checking for negative numbers. He was happy with it.

Q3. Then he asked me to write the code for DFS traversal of a tree. I asked him about the tree structure. He told me to write for an N-ary tree. Did it, using a vector (C++) of children pointers. This time, I didn’t miss a corner case (coz, there was almost none :P). He was happy with it.

**Interview Round-2:**  
 Interviewer was very cool and very frank. He went through my CV thoroughly asked me one question in SQL and two algorithm questions:

Q1. He gave me an Employee table with Id, Name and ManagerId columns in it and then asked me to write an SQL statement which will output all the manager names who have at least 2 subordinates under them. I know, it’s very easy :P.

Q2. He asked me to write the code to clone a singly linked list with next and random pointer and told me not to worry about any space complexity.  A fairly easy one. Solved it using a hash.

Q3. In continuum to the previous question, he asked me to rewrite the above code without using any hash. Did it very quickly :P. He was really happy and chatted with me for a while. I even chewed a gum after taking his permission. He was very impressed by my handwriting. Yeah you heard me right, I was feeling lucky :D.

**Interview Round-3:**  
 Interviewer was funny and he continuously asked me not shout (though, I really wasn’t in a mood to shout ;)).

Q1. He asked me to write a function which will connect all the nodes in a binary tree at the same level. I told him, I knew it and explained it in brief. He was cool and asked me whether I wanted to have a new question or just write this one. I said, “As you wish”. So he moved on.

Q2. He explained an use case of MS Excel: we can select multiple columns in excel file and drag them together left or right. He then asked me to write the code to implement the aforementioned scenario on arrays. The input will be, an array, left and right index of a sub-array (multiple columns) and a destination index (either in left or right of the sub-array). After scratching for a few moments, I gave him an O(n) solution with left and right shift using flip method. He was really impressed and praised my handwriting once again (God is great :)).

Q3. He quickly moved to the last question. A file with numbers from 0-9999999 (each number in a line) is given. How to sort the content. I gave him a solution with radix sort (as maximum 7 digits are possible for each number). Then he posed a constraint of very less RAM available. I discussed a modified external merge sort like algorithm with him. But then he told me to minimize the huge time taken by external merge sort. Then he gave a hint as “Use bits”. So I told him, to use a 10^7 size vector (which actually uses one bit for one boolean). He was okay with it.

Finally I was HIRED !!! 😀 😀

I am really really grateful to the geeksforgeeks team. How much I say about it, it will definitely be less. Keep up the great work 

Many Many congratulations to the author.  If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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# Microsoft Interview | Set 23

**Written Test:** First round was an online test on cocubes platform (not good for coding). This test is based on C, C++ and DS. The shortlisted students in this round were selected for next round which is coding round. Coding round had two questions:

**1)** In a Tic-Tac-Toe game two players are playing where player 0 is denoted as 0 and player 1 is denoted as 1. Given a linked list of moves made by the players ,determine who is the winner and in how many moves he required for winning.

Struct Move {  
 int p;    //Player number  
 int x;    //x and y pos in the tic-tac-toi  
 int y;  
 struct Move \*next;  
};

**2)** Given an array if in a position let a[i][j] =1 then print all it’s row and column 1. You should not consider a position 1 after you made it 1 in your past computation.  
 Note: In this question it is asked to not use any extra space.

sample(input):  
(i) 00100            (ii)10  
 00000                01  
output:  
(i) 11111            (ii)11  
 00100                11

**Group Fly/Activity:**  
 On the day of interview just before couple of hours we had a group fly in which we will be given two simple questions. We need to discuss our approach with our mentor.

**1)** Check if a binary tree is balanced or not.

**2)** remove duplicates from a string inplace.

The questions in this round will generally be pretty simple but an error free(handling all boundary cases) and completely optimized code is expected. Without this, it is very difficult make to next round.Test cases were asked for each and every question below. It is important for you to cover majority of the cases.

**Interview Round-1:**  
 **1)** Interviewer asked me to optimize the code for the question 2 in previous round (Not in terms of complexity but in terms of number of assembly instructions, time taken to execute each instruction)  
 **2)** Some simple questions based on LL. Sorry I couldnt recollect   
 **3)** Recognize power of two using bit operations

**Interview Round-2:**  
 Here I had only one question.

**1)** A node which has following fields

a) data  
 b) next\_ptr  
 c) prev\_ptr

can be used to represent doubly linked list, binary tree or none. Given a random pointer recognize whether it forms DLL, Binary Tree or none. I pointed out that for Binary tree root node has to be given then he asked me to assume the same.  
 Keep on discussing your approach with the interviewer, they will generally guide you to the solution.

**Interivew Round-3:**  
 My performance in round2 was a bit shaky and this round was a kind of eliminator.  
 **1)** 2 numbers each reperesented by linked lists, write a function which  gives difference of these numbers.

**2)** Consider a webpage which has a big single image and another page in which the previous image is divided into 6 parts, which one loads faster?  
 Now propose a solution reducing the loading time.(There are no bounds for this question to think, I proposed a solution which includes concepts from vision, networks and multimedia. The interviewer was very much impressed and immediately told me that I am going to have a next round)

**Interview Round-4:**  
 Here I had 5-6 questions. I didnt remember all the questions but you should be able to do it if you follow GeeksForGeeks.

**1)** Copy a linked list with next and arbit pointer.  
 (<http://www.geeksforgeeks.org/a-linked-list-with-next-and-arbit-pointer/>).  
 I told him that I knew this question, then he asked me for the approach and test cases and moved to the next question.

**2)** Given two sorted arrays. Second array has enough extra space to accommodate elements in first array. Give the resulting sorted array obtained by merging two arrays without using extra space.

**3)** Consider a binary tree for which root node and a target node are given to you. Give the next sibling of the target.(let the target be in level k, then you need to give the immediate node which is in level k)

Other questions were based on arrays, linked lists and binary trees (mixture of these).

All the interviewers were very cool, helpful etc etc… They understand our tension and try to make us feel as comfortable as possible. The first interviewer even put his arm over my shoulder during our little walk from canteen to interview room.

And yes hired!!! Thanks to GFG.

Many Many congratulations to the author. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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<http://www.geeksforgeeks.org/microsoft-interview-set-23/>

# Microsoft Interview | Set 24

Hello everyone, I recently got selected for the internship at Microsoft IDC. GeeksForGeeks helped me a lot in preparing for the coding tests as well as for interviews. The positions that they were interviewing for were SDE and SDET(Testing).

**1st Round. – Online – 30 mins**  
 The first & second rounds were online rounds which were hosted on cocubes.com . There were 15 MCQ questions. For me most of the questions were from C++, C. For others very few questions were from microprocessors, aptitude.

**2nd Round. – Online – 30 mins**  
 This was a coding round in which two problems were given.  
 **Problem – 1**: Given a singly linked list,in which the last node points to the middle node,delete the middle node and remove the loop.  
 **Problem – 2**: Given an array of size n, find the majority element.Majority element is one which gets repeated for more than n/2 times.

**3rd Round –Telephonic interview- 45 mins**  
 **1.** Tell about yourself? [Don’t tell ur fathers name, etc tell about ur  
 Hobbies, extra-curricular activities, accomplishments, ur strengths, ambition, etc.,]  
 **2.**Tell about any challenging task that you met in your life.[I told about the difficulties met in my project, it took 30 mins]  
 **3.**Tell about your achievements.  
 **4.** What is a good coding.  
 **5.** Why do you want to work for Microsoft?  
 **6.** Any questions?[Ask some interesting questions,it is a plus]

**4th Round – Interview[conducted in Bangalore IDC]-45 mins**  
 **1.** Given an address of a node in a singly linked list,delete that node.  
 **2.** Find the nth node from the end of a singly linked list.  
 **3.** Check whether a binary tree is a BST.  
 **4.** About project.  
 **5.** Any questions?

**5th Round – Interview[conducted in Bangalore IDC]-30 mins**  
 **1.** About project  
 **2.** Why do you want to work for Microsoft?  
 **3.** What is the disadvantage that you think that gmailhas?How will you overcome it?[for these types of questions if you have not used the product for which you were asked to find a disadvantage, you can tell the interviewer so that they ‘ll be suggesting you some other product]  
 **4.** Insert a node in a doubly linked list.  
 **5.** Any questions?

**6th Round – Interview[conducted in Bangalore IDC]**  
 **1.** Given a rotated array which is sorted search for an element in it.  
 **2.** Why do you want to work for Microsoft?  
 **3.** Tell about your strengths.  
 **4.** Any questions?

**My tips to crack Microsoft interview:**  
 While answering the questions remember the following:  
 **1.** Be yourself.  
 **2.**  Show excitement and interest in solving the questions.  
 **3.**  Think aloud.  
 **4.**  Clarify doubts regarding the question.Don’t assume things.  
 **5.**  Cover all the test cases in your code.  
 **6.**Don’t interrupt.  
 **7.**  Be up-to-date about the company.This will help you in asking some interesting questions about the company.  
 **8.**  Don’t write about things that you are not sure about in your resume.  
 **9.**  Enjoy the interview.Don’t be nervous.

**Books and websites that I referred:**  
 **1.**  [www.geeksforgeeks.org](http://www.geeksforgeeks.org/)  
 **2.** [Cracking The Coding Interview by Gayle Laakmann McDowell](http://www.flipkart.com/cracking-coding-interview-150-programming-questions-solutions-5th/p/itmd34cf5ja6gdhs?pid=9780984782802&affid=sandeepgfg) (a very good book) If you get selected for internship, you also have a chance to get converted into an employee over there,if you do the project given there well and if you perform well in the interviews that they will be conducting after completing your project.

All the best!!!

I would like to thank GeeksForGeeks for mainting a high quality problem set for coding tests and interviews.

Many Many congratulations to the author. If you like GeeksforGeeks and would like to contribute, you can also write an article and mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.

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<http://www.geeksforgeeks.org/microsoft-interview-set-24/>

# Microsoft Interview | Set 25 (On-campus for Internship)

**Microsoft IDC Internship Selection Process**  
 Hi everyone! I sat for Microsoft IDC Internship Selection Process. The whole process comprised of 6 rounds as follows:

**Round 1**  
 This round was taken on-campus and it included 15 aptitude questions containing mostly problems related to general programming in C. The round was hosted on CoCubes.com. 46 students were shortlisted from around 150 students.

**Round 2**  
 This round was also taken on-campus and hosted by CoCubes.com. We were given to solve two coding problems on an online judge. The questions were:  
 1. To check a tree is BST or not.  
 2. Change one string to another with minimum number of changes (Sorry! I don’t remember the exact one).  
 22 students were shortlisted from this round.

**Round 3 (Telephonic)**  
 The interviewer started with the introduction and went on asking questions from my resume. You must prepare your resume well and go through it thoroughly. Then after asking questions from my resume for around 20 minutes he asked a coding question. The question was:  
 Given a series of numbers, print which number is repeated how many times?  
 I gave brute force solution first by using arrays. Then he asked if we have million of numbers and negative numbers as well then which data structure will be used. I said hash table. He asked certain questions on hashing. Then he said if don’t care about time complexity and want to find in-place solution then what will be another method. I said first sort it and then count.  
 He appeared to be impressed and I was selected for the 4th round. From our institute 9 students were shortlisted for the next round. For next rounds students from all over the country were called to Delhi and Bangalore. I was called to Delhi.

**Round 4**  
 There were around 60 students. They were divided into two groups of 30 each. I was in the latter group of 30. We were given two coding questions to be solved on paper. The questions were:  
 1. Compress a string in-place.  
 2. Define BST. Check a tree is BST or not.  
 A total of 5 students from us were selected and I was lucky enough to be one of them. 10 students were selected from the former group of 30 students.

**Round 5 (Personal Interview)**  
 The interviewer started by asking a coding question: Given a rotated array, find the first element of the former un-rotated array. Then he asked some questions from Operating Systems. He then asked how to implement a queue from stacks.  
 I was not lucky enough to clear this round but it was a motivating experience. 

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# Microsoft Interview | Set 26

**Round 1:**  
 Questions about previous work, design patterns used in the previous work.

***Given two integers represented in Linked list format and now add these two lists and put it in the third list, at any point of time a node can have only one digit in it.***  
 With the discussions it came like by considering the carry forwards and all similar to some of two integers represented in a linked list fashion. Interview asked to tell the approach first then for coding

// Approach 1  
// 1 2 3  
// 12 8 9  
// 14 1 2

Version 1:

private static void Add(Node head1, Node head2)  
 {  
 int res = 0;  
 if (head1 != null)  
 {  
 count++;  
 Add(head1.Next, head2.Next);  
 count--;  
 res = head1.Data + head2.Data + carryFwd;  
 carryFwd = res / 10;  
 Node newNumNode =null;  
 newNumNode = new Node() { Data = res % 10 };  
 if (head3 == null)  
 {  
 head3 = newNumNode;  
 }  
 else  
 {  
 newNumNode.Next = head3;  
 head3 = newNumNode;  
 }  
 // happy with this logic where the list will go in   
 // reverse direction something like Insert at the head   
 // position every time a new node occurs to be created  
 }

Version 2: asked me to take an example and prove the solution is correct  
 One of my test case failed if the last digits also give the carry forward

static int[] aa = new int[3];  
 static int carryFwd = 0;  
 static Node head3 = null;  
 static int count;  
 private static void Add(Node head1, Node head2)  
 {  
 int res = 0;  
 if (head1 != null)  
 {  
 count++;  
 Add(head1.Next, head2.Next);  
 count--;  
 res = head1.Data + head2.Data + carryFwd;  
 carryFwd = res / 10;  
 Node newNumNode =null;  
 if (count == 0)  
 {  
 newNumNode = new Node() { Data = res };  
 }  
 else  
 {  
 newNumNode = new Node() { Data = res % 10 };  
 }  
 if (head3 == null)  
 {  
 head3 = newNumNode;  
 }  
 else  
 {  
 newNumNode.Next = head3;  
 head3 = newNumNode;  
 }  
 }  
 }  
 }

Version 3:  
 This will save last digits sum in a single node this is not what I have expected when the sum is of two digits, so please fix the code

private static void Add(Node head1, Node head2)  
 {  
 int res = 0;  
 if (head1 != null)  
 {  
 count++;  
 Add(head1.Next, head2.Next);  
 count--;  
 res = head1.Data + head2.Data + carryFwd;  
 carryFwd = res / 10;  
 Node newNumNode =null;  
 newNumNode = new Node() { Data = res % 10 };  
 if (head3 == null)  
 {  
 head3 = newNumNode;  
 }  
 else  
 {  
 newNumNode.Next = head3;  
 head3 = newNumNode;  
 }  
 if(carryFwd ==1)  
 {  
 newNumNode = new Node() { Data = carrFwd};  
 newNumNode.Next = head3;  
 head3 = newNumNode;  
 }  
 }

Version 4:  
 Can u optimize more here…? What is the maximum when you add two digits…? What are the possible values for the carryforward…? Back to back questions  
 So the final version of mine is removed the count variable and moved the last condition of carryforward to outside of function. He created more fun here that why he is digging so deeper.

public class Node  
 {  
 public int Data { get; set; }  
 public Node Next { get; set; }  
 }  
}

Now write the test cases for this problem.  
 Around 15 test cases means test inputs. I had written by looking at my solution.  
 The question here is do u write the test cases for your solution or for the problem, consider this is not your code you have been given a problem and write the test cases.  
 Then I added some of the test cases by ignoring my assumption of equal length of list.  
 Asked to some more to write was happy when I had written a test with linked list size of 10000000 as my solution is recursive I may get the stack overflow exception.  
 With this answer he banged me with lot of questions.  
   
 ***Interviewer:*** Then why do you choose recursion I need an alternate approach not happy with one alternate

// Approach 2  
 /\*  
 \* Reverse list 1:  
 \* Reverse list 2:  
 \* Add the lists with remainder and dividends  
 \* Reverse list 3:  
 \*/  
  
 // Approach 3  
 /\*  
 \* make the linked list to array and use the indices to   
 traverse and do the addition  
 \* No program is asked for it  
 \*/  
  
 // Approach 4  
 /\*  
 \* mConvert the entire linked list to an integer and then  
 add both the integers and then prepare a linked list   
 with the result   
 \* but the issue if the result is out of integer boundary  
 \*/

When I told approach 4 he asked me

***Interviewer:*** “Are you thinking that why this guy is saving integer in linked list and then asking me for addition of such lists…?”  
 ***Me:*** Yes  
 ***Interviewer:*** then answer yourself what is causing me to do this way, lets exchange the roles  
 ***Me:*** told some scenarios like  
 1. want to have index based integers and growing dynamically (so arrays won’t be friendly)  
 2. If I want to have a counter which value is more than the range of integer then I can go with this or some other data structure.

***Interviewer:*** Now lets go back to the question again and then fix your code by ignoring your assumption of equal length of lists  
 ***Me:*** the above approaches 3 and 4 can solve  
 Interviewer: but these are alternate approaches to solve any means of fixing the same solution instead of going with the alternate?  
 ***Me:*** May be I’ll pad the smaller list with the zeros and then use my algo extra overhead initially but it works.  
 ***Interviewer:*** Ok Back to your solution Recursion why did you jump and started with the recursion when u have these many alternates…?  
 ***Me:*** I usually think of recursion when someone ask a question in linked list which will solve sometimes easily as it is unidirectional.  
 ***Interviewer:*** can u elaborate more how recursion will ease the developer logic  
 ***Me:*** It uses internally tree through which I can perform operations in reverse direction in a linked list  
 Vijj: What tree does it maintain?  
 ***Me:*** Name is some RecursionTree but its not actually a tree  
 ***Interviewer:*** Then what is that  
 ***Me:*** some data structure  
 ***Interviewer:*** offcourse what is that data strucrue  
 ***Me:*** I hope its stack as it is working LIFO fashion so I can do the reverse operation easily. That’s why one of my test case checks for Stack overflow exception as I used recursion when I have huge data.  
 ***Interviewer:*** What is LIFO  
 ***Me:*** explained about the LIFO and compared with the FIFO.

***Interviewer:*** Any questions to me …?  
 ***Me:*** If it is not confidential and obvious tell me what is the core logic or algos used in Bing, as my manager told this is for bing team  
 ***Interviewer:*** ok if you want to write an algo for a search whats ur approach  
 ***Me:*** I’ll go with some Heuristics based search, like Best-First search kind of A\* algorithm or TSP (Travelling sales person) problem solution.  
 Interviewer: if that is the case anyone can write a search engine  we also use some heuristics but never be like straight A\* algo  
 And some discussion on Google Vs Bing and then That’s all from my side and you may be part of Bing relevance team once we talk with other guy.

**Round 2: lasts for 1:30 min**  
 ***Interviewer:*** will start directly with the question without wasting time.  
 Given an array of +ves and -ves find a sub array which maximum is max among all the sub arrays of any length in the given array.  
 Tell the approach first and then write the code  
 ***Me:*** After some time told the approach with O(n) complexity then he asked me to write the code

int len = sizeof(arr)/sizeof(arr[0]);  
int currMax = a[0], finalMax = arr[0];  
for (int i=1;i<=len;i++) {   
 currMax += a[i]; i  
 if(currMax > finalMax)  
 finalMax = currMax;  
 if(currMax&lt;0)  
 currMax =0;  
}

***Interviewer:*** Take some numbers and prove that your solution is correct  
 ***Me:*** Shown with the example I need to traverse for the entire list till I get the answer.  
 ***Interviewer:*** Does it fail in any scenario?  
 ***Me:*** no never  
 ***Interviewer:*** It will fail if all the numbers in the array are -ves  
 ***Me:*** but initially the question was the array is mix of +ve and -ve  
 ***Interviewer:*** Ok then let me change the question and consider it has all -ves then does your code fail if so where?  
 ***Me:*** yes it will with conditionof currMax  
 ***Interviewer:*** then fix  
 ***Me:*** took lot of time to fix and then asked me to prove the correctness  
 I couldn’t prove my solution as I lost somewhere while I was tracing with the big list but the solution was correct, So  
 Interviewer: he asked me to change the initialization and fix that is the hint  
 ***Me:*** I couldn’t fix as I was stick to my solution, but I gave a alternate approach like  
 I’ll multiple all -ve numbers with -1 and make the list is full of +ves and then find the minimum of sub array instead of max once I got I’ll make it is a -ve number before return or print  
 ***Interviewer:*** very keen on what is the return value of the funtion which I wrote; and he told you are going to the alternate solution instead of fixing the existing solution  
 ***Interviewer:*** ok lets go to anther question given a tree find the ancestor  
 ***Me:*** meaning parent, grand parent, or grand grand parent  
 Interviewer: does it matter for you? And what is ur approach for say grand parent  
 ***Me:*** I said may be I’ll go with stack and based of your option I’ll peek the node from stack  
 ***Interviewer:*** Ok we will go to some other question instead of this.

***Interviewer:*** I’ll draw a tree on a paper and give that to you take your own time and remember the tree in a data structure and once you say yes I’ll wipe out or take my paper back then consider the data structure is input to your algorithm and them construct my tree back  
 ***Me:*** I couldn’t understand the problem asked too many questions what he really want like I’ll construct the tree by using ur tree and then call the same function to recreate  
 ***Interviewer:*** how do you create what is ur input what is the data structure is that  
 Me: I said Node blah blah … asked too many question then I understand what he wants  
 So my approach was I’ll represent your tree in two arrays one will be Inorder and other will be pre/post here I’ll go with Pre and once I have these two arrays I can go with the construction algo by giving these are inputs.  
 ***Interviewer:*** tell me the approach how do u construct if you these two arrays  
 ***Me:*** I told combining these two how we can go and construct like from inorder we can get the root element and find that root in the second array and then split the array which is same as left and right of tree for the root and proceed further; this I need to do it manually for the given tree to prove my solution; and he asked couple of questions after splitting where the sub arrays will go and how dow remember that what is left n right; manually I explained all these with the example and I said don’t know what condition need to check when I write this as a program  
 ***Interviewer:*** happy with the approach and asked what In/Pre/Post oders why did u choose only these two  
 ***Me:*** I need Inorder and you can tell me which one do you want me to take either pre or post  
 Interviewer: its up to you, ur algo ur data structure and write the program  
 ***Me:*** I was not able to put my logic in the code as I couldn’t get the proper conditions tried in normal way as well as recursion but couldn’t make a concrete code at all.  
 ***Interviewer:*** we are running out of time so will stop here.

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# Microsoft Interview | Set 27

Round 1: (1 h)  
 ==============  
 Q1. Design a Garbage collector like java. How would you detect depended reference loop?   
 Hist : Class design, Cycle detection algorithms for disjoint graph( List of connected graph)

Q2. Find an element in a sorted rotated array in O(logn ) complexity.

Round 2:(1.h 15min)  
 ===================  
 Q1. Given a sorted array having duplicate elements,how would you find first index of a given element in O(logn).  
 Write code for it. Change the condition to find out last index of that elements.  
 [ Hint Binary search]

Q2. You have a dictionary of words. Given a word, print all anagram are in dictionary . State the data structure to be used to solve this problem.

Q3. Design a Chip-Encryption system. Which will do following operation:  
 1. Take a word from user  
 2. Encrypt the word by some Private or public key cryptography or any other algo.  
 3. Transmit the encrypted word by TCP or UDp or SSL.  
 Design the class diagram using OOD. Which design pattern you are using to achieve this.

Round 3:(1.h 15min)  
 ===================  
 Q1. In a plane n points (X and Y) is given. How will you find out maximum co-liner points. Extend this algorithms. it for point(x,y,z) in 3D plane.

Q2. Reverse a 32-bit integers. write code for it.

Q3. What the different issue in multi-threading ? What is the difference between mutex and semaphore.  
 Q4. You have a file with million words in it. Find most frequent 10 word in that file. Node that you can store all word in memory.  
 (Note : Min-Heap + List )

Round 4 :  
 Skipped … 

Round 5( 2h 30 min)  
 ===================  
 Q1. You are given a Text, where all space, full stop and all punctuation mark is removed. You want to reconstruct the text by putting spaces between words.  
 A dict is given and following API is also given.

a) Decide if the text can be converted a sentence with valid words or NOT.  
 b) Find how many way you can do the reconstruction of the text.  
 c) Find what is the minimum number of space can be used for this reconstruction.  
 d) For case (c) find out the indexes where you suppose to put a space.  
 e) Now recover the text to sentence in place .

Subsequent Question:  
 1. Why Greedy technique will not work for this?  
 2. yes ! Backtracking will work, what is the problem of using backtracking ?  
 3. Illustrate and explain how the solution is contracted from the Dynamic table ?  
 4. Write the correct working code for (c),(d),(e).

Q2. Given a BST, find out the minimum length form root to leaf with sum S. Note that:  
 a) Path from root to leaf node.  
 b) Sum of node of the path is S.  
 c) if multiple such path exist, print minimum length path.  
 d) What is advantage of BST rather than BT used for this algorithm, how it improve the performance. in BST, is it required to explore both side ?  
 e) Write working codes for it.

Status: Selected ! (The interview call was for SDE-I, but they offer me for SDE -II(L61) position)

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# [TopTalent.in] Exclusive Interview with Prashanth from IIT Madras who landed a job at Microsoft, Redmond

Armed with a dual degree from IIT, Madras, and a very strong resume, Prashanth Srikanthan was destined to land a lucrative offer from one of the big recruiters. So when Microsoft came calling he converted his potential into a Rs 60 Lakh package as a Software Engineer. [TopTalent.in](https://www.toptalent.in/) brings you his opinions and advice about dealing with interviews.

[](http://d2hc1qfcrygj4j.cloudfront.net//wp-content/uploads/196881_10150141804730528_8292477_n.jpg)

**TopTalent:** How does it feel to be selected by Microsoft?

**Prashanth:** It felt good to be recognized for the effort put in. It was definitely a proud moment to be hired by a company with such a rich history. After a few years of lacklustre activity in the spectrum of consumer products, I believe Microsoft is finding its way again, so this is an exciting time to join the organization.

**TopTalent:** Which companies did you get an offer from apart from Microsoft, Redmond?

**Prashanth:** I received an offer only from Microsoft Redmond. I was interviewed by Google MTV (Mountain View), Epic Systems Wisconsin and Oracle California besides Microsoft Redmond. My interviews with Oracle were left incomplete due to lack of time. Although I had excellent interviews with Epic Systems, I asked the HR to not extend an offer to me as I was uncomfortable with the fact that they had an office only in the US, and therefore being unlucky in the H1B-visa lottery would make the job offer worthless for at least a year.

**TopTalent:** Can you give us a brief account of what you felt was the toughest interview?

**Prashanth:** I think toughness of an interview is subjective to a certain extent. Having said that, the toughest interview for me was undoubtedly the final interview for Google MTV. They asked me a challenging set of questions, mostly open-ended. Overall, I would say Google had the toughest interviews.

**TopTalent:** What was your preparation strategy?

**Prashanth:** Preparation aimed specifically towards interviews was done in the 3-4 months leading up to the placement season. Apart from the resources I consulted, I also asked a couple of friends to suggest problems to think about during my free time. Whenever I encountered an algorithmic problem, I would try my best to solve it without consulting the web or a friend. Then I would code it up, since fast coding is often a great advantage during placement interviews.

**TopTalent:** What resources did you consult? Where did you practice problems from?

**Prashanth:** I read a few chapters from “Cracking the Coding Interview” by Gayle Laakmann McDowell, which I would suggest as a first resource for anyone appearing for a coding interview. Besides the book, I used to look up online resources like GeeksforGeeks and Leetcode from time to time. The tutorials at topcoder are also a fine resource. For a couple of years, I had been solving problems from codechef, codeforces and topcoder sporadically out of interest which helped me break into the mindset of an algorithmic problem solver.

**TopTalent:** What kind of skills do you think helped you getting this job?

**Prashanth:** The obvious answer is, first and foremost, algorithmic problem solving skills. Additionally, I was working, at that time, on two significant, interesting projects which I was very enthusiastic about, and spoke enthusiastically about them to my interviewers which I believe was a non-trivial factor in creating a favorable impression.

**TopTalent:** What is your advice to students who are aiming for similar placement offers as yours?

**Prashanth:** For the interview questions, practice a lot of problems and don’t feel lazy to practice writing code. In my case, the interviewers (from Microsoft and Google) were very interested to hear about the research work that I had carried out and was planning to pursue in my final semester. I would advise students to take an initiative to undertake projects that interest them, because it will give you an edge in the interviews.

**TopTalent:** What should one keep in mind while preparing a resume?

**Prashanth:** I spent a considerable amount of time preparing my resume. My rule of thumb was to not exceed 2 pages. It is always a good idea to scrutinize your resume from the perspective of an interviewer and ask yourself how you can make it better, more concise, more appealing. Never claim to know something you don’t. Do not be afraid to deviate from a fixed resume template (that your institute might suggest, for example) if you feel a different arrangement represents your case better. Advertise your achievements and projects well, and be thoroughly prepared to answer questions on every point mentioned in your resume.

**TopTalent:** Please add other details that you want our readers to know.

**Prashanth:** I want to emphasize a couple of points. First, always remember that the company you are interviewing for wants to hire you as much as you want a job offer from them. Remembering this simple fact helps in maintaining confidence and avoiding panic during the interviews. Second, never try to deceive the interviewer. Try to be as honest as possible and if you do not know something, admitting it is far better than any alternative.

You can [login and download](https://www.toptalent.in/jobseeker-registration.php) Prashanth’s resume from TopTalent.in.

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<http://www.geeksforgeeks.org/exclusive-interview-prashanth-iit-madras-landed-job-microsoft-redmond/>

# Microsoft Interview | Set 28 (On-Campus)

**Microsoft Interview Experience(On Campus)**

**1st Round :**  
 Online test was taken in the morning by cocube with 15 MCQ. Time was given for this 30min.  
 I had some problem (can’t write here) so I did in 10 min and rush back to room. (I think u understand why I came back to room.)  
 After 2 hour result announced and was in the shortlisted of 78 students.

**2nd round Begin : (time 70min.)**  
 Again an online coding round begin with 2 question given.  
 Q.1: An array of string is given in sorted order but it can have any no of null sting in between. One another string you have to search in that array of string. If string found then return the index of that, otherwise return -1.  
 Q.2: An integer array is given which consisting integer no’s, But in that array 3 unique no are there whose no of occurrence is even.  
 Print those three no and the sequence in which the appear in the array.  
 I did both of the question one I did myself and another one with the help of my friend.

Result Declared after two day on Friday. My name also were there with 28 students.

**Round 3 Begin: (Group Fly Round):**  
 They assembled us in a room and gave same problem to everyone and ask to right the algorithm for that.

Question: word reversing of the string.  
 Eg. “Microsoft visited your campus”.  
 Expected Output: “campus your visited Microsoft”.  
 Question was pretty simple everyone knows how to do it.  
 I don’t know on which base the selected only 12 out of 28 students, and I was one of them who selected.

**Round 4 (F2F) : (Time 1hr.)**  
 It was technical round.  
 Firstly he went through my resume and asked about my project (Done in c++) which I mentioned in my Resume.  
 They ask which oops concept you used in your project. I told and explained everything whatever I had used…  
 Then he asked me by which oops concept you can improve your project…I told about STL and explained how I’ll do.

Then he came to data structure and ask very few simple questions….  
 Q.1 : an array of 1…N no is given to you, but one no is missing, how will you find that.  
 I think everyone knows how to do it..  
 Q.2 : A string is given to you, and you have to find out first non-repeating char.  
 I had done before this question from geeksforgeek. So no problem at all.  
 Then some optimization discussion on different assumption’s like…if you string consisting Bytecode char and all.

After one hour they announced the result of Round 4, I was the one of 7 students out of 12.

**Round 5 (F2F) : (Time 1hr.)**  
 It was another technical Round.  
 Firstly he gave me his intro then I…..  
 Then he gave me my page on which I had written algorithm in Group Fly Round. And asked me to code it.  
 I did and explained.  
 Then he asked me…. For implementing a dictionary which data structure you will use..???  
 I answered I’ll use Trie .  
 He spelled ‘T’’R’ ’E’ ’E’…  
 Then I said no sir ‘T’ ‘R’ ‘I’ ‘E’…  
 I explained with structure of trie how it is useful, beneficial and efficient.  
 He told me to implement it in Tree.  
 I did that…By BST  
 Then he made a loop in my BST by connecting two child node. And asked me to remove it..  
 I loop is not possible in a BST.  
 He asked me to proof it…and I proved.

Then he came to Puzzles……  
 He gave a puzzle of “8 coins and a balance scale”  
 I knew it because I had done already.  
 But don’t know why I couldn’t solve there.  
 He gave me some hint after some time he told me the ans and how to do…  
 It can be done by using balance scale two time.  
 Mine answer was 3.  
 ……  
 …….  
 After some time result came out….  
 5 students were selected out of 7 for final HR round…But this time I was in those 2 who went out..  
 ……………Thanks a lot to GeeksforGeeks for helping me.

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<http://www.geeksforgeeks.org/microsoft-interview-set-28-campus/>

# Microsoft Interview | Set 29 (On-Campus for Internship)

Recently we had microsoft interview for internship in our campus.

**Online Test**  
 It was the technical + few aptitude test. There were around 4-5 set of mcq for all students at Cocubes.com. i was lucky to have a easy one.

Then i was selected for 2nd round .

**Round 2 : (online judge)**  
 Around 200 people were selected for 2nd round. This round contained 2 question.

1) Given a linked list which contains series of numbers seperated by “0”. Add them and store in the linked list in-place.

for eg : i/p linked list is 1->2->3->0->5->4->0->3->2->0  
o/p Linked list is 6->9->5

2) Given a binary tree and value V. delete all the leaf nodes whose values are equal to V. It must handle all cases for example if u delete both leaf from a node Say B. Then the node B also becomes the leaf node.  
 This round was pretty easy one . first one can de done in O(n) and 2nd one can be done by postorder traversal.

I was confident that i will be selected for next round. after one week results was announced and 24 students were selected for next round.

**Round 3: (group interviews Written test)**  
 This round for the only 17 students and first seven were allowed to enter directly 4th round. i was one among the seven. The ranking was based on the scores of first two round. so each and every round matters in microsoft.

2 question were asked for this interview.  
 1) Delete alternate nodes in a doubly linked list.  
 2) Convert a string into a string without duplicates without changing the order of characters IN PLACE. EG: Input: Bananas Output: Bans.

Many of them were easily eliminated from this round. Neatness and indentation also matters.

**Round 4: (technical round )**  
 This round was the toughest round of all. The interviewr seems to be little strict. He called me and one more boy inside for interview.  
 I thought he will select one among us for next round. but actually thy don’t compare in these ways. first question they asked me was  
 1) given a 2d character array and u r allowed to move down, left, diagonal down and form a string and check whether that string is present in the dictionary or not.  
 ans. i gave him backtracking approach and he saw that and he asked whether i can improve it little more. i gave binary search solution for searching in the dictionary and he told me that i can use prefix checks also. then i made use of it. Then he moved to second question.

2) given a chess board nXn size and knight and u start from position (a,b) and have to reach (C,d) in minimum number of steps and there can be wall in some squares boxes also which blocks knight.  
 i was really nervous and in tension i gave him DFS solution. he kept on asking me that can i improve it or not and finally i told i can apply djksthra algorithm. but i dint mentioned the word BFS. i came out and i thought i won’t be selected for next round.

Meanwhile the questions asked to my friend were  
 1)topological sort  
 2)box stacking dynamic programming problem .

**Round 5 (personal interview ) :**  
 They called my name and i went inside. i have my resume to him and he went through it and then he was impressed by my groupon internship during 2nd year. then he asked me Why Microsoft? and then we talked for a while about games programing (Xbox ) and he asked about cloud computing. Then he saw in my resume that i was mentor in Data structures for Weak students so he asked my question in Linked list.

1) Given a singly linked lists of 2n size. First n and second n are sorted. Sort the entire linked list. he asked for all possible solutions. i told him solutions for  
 1)swaping by node  
 2)swaping by data  
 3)merge sort method  
 4)hashing (counting sort method )  
 it was not too hard one .

**Round 6 (final round)**  
 I think it was stress interview. the interview called me inside with one of my friend . he asked us about previous two round. Then he gave me 2 question  
 1) Design LRU cache. (i read this just a day before)  
 2) Find and replace in a string.

Finally i was selected for microsoft internship. The people from microsoft were also very good and friendly. I read few websites before Interviews and geeksforgeeks is one of the best among them. Its really good to prepare for interview from geeksforgeeks and each and every round matters in microsoft.

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-set-29-campus-internship/>

# Microsoft Interview | Set 30 (On-Campus)

**Online Round:**  
 15 MCQ’s and 2 coding questions organized by CoCubes.  
 Coding questions –   
 1. Given a list of strings separated by space, return the position of the required string. Return -1 if string not present.  
 ex:”at”, “bat”,””,””,”car”,””,””,””,”dog” … find “car” . o/p: 4

2. Given a list of numbers find the numbers occurring even no. of times.

**Group Fly Round:**  
 Rotate a 2-d Matrix clockwise by 90 degree (inplace)

**Round 1:**  
 What do you understand by polymorphism? What are constructors? When are copy Constructors used? What are virtual Destructors? Why do you need them?

Detect whether a linked list has a loop. Find the length of the loop.

Print the values of the Full Nodes in a Binary tree. (A node is said to be full if it has both right and left children).

**Round 2:**  
 Tell me something about yourself.

What does the word ‘System’ mean in System.out.println in Java?

Given 2 sorted arrays, find the median element. (without extra space)  
 Search for an element in an array. (He just wanted n comparison i.e. I was using a for loop which has a comparison and another comparison within the for loop to find the element., he counted them as 2 comparisons. Hence 2n comparison.)

First Normal Form. If a schema has a date attribute is the schema in 1NF.

**Round 3:**  
 Tell me something about your project.

Find the index of the element which is greater than the given number(the number may or may not be present in the array). The array is sorted , contains duplicates .

Delete n elements after m elements in a linked list, continue till the end of the list.

**Round 4:(HR round)**  
 Why do you want to work for Microsoft?

He gave a list of functions that can be used in a file. Find the last n lines in the file using those functions only. (Have you heard this question before? Have your friends discussed it with you? If you were in place of your friends would you tell them about your questions?)

Given a 2-d Matrix sorted row wise and column wise . Find the k-th smallest element.(Not the min heap method, he needed a more optimized method. He guided me through the question.)  
 Note: The panellist were quite experienced they will understand whether you know the question or not. So just own up. Test Cases are very important.

Microsoft has an amazing set of panellist. They are only interested in the basics. They won’t ask very difficult questions, because they want to understand whether you can come up with a solution.

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-set-30-campus/>

# Microsoft Interview | Set 31 (On-Campus)

Recently Microsoft came to visit our campus for offering SDE positions. Here is my interview experience.

**Online Rounds:** These were organized by CoCubes.

Round 1 – There were 15 simple MCQ’s. Most of them are from [GeeksQuiz](http://geeksquiz.com/). Most of the students cleared this round.

Round 2 – There were 2 coding questions

1. Given a sorted list of strings that may contain NULL in random indices , return the position of a given search string. Return -1 if string not present.  
 ex:”at”, “bat”,””,””,”car”,””,””,””,”dog” … find “car” . o/p: 4  
 I initially tried a modified binary search, but something went wrong, So did a simple linear search. My bad 😛

2. Given an array of integers where all the elements occur odd number of times except 3 elements which occur even number of times, find the 3 elements.

They shortlisted 39 students for a Group Fly Round.

**Group Fly Round:** Students were divided into groups of 3 or 4 and were assigned a mentor. Everyone was asked the same question and was expected to write a clear and neat C/C++ code with comments wherever possible.

The question was that an 1-D array contained N\*N elements. Assuming that the N\*N elements form a matrix, you have to rotate the matrix in-place.

A group of 16 students were selected from this round for Personal Interviews.

**F2F : Round 1 – 30 mins tops**  
 What is your favourite subject ?  
 – OOP  
 What are the basic aspect of OOP ?  
 – Polymorphism, Encapsulation, blah blah  
 Explain Polymorphism to a layman  
 – More blah blah  
 How and when is it implemented ?  
 – Run time and Compile time, via Overloading and Over-ridding

He asked me to write sample code for each, which i did.

Given a linked list which has got a loop, how do u detect the loop. ?  
 – Floyd’s cycle detection algorithm  
 He asked me to code it. He was happy; I had put checks for all corner cases.

Count the number of full nodes in a binary tree. Full nodes are those which have both non-null left and right children.  
 – I gave a pretty easy recursive solution. He asked me to do it iteratively using a different traversal. So i did a level order traversal.  
 He asked me to give all kinds of corner cases. He was happy.

Have you implemented thread library ??  
 – Yes in Java and C++  
 Difference between thread and a process ??  
 – Blah Blah.

**F2F : Round 2 – 45 mins**  
 The interviewer was very serious and directly went into coding questions

Given an array containing elements where all elements have even occurrences except two elements, find those elements.  
 – I gave him the xor approach where you have to find the rightmost set bit and then divide into two groups. He was waiting for that and went directly to bit representation, i.e. Little Endian and Small Endian.  
 Followup : Check if the given machine architecture is Little or Small Endian.

Given two Strings, find the minimum length window in the first string containing all the elements of the second string.  
 -Did it pretty quickly. He kept tweaking the questions and asked me to make necessary changes in the code. Finally he asked me to give some good test cases.

**F2F : Round 3 – 45 mins**  
 This was my final round with the AA Manager.

He first asked me about my dismal CGPA :3  
 Then we discussed a little about my projects.

He asked me about semaphores and we had a little discussion about the types of semaphores. Then he asked me to write the Signal() and Wait() functions. Finally he asked me to implement mutual exclusion in critical section. I gave the Peterson’s algorithm. He moved on

Given an array of elements arrange the elements such that the odd elements are in the odd position and even elements are in the even position.  
 – I gave him a two pass approach where i segregate first and then separate accordingly. But he asked the one pass solution. This was when my luck ran out. I know its pretty easy, but messed it up. And the guy was also adamant because even after 15 minutes of trial and error, he asked me to go on.

Though I didn’t get the job, it was a wonderful experience to be interviewed by such experienced people from the industry.  
 A few points that i thought would be worth mentioning –

\* Think out load, let the interviewer know that you have actual depth in the matter  
 \* Always ask questions about a problem if you are not sure  
 \* Always think about the corner cases and uncommon test cases before you start writing your code

Also, a big thanks to the entire GFG team for their constant efforts  Keep Coding, Keep Rocking.

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-set-31-campus/>

# Microsoft Interview | Set 32 (On-Campus for Internship)

Recently Microsoft conducted an on-campus interview at my college. It consisted of 5 rounds which were all on-campus. They were as follows:  
   
 **Round 1(online)(30 minutes):**  
 Consisted of 15 mcqs mostly related to c/c++ and probability. It was fairly easy and very few people were eliminated.

**Round 2(online)(1 hour):**  
 We had to write two programs in this round.

1.A sorted list of strings interspersed with NULL in random indices is given. Return the position of a given search string. Return -1 if string not present.  
 ex:”a”, “b”,””,””,”c”,””…. find “b” . o/p: 2

Just a simple linear search will suffice.

2. Given an array of integers where all the elements occur odd number of times except 3 elements which occur even number of times, find the 3 elements.

A brute force solution is fine. You may also use a hashmap.

The above two rounds were hosted by cocubes.com.

**Round 3(Group fly round)(30 minutes) :**

Groups of 5 were made amongst the remaining candidates. Each group was assigned an interviewer and we were given a problem to solve.

Write a program to rotate a square matrix 90 degrees clockwise using constant space.

**Round 4(F2F)(90 minutes):**  
 The interviewer asked a lot of questions about my projects. Spent about 30 minutes on questions related to NLP and machine learning. Asked me about SVMs, neural nets, back propagation etc.

Then he moved on to programming questions. I was asked to program a regular expression(regex) matcher. Given a pattern string and an input string return true if the two match. The regex special characters like \* and ? had to be taken into consideration. Basically if there is a ‘?’ in the pattern string any character in the input string can take its place. Same goes for ‘\*’ but in this case any number of characters can replace it in the input string.

Example: a\*b matches acdb  
 a?b matches acb  
 a\*b does not match bca  
 a?b does not match acdb

The rest of the interview involved making modifications to this program. For example, modify the program so that it returns true on a partial match, i.e. even if the pattern is present inside the input string.

**Round 5(F2F):**  
 This round started with questions like why do you want to work for microsoft? Tell something about yourself etc.  
 Then came the final round of technical questions.  
 I was asked to write 2 programs and answer some theoretical questions.  
 1. Given a MxN matrix of 0s and 1s convert all rows and columns to 0 which have at least one 0 in them. You can use O(m) space.  
 2. Given a matrix of characters and an input string, return true if the string is present in the matrix.

input string = ABCDE  
Matrix = A T G  
 B E H  
 C D V

Output: string is present.

**Some final questions:**  
 1. Some questions about b trees. Don’t remember the exact questions.  
 2. Describe an algorithm to balance a binary search tree.  
 3. Describe another algorithm for the same.

This was the final round.

I would like to thank the geeksforgeeks team for providing us with such a fantastic platform.

Hope this helps at least some of you.

Thank you.

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<http://www.geeksforgeeks.org/microsoft-interview-set-32-campus-internship/>

# Microsoft Interview | Set 33 (On-Campus for Internship)

Recently Microsoft IDC had visited our Campus for Intenship. There were 6 rounds in total for me.

**Objective Round :-**  
 The objective round was taken in Cocubes.com, there were 15 questions (1 question was repeated in my set). There was a question about “Rectangular Collisions in an array” which I had no idea about.

**Coding Round :-**  
 There were two coding questions :-  
 1) Find an element in a sorted array which has been rotated circularly at only one location in O(logn) time.  
 (Refer <http://www.geeksforgeeks.org/search-an-element-in-a-sorted-and-pivoted-array/>)

2) Find the inorder successor of a node in a Binary Search Tree.  
 (Parent pointers were present in the BST). (Refer Method 1 of <http://www.geeksforgeeks.org/inorder-successor-in-binary-search-tree/>)

**Group Interview Round :-**  
 First 10 minutes, he asked about what we expect to be the next big thing in technology. Then he gave two questions :-  
 1) Given a string, you have to check if it is a valid number or not.(The number can be signed, floating point/integer). If it is a number return true else return false.  
 The constraints were :-  
 i) No decision statements allowed (No if-else,no switch-case).  
 ii) No ternary conditional operators allowed (? : not allowed).  
 iii) No looping statements allowed (No for/while/do-while).

(My solution was a recursive implementation returning a bool having only one return statement using relational operators and two global variables, one for checking if it is the first occurance of a ‘.’ and other for checking if the sign ‘+’/’-‘ occurs in 1st location or not).

2) Bing wants to improve the experience of users by giving reward points to users. Devise an algorithm to assign reward points to different users.

**Personal Interview Round I :-**  
 1) You are given a string containing only ‘(‘ and ‘)’, check if the the string is well formed,i.e. check if the paranthesis is well matched.  
 (Either have a count of ‘(‘ or use a stack for pushing ‘(‘ and popping when ‘)’ is encountered).

2) There is a Bot Class with the following prototype :-

class Bot {  
// private data members  
public :  
 bool moveleft(); // The bot moves one block left and returns true.  
 bool moveright(); // The bot moves one block right and returns true.  
 bool movebottom(); // The bot moves one block down and returns true.  
 bool movetop(); // The bot moves one block up and returns true.  
 bool hasGold(); // returns true if the current position of bot has gold.  
};

You are given a bot and the dimension of a maze having walls and some blocks having gold, check if the bot can reach a block containing gold.

(Use dfs graph traversal using the recursive implementation and return true if the current position has gold and return false only if you cannot move any further).

**Personal Interview Round II :-**  
 1) You are given the roots of two binary trees, check if the trees are isomorphic or not.(Initially he framed the question for a tree (not a binary tree) and gave me two random nodes instead of the roots).

(Refer http://www.geeksforgeeks.org/tree-isomorphism-problem/)

2) You are given an array of n X m dimension. You start from (0,0)th location. You can move from (i,j) to any of (i + 1,j),(i,j + 1),(i + 1,j + 1)th locations. Find the total number of paths starting from (0,0)th to (i,j)th position.

(For all i and j,dp[i][0] = dp[0][j] = 1, dp[i][j] = dp[i – 1][j – 1] + dp[i][j – 1] + dp[i – 1][j]).

**Personal Interview Round III :-**  
 1) Given a dictionary, group the anagrams together.  
 (Sort each string in dictionary, as anagrams will have same representation after sorting, use a hash map to store the groups of anagrams).  
 2) He asked questions related to my project.

Thank You geeksforgeeks.org.

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<http://www.geeksforgeeks.org/microsoft-interview-set-33-campus-internship/>

# [TopTalent.in] Exclusive Rapid Fire Interview with Gritika Who Got a job offer from Microsoft

[](http://d2hc1qfcrygj4j.cloudfront.net//wp-content/uploads/Gritika.jpg)For Gritika, and for many others like her, Microsoft is a dream company. As she recalls ‘I sat for Microsoft as a part of my campus recruitment.   
 Microsoft has always been my dream company. After getting placed, I didn’t sit for any other company.’ Being relived at the thought sign off a recruitment season at a high, her biggest moment to savor was seeing a smile on her parents’ face.

We at [TopTalent.in](https://www.toptalent.in/) spoke to Gritika from Jadavpur University about her experience of a Microsoft interview and what others can learn from her experience. You can also [download](https://www.toptalent.in/jobseeker-registration.php) her resume to see her detailed profile.

My toughest interview was the third round of my Microsoft interview, after which I was asked to leave. But, seems like I was destined to get the job and was called back :) Even the HR round was quite grilling, the interviewer was very friendly still the answers he expected had to be prompt and precise.

**Your Preparation Strategy:** I worked on data structures. I feel if you have a sound knowledge of the various data structures, it helps in optimal problem solving. But practicing codes is also very important, as it enables us to identify all possible bugs and test cases.

**Resources:** Geeks for Geeks, I owe my success to that site. My college seniors were also very helpful. They guided me, which enabled me to only study the relevant topics from the pool of available topics.

**Your Skills:** Writing codes efficiently (on paper as well), this helps in the PI rounds as we can develop linear program writing skills. Identifying test cases, as we know Microsoft puts great emphasis on test cases.

**Advice:** Have a mind of your own. Don’t just mug up efficient solutions to problems, try to come up with your own solutions. This is what makes you stand out from the others when you are confronted with an unknown/unexpected problem.

**Resume:** Keep it precise (within 2 pages). Highlight your skills and achievements. Doing project work is certainly helpful as it demonstrates that you are capable of developing something useful from just a list of requirements.

In case you missed, you can also [download](https://www.toptalent.in/jobseeker-registration.php) her resume to see her detailed profile.

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### Source

<http://www.geeksforgeeks.org/toptalent-exclusive-rapid-fire-interview-gritika-got-job-offer-microsoft/>

# Microsoft Interview | Set 34 (On-Campus)

**1st Round (Online)**

15mcq 30mins – Most from C/C++. Few from OS

**2nd Round: Coding Online (1 hour)**

1st quest: <http://www.geeksforgeeks.org/intersection-of-two-sorted-linked-lists/>

2nd quest: <http://www.geeksforgeeks.org/check-for-balanced-parentheses-in-an-expression/>

***13th august:***

**Top 20 students were selected for the next round. 8 had direct interviews while the rest 12 of us had another elimination round. The selection was done using the total score of both the online rounds**

**Elimination Round: Pen and Paper (20 mins)**

Write the code implementing a queue using stacks.

**Interview 1: Technical (1 hour 15 mins)**

The interviews were on in parallel and when I went for my 1st interviews some were already rejected while some even had their 2nd and 3rd interview rounds.

Asked about myself and my history followed by technical questions.

1. Suppose you have an array of elements which has duplicates except 1 number, ex. 1,2,3,4,3,2,1. You need write a pseudo code to find the unique number. Here ans – 4. Also asked the complexity of my code which was O (n).
2. Tell the pseudo code to reverse a linked list.

I started to make the logic for O (n) but he said it might not be possible to do it in 1 iteration so not an issue. But I gave him the logic of O (n) and 1 iteration.

1. You have a matrix a[m] [n]. Transpose it into a matrix b[n] [m] in minimum iterations. I could think of m\*n/4 at most.
2. Questions on OOPS
3. Difference between OOPS and C
4. Difference between abstract classes and interface. Gave cases for me to tell the error or right ans in abstract classes.
5. DBMS: 5th largest salary of employees from a given table. I answered using rownum and then limit but he wanted a general ans. So all I could tell was using nested query.
6. Puzzles:

– There are 25 horses. Only 5 can run together at most. You have no timer. Min no. of runs reqd. to find the fastest horse.

– There are 4 people who want to cross a bridge. Minimum time they take to cross a bridge is 1, 2, 7 and 11 respectively. There is only 1 torch and at most 2 people can cross a bridge at a time. But no one can cross the bridge without torch (Someone has to come back to give the torch). Find minimum time in which all 4 cross the bridge.

2nd puzzle I 1st answered 22 but then corrected myself and answered 18 (1 and 2 cross. 1 comes back. 7 and 11 cross. 2 comes back. 1 and 2 cross – total time 2 + 1 + 11 + 2 + 2 = 18).

I was informed 5 minutes after my interview to be ready for the 2nd Round.

**Interview 2: Technical (20 mins)**

Was asked about self, my project on cloud computing and questions related to it.

1 technical question.

Write a code to delete x elements after 1st n elements.

I wrote the code but missed the case where n = 0. So as he was checking the code I told him the case I had missed. He was confused if the code would work if there were less than n + x elements but I showed him that it would.

Was a short interview compared to others and was scared of being rejected but finally was called for the hr interview in sometime.

**Interview 3: HR (20 mins)**

He first told me about the code I had written in the elimination round that it was the best code he got in the day. Following it were typical hr questions.

Tell about myself, my strengths and weaknesses. Why do I want to join Microsoft?

Why should Microsoft hire me?

About my college project and my summer internship project.

What would you like to improve in yourself 3 years from now (other than knowledge)?

**Finally after the whole day of interview I was selected with 1 more guy from our college. Thanks to** [**geeksforgeeks.org**](http://geeksforgeeks.org) **and** [**geeksquiz.com**](http://geeksquiz.com) **for helping me prepare and crack the interview.**

**Important Points:**

1. Always show a lot of energy in the interview.
2. Microsoft gives great importance to values and ethics so stick to them in your questions.
3. Speak out whatever approach you think in the interview. The interviewers do not want to sit idle. They love to understand how you think.
4. Do try showing company’s goals as yours.

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-set-34-campus-2/>

# Microsoft IDC Interview | Set 35 (On-Campus for Internship)

**Online test:** This test was organized by cocubes.com, and had to be completed within an hour.

There were two coding questions:

1. There is a linked list whose node is defined as follows

struct node  
 {  
 int x,y;  
 node\* next;  
 };

We had to implement a function which takes the head of linked list, and if any three consecutive points lie on same horizontal or vertical line, we had to remove the middle node. The linked list will either be empty or will contain atleast two nodes. The function prototype was:

void remove(node\* head)  
 {  
  
 }

Example:

Input: (1,2)->(2,3)->(2,4),(2,5)->(3,4)  
Output: (1->2)->(2,3)->(2,5)->(3,4)

2. Given a sorted array, convert it into a height balanced binary search tree. A height balanced tree is one in which for every node, the height difference of left and right subtree is at most 1. Node of binary tree was:

struct node  
 {  
 int data;  
 node\* left;  
 node\* right;  
 };

Function to be implemented was:

node\* binary\_tree(int\* ar, int len)  
 {  
  
 }

**Interview:**  
 There were 3 rounds of interview, and we had write code on paper.

**Round 1:**  
 There were two questions:  
 1. Given a string, remove all continuous occurences of ‘a’ and any occurence of ‘b’.  
 Example: Input: “aacbccdbsssaba”, then output: “acccdsssa”

2. What data structure should be used if we have to implement insert and delete functions in a text editor? The functions should be as fast as possible.

**Round 2:**  
 Question 1: Given a string and two positions in that string, shuffle the string, that is, move the given substring to the front. Example:  
 Input: abcdefgh, 4,6  
 Output: defabcgh  
 This has to be done inplace with O(n) time complexity.

Question 2: How to implement dictionary data structure in C++? What kind of hash functions shall we use? How to manage collisions?

Question 3: How would you implement vector data structure in C++ on your own? What would be the accessing time complexity? How can you make it O(1)? How to resize the structure?

**Round 3:**  
 Question 1: Given a k-ary tree, how to print the elements layer wise?

Question 2: Given a singly linked list and a number ‘n’, write code to reverse every ‘n’ elements of the linked list. Example:  
 Input: 1->2->3->4->5->6, n=3  
 Output: 3->2->1->6->5->4

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-set-35-campus-internship/>

# Microsoft Research India Interview | Set 36 (On-Campus for Internship)

Recently Microsoft research india invited application for internship.They shortlisted based on CV (projects related to your topic of interest and CGPA).

After shortlisting I had one telephonic interview of about 40 minutes:  
 Main focus was on the project I did. I had to explain every thing I did in my project its basic utility and model.Interviewer asked me key challenges faced, key aspects used and many other things related to my project.  
 Then he asked me one data structures question:  
 Given n numbers you need to find min and max.How many comparisons are required.. optimize the approach  
 ( <http://www.geeksforgeeks.org/maximum-and-minimum-in-an-array/>)

Then he was satisfied with the answers, he asked few more questions based on my project. I pushed some codes of project on github and provided link of the same in my cv so he asked about who came up with the design and how did you do this and that..

Finally the interviewer offered me internship offer at MSR India.

Special tips:  
 Be confident during whole interview.  
 Have positive attitude and talk with the interviewer while solving any question.

I want to thank geeksforgeeks for providing such a useful bank of questions.

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

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<http://www.geeksforgeeks.org/microsoft-research-india-interview-set-36-on-campus-for-internship/>

Category: [Interview Experiences](http://www.geeksforgeeks.org/category/interview-experiences/) Tags: [Microsoft](http://www.geeksforgeeks.org/tag/microsoft/)

# Microsoft Interview | Set 37 (For SDE-1)

**Skype round:**  
 1) Print the last n lines of a file (Hint : treat it like a linked list)  
 2) Length encoding –  
 Input: aaabbc Output: a3b2c1

**F2F round 1:**  
 1) Given a few points in first quadrant – (x1,y1) …..(xn,yn) and given another set of points (a1,b1…..an,bn), determine whether all the points (a1,b1…an,bn) have already occured in (x1,y1)…..xn,yn)

2) Given a graph where every two nodes are either friends or enemies with each other. Find a way to go from one node to the other.  
 Restrictions:  
 1) You can also travel from one node to next if they are friends with each other  
 2) You have some “magic potions”. You can convert an enemy path to a friend path with a magic potion.

Find the path with min number of magic potions required.

**F2F round 2:**  
 1) Discuss one good, one bad feature of facebook. How you will redesign it to improve it?  
 2) Implement auto complete.  
 3) Given numbers a1…an find the minimum index, whose element occurs twice in the array. Do it in one pass of the array ( or less that O(n) if possible?)  
 e.g 3 2 4 4 2  
 Output : 1 (is the lowest Index) since, ‘2’ repeats twice.

Follow up:  
 Return the element that repeats at the earliest in the array. Output: 4

**F2F round 3:**  
 With GM. General discussions about projects/work culture/goals.

I got a call after two days that I’ve been selected. Many thanks to geeksforgeeks.

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<http://www.geeksforgeeks.org/microsoft-interview-set-37-sde-1/>

# Microsoft IDC and IT First Round Questions

Microsoft conducted their first round of shortlisting for placements and internship. The online coding round was organized by CoCubes like last year.

The test was for 1.5 hrs and had 2 coding questions. Allowed programming languages were C, C++ and Java.

The questions were as follows:

1) Given the head of two linked lists , find the merging point of both the linked lists. In case the linked lists do not merge then return NULL.

2) Given a 2d array of 0s and 1s where 0s represent water and 1s represent land. A connected patch of 0s count as one single water body and if a water body is covered by 1s all around it then it forms one pool. Write a function to return the total number of pools in the 2D matrix. In case a water body is present on the boundary of the array immediately return -1.

Sample test cases :-

Input :  
11111  
10101  
10111  
11111  
11111  
Output : 2  
  
Input :  
11110  
11111  
11011  
11011  
Output : -1  
  
Input :  
11111  
10111  
10011  
11011  
11111  
Output : 1

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Category: [Interview Experiences](http://www.geeksforgeeks.org/category/interview-experiences/) Tags: [Microsoft](http://www.geeksforgeeks.org/tag/microsoft/)

# Microsoft IDC Interview Experience | Set 38 (For Internship)

I completed my internship at MS-IDC this summer. Here is my interview experience.

**Round 1(Online MCQ):**  
 Varying level of difficulty. 15 MCQs. Topics: C/C++, data structures, DBMS, OS, Networking

**Round 2(Coding test-online):**  
 Two coding questions were given. Fairly simple. One was to print nth element from last in a linked list. Other was to convert a number to base 4 number

**Round 3(Telephonic Round):**  
 He asked me about myself, and a couple of questions from ethical hacking(I had written about it in my CV). Then he asked me to develop an online chess game. The entire class definition, data structures to be used and graphics implementation etc were discussed.

The interviews were held in a college in Delhi.

**Round 4:**  
 Firstly he asked me about myself, then my projects. Then he asked me to write a code to remove comments from a C file. Then he asked me the approach to detect a loop in a linked list. Then he asked me to design a system that would add two polynomials.

**Round 5:**  
 He gave me a very tough question of graphs. It was similar to a traveling salesman problem but had two paths, one path or no path to every other city. One possible way of reaching the other city was via plane and the other was a taxi. The salesman had a fixed number of coupons for both taxi and plane. He had to save maximum coupons at the end. Then, test cases for this problem. I wasn’t the only interviewee in this round. I had another person sitting next to me. He was rejected while I made it through.

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# Microsoft Interview Experience | Set 39 (On-Campus)

?I like to thanks geeksforgeeks.org for my ?entire journey in placement.

**Round->1 (multiple choice questions)**  
 1. Intersection of two linked list.  
 2. There is a 2 d array. 0 signifies water and 1 signifies land. an island is connected 0s(in all 8 direction) and no 0 should be on the outer edge of two array. You have to count the bumber of such possible array.

You have to solve both coding question to enter in 2nd round

In round 2 interviewer were very cool and supporting. try to shake hand while entering and ask every detail of problem.

**Round 2:**  
 1. Explain yourself.  
 2. A backtrack problem on sudoku.  
 write full code on paper in any language. write failure case of your code.  
 3. Discussion on projects.  
 i had done a project on big data on frequent itemset.they were really interested in each and every detail of big data paradigm.  
 4. Your strength and weakness and extra curricular interests,

**Round 3:**  
 1. there is a 3 million character string. u have to print the count of occurrence of each node.  
 do not jump on to the question. wait for him to complete. i gave count sort pf O(n) solution but he was focusing on more optimized one.

2. again he jump to my big data project. he gave me a real life scenario and asked to design it.  
 you are giving the information of about 10,000 sites about their users and the product they had bought. you are a consultant. give a big data solution to find out the places where users had bought the jewellery in large amount. also give the name and details of users who had bought jewellery in large amount.

he was quite impressed by my design. we discuss the design for about 30 minutes. then instantaneously they told me that i am selected for 3rd round.

**Round 4: (HR round)**  
 HR was very cool  
 1. tell me about yourself.  
 2. why Miscrosoft.  
 3. tell any 4 of your favorite product of Miscrosoft  
 4. tell 2 good and 2 bad points of Microsoft.  
 5. Why you opt for your college.  
 he was trying to check my planning skills to compare 2 entities.  
 6. Why computer science.  
 7. Tell any 1 social problem that bothers you the most.  
 8. Suggest 3 solution to above problem as a technical guy.  
 9. what is big data  
 10. what will you do if your colleague is not working  
 11. what if you are not agreed with your senior

My tips is to stay cool and enjoy the interview. carefully tell your weakness. Don’t worry to ask questions from interviewer. Take proper use of the time. Big data helps me a lot in every round.focus on designing problems along with data structure.

geeksforgeeks,org alone is sufficient.

Best of luck to all guys who are preparing.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-39-on-campus/>

# Microsoft Interview Experience | Set 40 (Off-Campus)

I got mail one day that I have an Interview scheduled on next day in Bangalore.

**Round 1 onsite:**  
 I think this round was just to check whether I take care of all boundary cases for problems and also my speed? Problems were quite easy then what I expected but they made it very lengthy to check my speed

General questions 1 :Tell me about yourself?

GQ 2 : Tell me about your work in your current Organization ?

Q1: You have given an array of 0’s and 1’s. Write the code to swap only two elements in the array so the number formed by this array keeping all the elements in same order should be largest one.

I/P: 11000101 O/P: 11100100

Now he modified the question: Let’s say instead of array, a number is given. Swap two bits of this number find out the maximum number formed after swapping thse two bits

Again he modified that Lets the array elements are decimal numbers (Not 0s and 1s). Swap two elements and find out maximum no formed. Write the code.

Again he modified the same questions that lets say a number is given, swap two digits of the number and find the maximum number formed by it.

He was just checking my coding speed and making sure whether I check all boundary cases.  
 Q2: Pairwise swap elements of a given linked list (of course by changing links). After looking at my code he said that I have made a segmentation fault but I try to convince him that I wrote the code correctly and he was convinced.

After this round HR got a mixed feedback so he decided to go ahead with my next round.

**Round 2:**

This round was basically focusing on my problem solving abilities. Coding was not tough but thinking and approach was critical.

Q1: A directed graph was given. I had to make a function which take a value of node as input and print all the nodes which had incident edge on the input node and also print all nodes to which input node has a direct edge. He kept ignoring the solutions I told because he wanted it to solve in a particular way.  
 Q2 : Find the largest rectangular area in a Histogram. I read this question long before but couldn’t remember it but fortunately I was able to solve it with few difficulties.

**Round 3:**

Q1: basics of computer science: Multithreading, long discussion on dynamic memory allocations, memory leak, some OS fundamentals. Some compiler design questions where he helped me and finally we reached to the solution.

Q2: You have a stream with millions of words in it. Find most frequent 10 words in that stream at every instance

Q3: How will you store a very big number if it can’t be store in any data type?

**Round 4:**

This was a designed round and interviewer was principal development manager.

Again round started with ‘tell me about yourself and the work in the current Organization’.

Question 1: He opened the site msn.com and asked me to design a part of ‘stockscreener’ hierarchy using my OOPs and MVC understanding. And asked me write a class which will show the user that if stock market is open or closed. If it is closed then I have to print when the market is going to open in future. To find the future date he gave me a list of Holidays, Half days and obviously market will be closed on Weekends. So store this information in a proper Data structure and use it in finding future date.

This question took around 35-40 minutes of time

Q2: For a Sudoku game, I had to design a screen using OOPs and MVC understanding. Where a column can be empty where you can put a editable number in future or an editable number which you can change as per your requirement or a fixed number(inserted by system only and user can’t change them). This question was an easy one so hardly took 15 minutes.

Q3: Simplest of all, for a given BST I had to print all the number in ascending order which lies in a given range in best possible optimum way.

**Round 5:**

This was the last round and the interviewer was ‘Partner Development Manager’. I knew he has veto power and today he is the one who will decide my fate, so I was more nervous and conscious but he made me so comfortable and welcomed. For first 10 minutes or so we were just chatting about our views on movies and asked me who do I think most underrated actor in Bollywood? I said Jimmy Shergill and he said he also think the same.

Asked about my college life and achievements? What is the biggest achievement so far? Why do I have less percentage in 10th class? Why are you changing the company?

Then he moved to puzzles.

Q1: There are N people in a room and one of them is a celebrity. In the room everyone knows the celebrity and celebrity doesn’t know anyone in the room. You have 1 question ‘do you know him?’ and you can ask this question N times to anyone in the room. The person to whom you are asking question will reply ‘Yes, I know this guy’ or ‘No, I don’t know this guy’. By asking the same question N times to whoever you want to ask you have to figure out who is celebrity in the room. If A knows B doesn’t mean B knows A.

After that He asked my 2-3 more puzzles which I knew already and I told him so he asked the solution and moved on.

Q2: A Matrix of 1s and 0s is given, all zeros are water and 1s are land, first find out the number of ponds in the array (Reverse of islands problem). If one change can convert 1s in to zero then find out minimum number of changes that we need to make so that there will be only one pond in matrix.

In the end, he asked me whether I am preparing for other interviews or higher study so I knew all the puzzles. I said No but I like puzzles and I am good in them.

This was all. A big thanks to GEEKSFORGEEKS, you guys made our life so easy. You are Google for me as far as an interview preparation is concerned.?

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-40-off-campus/>

# Microsoft Interview Experience | Set 41 (On-Campus)

**MCQ Round:**  
 15 MCQS were asked on c,c++, OS.

**Coding Round:**  
 1) Given a linked list of co-ordinates where adjacent points either form a vertical line or a horizontal line. Delete points from the linked list which are in the middle of the line

Eg:  
 (0,10) -> (1,10)->(5,10) -> (10,10)  
 |  
 (10,5) -> (20,5) -> (40,5)  
  
should be changed to  
 (0,10) -> (10,10)  
 |  
 (10,5) ->(40,5)

2) Given a sorted array,convert it into bst

**Group Fly Round:**  
 <http://www.geeksforgeeks.org/a-linked-list-with-next-and-arbit-pointer/>

The code should be written on paper and should be error free. No extra space should be used.

**Interview 1:**  
 1) Given a linkedlist of moves of 2 players in tic-tac-toe game . Find who has won the game.

**Interview 2:**  
 1) Given a pile of 9 objects. 2 players take turns to pick 1 , 2 or 3 objects . The last one to pick is the looser. What is the winning strategy? wining strategy for 9 coins

2) Asked to how to design a cache for dns records. I have told different approaches like First-in-First-Out, less frequently used,least recently used… He asked me to tell the strategy and code it. I told LRU and implemented this.  
 <http://www.geeksforgeeks.org/implement-lru-cache/>

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# Microsoft Interview Experience | Set 42 (For SDE1)

I received interview call from Microsoft (Bangalore) for CRM team, SDE1 position for 1.5 year experience.

**Round 1: 1 hour**

It was a GD like interview, with multiple people in same room given same question and interviewer was discussing individually with every person.  
 Given 2 arays if integers, sort the first array based on order of 2nd array.  
 http://www.geeksforgeeks.org/sort-array-according-order-defined-another-array/>  
 I started with brute force approach, then optimized to binary seacrh and then hashmap

**Round 2: 1 hour**

Same as previous round, one interviewer, multiple candidates same question individual discussion.

If you have a stream of incoming characters, reverse and print the string as soon as input is finished. Write a code for same

**Round 3: F2F 1 hour**

One-on-one

Flatten a multi-level linked list  
 http://www.geeksforgeeks.org/flatten-a-linked-list-with-next-and-child-pointers/>

Took a while to solve this one.  
 First I used a stack and then formed an algo without stack an without recursion.

**Round 4: F2F 1.5 hour**

A printed sheet of a c-program was given, had to find syntactical and logical error in program.

Connect all nodes of a binary tree which are at same level.  
 You can not store level information  
 http://www.geeksforgeeks.org/connect-nodes-at-same-level/>  
 <I used a variation of level order traversal>

**Round 5: Hiring Manager <1 hour**

Detailed discussion on current work, was grilled a lot

Reasons to leave current company

Reasons to join Microsoft

and other such questions

**Tips:**

Keep thinking loud and discussing your thought process with interviewer. They will keep giving hints for you to reach solution.  
 Find a solution, any solution, and keep optimizing it.

Hope this helps. 

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-42-sde1/>

# Microsoft Interview Experience | Set 43

For Microsoft Bangalore CRM team.  
 Experience: 1.8 years.

**Round 1:(Written test)**  
 1. Given a sentence say, “these are twelve pens and thirty two sheets” convert this sentence to “these are 12 pens and 32 sheets”. We were asked to do it inline. The interviewer called each one of us and asked us to explain the approach.we were asked to minimize the space and time complexity.

**Round-2(Technical)**  
 He asked me to Introduce myself and then started asking me what do I know about CRM.(Go through the website before attending the interview)

1. Given a client and a server and each of them has a queue in it. Client has to copy the contents of the queue to the server once the internet connection is up. The amount of data which it can copy at one go is fixed(Say 5 units). Design an approach for this. Let’s say input queue is partitioned as 2MB,4MB,10MB,6MB and the fixed size of the window is 5MB. The output queue also has the same partitions as the input queue. (He was basically testing how i can use operating systems concepts, designing approach and data structures together).

2.Deep discussion on the current project which i’m working on currently.

3.Permutation of string with test cases.

**Round-3(Technical)**  
 He asked me to introduce myself.

1.He asked me about the current project which im working on.. and a few questions on the technologies which were used in the project.

2. Given N prisoners who are standing in a line and M hatred relationships among them say,P1 hates P2, P3 hates P1, P3 hates P5 etc.. If any of the hate relation contains invalid cases like P1 hates P3 and P3 hates P1 then return false. Output the final order in which the prisoner should stand in the line so that they don’t hurt each other. say, if P1 hates P3, P3 should stand behind P1 so that P1 cannot hurt him. He asked me to code for the same.

3.Given a root, particular node and distance in a binary tree,.. say (struct node \*root, struct node \*n,int k) print all nodes which are at a distance of ‘k’ from node ‘n’. He asked me to write the code.

**Round-4:(Technical)**  
 He asked me to walk him through my resume.

1. Why Microsoft?  
 2. Why do u want to leave your current company?  
 3. Deep discussion on the current project which I’m working on.  
 4. Given a binary tree how to construct the mirror tree out of it. I gave a recursive solution. He asked me to write the code for it. He asked me to write the same without using recursion and test cases for the program.

**Round-5 (HR)**  
 1.Discussion on current compensation etc.

Overall, it was really a good experience. GeeksForGeeks, you guys have made our lives so easy! Thanks a lot. 😀

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# Microsoft IDC Interview Experience| Set 44

I recently got an internship offer from Microsoft IDC and would like to share my interview experience. It’s a little long because I’m sharing my experience, not just the questions.

**First round (Online):** This was common for both Microsoft IT and IDC. There were 2 coding questions (1 hour) and 20 MCQs (30 minutes). MCQs were mostly based on data structures, C/C++ and a few on OS. In the coding questions we were given the main function, we just had to fill in the code for the functions.

Coding Question 1: Find the point of intersection of two linked lists. (Bonus points for checking if the given linked lists are circular)

Coding Question 2: Given a matrix which consists of 1’s and 0’s, a pool is defined as a collection of 0’s completely surrounded by 1’s. Example,

1 1 1 1 1 1 0 0 0 0 1 1 1

1 1 1 0 0 1 1 0 0 1 1 1 1

1 1 0 0 0 1 1 1 1 1 1 1 1

1 1 1 1 1 1 1 1 1 0 0 0 0

This matrix contains only one pool since only one group of 0’s is completely surrounded with 1’s

Find the number of pools in a given matrix

I solved both the questions but could not pass all the test cases for the second question. But I solved the bonus problem in the first question and my overall score became high. So if you get any bonus questions, do not ignore them. They may help you score really well.

**Second Round (Telephonic):** The interviewer started with talking about Indore (my hometown), my weaknesses, my hobbies etc. So basically he was trying to calm me down (Tough I wasn’t panicking. I’ve no idea why he thought I was :-P). Then he began with the questions.

Question 1: Suppose you are the in-charge of a project in which you need to develop an online railway ticket reservation system. What are the things that you would consider while planning out the project and why?

I was excited since I had prepared this answer already. Basically it’s the kind of question where they wish to check the scale at which you think and how much you keep yourself updated with the latest technology. Firstly I talked about how our requirements would help in determining which technology to use. I told him about my projects in php & ASP.NET and then compared the two in terms of cost, scalability, support, ease of use etc. Then I told him a little bit about UI/UX and then finally about the factors that could cause our website to crash. We talked about database backup, restore etc. in short. There is no perfect answer to this question, you just need to show them that you think about the “Big Picture” while designing the system. When he was fully convinced, we moved on to the next problem

Question 2: You are given a pointer to a node in a linked list (Not the pointer to the Linked List!). How will you delete this node?

Frankly, I never heard this question before. It came to me as a big surprise that this question was quiet common but I missed it during my preparation! I got nervous at this point. But I remembered that I should let the interviewer know what’s going on in my mind, so I kept talking. But after 5 minutes he moved on to the next question and told that we would come back to this question again.

Question 3: You are a project manager & you have 100 hours to complete a project. How much time will you give to planning, coding and testing?

At this point I regretted sleeping during the Software Engineering Lectures. I thought making wild guesses would give a very bad impression. So instead of giving him numbers I told him that according to my experience coding would take maximum time, followed by planning and then testing. He laughed at my answer (Ohh yeah… they do that -\_-). But maybe he thought of me as a kid who hardly has any experience and was kind enough to tell me that it’s not how projects in industry work. They give maximum time to planning because if the planning is done properly then coding hardly takes any time! (I know most of you are with me on this :-P)

But while he was telling me all this, I got the time to think about the second question. But the problem was that my answer wouldn’t work when the node was the last node in the list. And this is exactly what I told him before answering the question. Surprisingly my answer was correct. He asked me what I will do in case the node was at the end? I said I had no idea. Then he told me about “dummy node” but he told me that he was satisfied with my answer.

So my interview took more than 45 minutes (unlike my friends’ which went for 20-30 minutes! :-O). I thought I messed up a lot & won’t be selected for the next round. But I was (I guess others messed up more than I did ;-))

**Round 3 (Face-to-face in Microsoft IDC, Hyderabad Campus):** So the campus is huge, great interior, facilities etc. Within half an hour, I was called for my first round.

**F2F 1:** The interviewer himself came in the waiting area and took me to the interview room. Well it was a big hall with 8 interviewers sitting far away from each other. They all had their laptops, pens and few blank sheets with them.

Interviewer: Why don’t you tell me something about youself?

I gave him a breif introduction about myself (laid special emphasis on the fact that I am a Microsoft Student Associate ;-))

Interviewer: Okay so let’s jump on to the questions… You are given a string that consists of Rs, Gs and Bs. You need to sort the string so that all the Rs come towards the front, Gs in the middle and Bs towards the end.

Approach 1: Brute force i.e. simple selection sort

Approach 2: Use 3 counters r, g, b and count the number of Rs, Gs and Bs in the first parse and put those many Rs, Gs and Bs in the second parse. (he smiled and said it’s a good solution but he wants a different answer)

Approach 3: In the first parse, bring all the Rs towards the front. The remaining string would have only Gs and Bs. Similarly, in the second parse, collect all the Bs at the end (he said I can do better)

Approach 4: It took me a little time to think about this but he gave me hints and I finally came up with an algorithm. He asked me to code it and started doing his own work. I walked him through the code (and tried highlighting how I took care of the invalid inputs, corner cases etc. :-P)

Interviewer: Well… that’s all from my side. Do you want to ask me any questions?

Well I didn’t mind a bit of chit chat 😛 So I started asking him about the most challenging project he did in MS and about the development strategy that they follow for development of cross platform apps. He was nice and told me everything with a lot of interest.

**F2F 2:** 2 of my friends were rejected in the first round itself, while the rest 3 of us went to the next round. This interviewer looked very serious.

Interviewer: Tell me something about yourself…

With his expressions he didn’t seem to be interested in my answer at all and quickly gave me a question.

Interviewer: Okay so you are given a string that consists of vowels, consonants and other chars. You need to sort the string so that all the vowels come towards the front, consonants in the middle and other chars towards the end.

I couldn’t be more happier at that moment 😀 I didn’t tell him that I had been asked this question in the previous interview & told him my approach (Approach 4 from last interview). But he understood that I knew the answer and so he changed the question 😛

Interviewer: You are given a matrix that consist of chars and you need to search for a string in that matrix. Now the string can be formed by going into any direction from a particular matrix position. So the only constraint is that the cells’ corners must touch.

This was an easy problem and I told him my method

Interviewer: Now I’m putting one more constraint over this. You can not traverse an element more than once.

This was again easy. I just used a dummy character (\*) in place of the chars that had already been visited and restored the char back after the recursive step. He got a little confused by this dummy char concept but then I explained him why it would work and he was satisfied with my answer. He asked me to code it then. I made a few mistakes which I corrected later but overall this round was good 

**F2F 3:** This was the final round & was supposed to be an HR round. But since they had to finish off the interviews they sent me to a technical person! (I peeked into his laptop and saw that he had the feedback of my previous rounds and also the questions which were asked to me!)

Interviewer: Tell me something about yourself

I again gave the same answer (ofcourse with emphasis on MSA thing :-P)

Interviewer: What could you have done better in any of your previous interviews?

I told him about a small bug in my code. I forgot to increment a variable and the interviewer ignored it.

Interviewer: So I see you have worked on Hadoop. Can you tell me what you did in your project?

I was expecting this question and gave him a good explanation on this. My project was on network intrusion detection systems using big data.

Interviewer: Since you’ve worked on IPs, let me give you a small problem. Convert the following number into IPv4 format.

It was fairly easy and I wrote the code. I made a few mistakes in my code (I was really nervous this time) but corrected them later

Interviewer: Okay so tell me something about garbage collection…

Told the definition

Interviewer: In which language do we have garbage collection?

I told C++ (yes… that’s what you do when you are under so much of pressure -\_-) He gave me a strange look and then I realized what I told him! But I guess he understood that I was panicking

Interviewer: Okay… what are unicode strings?

I never expected this question in an interview and I gave a very bad definition. He didn’t looked impressed at all.

Interviewer: Umm… let me give you a coding problem. You are given a canvas and you have to draw a line from point A to B. How would you go about doing this problem?

Phew… this question would save me (atleast that’s what I thought). But I didn’t consider the corner cases. He gave me a hint and luckily I could solve the problem successfully.

Interviewer: That’s it from my side. Do you have any questions for me?

Yes ofcourse! I asked him about the most challenging project that he did but he seemed to be a bit confused about what to answer. So I explained him my question again and gave him a few examples of what other interviewers answered (It felt awesome at that moment because he was in the same position as I was 10 minutes back then :-P)

The experience was good because they focused only on technical stuff & the questions were also good. I really liked the helping attitude of people there.

I would like to thank geeksforgeeks for helping me out in the preparation for this interview. I think you guys are doing a great job helping out students 😀

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<http://www.geeksforgeeks.org/microsoft-idc-interview-experience-set-44/>

# Microsoft Interview Experience | Set 45

**Round 1:**

Written coding test:

Given a number in a linked list find the next greater permutation.

**Round 2:**

F2F 1:  
 With senior developer:

1. given an array. write a function to find if the array satisfies the condition min^2

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-45/>

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# Microsoft Interview Experience | Set 46 (Onsite)

I had my onsite rounds with Microsoft.

There were 4 interviews.

**Round 1**. Given a circular buffer, write Get( ) and Post( ) methods . Get(n) should return the n characters in the string, if ‘n’ elements are not present, it should throw an exception. Put( string s) should put each of the characters of string s into the buffer without overwriting anything which hasn’t been read by Get()

**Round 2** Longest common substring from 2 given strings. As I couldn’t give optimal solutions, asked me to write a strcmp(str1, str2) method

**Round 3** Write a secure and safe strcpy( ) method . Asked me some theoretical questions about indexing and triggers for sql

**Round 4** Write a program which generates XLS column numbers given the column number in decimal.  
 e.g.

Input Output  
1 A  
2 B  
26 Z  
27 AA  
52 AZ  
53 BA  
...

Good Luck to future interviewers

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-46-onsite/>

Category: [Interview Experiences](http://www.geeksforgeeks.org/category/interview-experiences/) Tags: [Microsoft](http://www.geeksforgeeks.org/tag/microsoft/)

# Microsoft IDC interview Experience | Set 47 (For 1.7 Years Experienced)

For Microsoft Bangalore CRM team.  
 Experience: 1.7 years.

**Round 1:(Written test)**   
 Question 1 : Given a binary search tree . Print its level order traversal in reverse order level wise .eg if level order is 1234567 then required output was 1327654

Question 2: Given a binary search tree , Print its zig zag traversal .

Complete syntactically correct code was required with all corner cases covered .

**Round-2(Technical)**  
 He asked me to Introduce myself and then started asking me about my project

1. Print the given matrix in spiral order .

<http://www.geeksforgeeks.org/print-a-given-matrix-in-spiral-form/>

Code should be syntactically correct with all corner cases handled in a single attempt.

2.Count all possible decodings of a given digit sequence .

<http://www.geeksforgeeks.org/count-possible-decodings-given-digit-sequence/>

Initially I started off with a recursive solution and came up with Dynamic programming solution afterwards. Full working code was required without any corner case missing.

He asked to list down all the possible test cases for the given scenario . He was very particular about the Test cases .

**Round-3(Technical)**  
 He asked me to introduce myself.

1.He asked me about the current project which i m working on.. and a few questions on the technologies which were used in the project.He was very particular about my project discussion.

2. Given a linked list consisting of String in each Node . Given just a pointer to the head Node , I was required to find whether the resultant String formed by combining all the Nodes of the linked list is a palindrome or not .

eg – Consider this linked List structure

“aba” -> “cd” -> “efe” -> “d” -> “caba”

Hence this structure is palindrome . Was required to check for palindrome online as Linked List length could be infinite at any point of time .

I was required to discuss and write full code on the whiteboard starting from Node structure to the end logic .

After that i was required to list down Test Cases for the same .

**Round-4:(Technical)**  
 He asked me to walk him through my resume.

1. Why Microsoft?  
 2. Why do u want to leave your current company?  
 3. Deep discussion on the current project which I’m working on.  
 4. Write code for the crossword puzzle game .I said I have not played it earlier .

He then asked me to discuss and write code for Sudoku game in whiteboard. I wrote it using Backtracking

<http://www.geeksforgeeks.org/backtracking-set-7-suduku/>

5. Suggest some improvement which u can carry out in Microsoft Office .

**Round-5 (HR)**  
 1.Discussion on current compensation etc.

A big Thanks to GeeksforGeeks for providing such a brilliant platform for interview preparation .Keep up the good work 

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<http://www.geeksforgeeks.org/microsoft-idc-interview-experience-set-47-1-7-years-experienced/>

# Microsoft interview Experience | Set 48 (For 1.5 Years Experienced)

Here goes my experience.

**Skype Round:**

1) Level order traversal of a binary tree. Extend or modify the code to zig zag traversal.

<http://www.geeksforgeeks.org/level-order-tree-traversal/>

<http://www.geeksforgeeks.org/level-order-traversal-in-spiral-form/>

**Face to Face Round 1 :**

1) Questions about my previous work.

2) Sort an array of 0’s, 1’s, 2’s.

<http://www.geeksforgeeks.org/sort-an-array-of-0s-1s-and-2s/>

**Face to Face Round 2 :**

1) Print last n lines of a file

<http://www.geeksforgeeks.org/print-last-10-lines-of-a-given-file/>

2) Right and Top view of a binary tree

<http://www.geeksforgeeks.org/print-right-view-binary-tree-2/>

<http://www.geeksforgeeks.org/print-nodes-top-view-binary-tree/>

**Face to Face Round 3 ( Hiring Manger) :**

1) Questions about my previous company work and why would I want to shift.

2) Given a matrix which is spirally sorted. Remove an element and insert another element without messing up with the sorted order. More importance was given to coding

**Face to Face Round 4 ( Bar Raiser ) :**

1) Given an array filled up with 1 to n^2 in randomized order. Fill it in a square matrix of size n.

2) Give test cases for atoi function.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-48-for-1-5-years-experienced/>

# Microsoft interview Experience | Set 49 (For Internship)

Recently Microsoft visited our campus for SDE intern. The process took over 4 months.

**Round 1 (Online MCQ’s)**  
 time- 30 minutes.

This was conducted on CoCubes.com ,there were around 25 questions of varying level of difficulty. Topics: C , C++ , Aptitude.

Around 60 students out of 150 were shortlisted for the next round.

**Round 2 ( Online Coding Round)**  
 time – 90 minutes

This was conducted on the same day. There were two questions of data structure.

1) Write a function to check whether the parenthesis ( “( )”, “{ }” , “[ ]” ) in a given string are balanced or not.  
 [http://www.geeksforgeeks.org/archives/6547](http://www.geeksforgeeks.org/check-for-balanced-parentheses-in-an-expression/)

2) Write a recursive function to make a list from two given Linked lists, that contain intersection of the elements present in the given lists inplace.

37 students were shortlisted for the next round.

**Round 3 (Telephonic interview)**  
 time- 33 minutes  
 1. I was asked to introduce myself.  
 2. Then there were couple of questions on the project i was working on. As my project was in java as the front end and oracle as the back end, i was asked few questions on multithreading and sql.  
 3. I was then asked to explain the logic and the code to traverse a binary tree level by level but in spiral form.  
 <http://www.geeksforgeeks.org/level-order-traversal-in-spiral-form/>  
 4. Logic and the code for the lowest common ancestor in a binary search tree.  
 <http://www.geeksforgeeks.org/lowest-common-ancestor-in-a-binary-search-tree/>  
 5. Complexity of both the above codes and why such complexities.  
 6. i was asked questions on OS-  
 -Differentiate between mutex and semafore variables?  
 – What does a thread and a process share in common?  
 – What is a deadlock ?  
 7. There were few questions on C++.  
 – Polymorphism and runtime polymorphism.  
 – What is a virtual destructor?  
 I was asked if i had any queries and i asked about the work that interns will get to do in microsoft and the interview ended.

Only 9 were shortlisted for the further interviews. I was lucky enough to be one of them.  
 We were called to Microsoft India Development Center, Hyderabad.

**Round 4 (Technical)**  
 Time- 35 mins

The interview started with my introduction. Then there was a long discussion on my project. He told me the flaws in my project and asked me to tell how would i deal with them.  
 1) Given two arrays of integers( in random order), how would u determine the rank of an element.  
 For ex: let the two arrays be  
      46 32 16 73 57 2 and  
      86 7 98 3 75

     rank (46) = 6  
      rank (86) = 10  
      rank (2) = 1

i don’t remember the exact question but it was similar to this. Fairly simple. I suggested some approaches and i was expected to come out with the best approach.  
 then i was asked to code my solution and design the test cases for the same.

2) I was asked about my favorite subject.

3)Write and explain the code to connect nodes at same level in a binary tree.  
 http://www.geeksforgeeks.org/connect-nodes-at-same-level/

Soon after the fourth round some of us were called for the next round.

**Round 5 (Technical) (30 mins)**  
 1) Given a Y- linked list. Find the node at the intersection point.  
 2) Given a string of containing lower case letters and upper case characters. Find the number of occurrences of each character.  
 The question was further modified to include the special characters as well. I was asked to design the test cases for the same.  
 3) Remove duplicate characters from a given string keeping only the first occurrences (i.e order should not change). For ex- if the input is ‘bananas’ the output will be ‘bans’.  
 <http://www.geeksforgeeks.org/remove-all-duplicates-from-the-input-string/> (second method).

5 of us were called for the next round.

**Round 6 (HR ) (30 mins)**  
 There were questions like-  
 1) Brief me about your academic history.  
 2) The project you are currently working on and why did you choose this?  
 3) What improvements can you do in your project? Are you working under a professor or just out of interest?  
 4) How would your peers describe you?  
 5) How would your professors describe you and what are your weaknesses according to them?  
 6) How are you trying to improve?  
 7) What keeps you motivated?  
 8) What are your Short term and Long term goals?  
 9) Why Microsoft?

There were few other questions which i can’t recall now :p  
 It was the last round. It went pretty well.

The experience was awesome and i found that the people over there are very humble and i really liked their helping attitude.

**Some interview tips-**

Stay calm, CONFIDENT and keep yourself motivated.  
 Be honest.  
 Try to keep your approach clean and don’t mess up things in your’s as well as interviewer’s mind.  
 Don’t think about the results, just enjoy the interview process with a free mind 😀  
 Focus on building your concepts strong.

A big thanks to GeeksforGeeks for providing such a brilliant platform for interview preparation. Keep up the good work 

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-49-internship/>

# Microsoft interview Experience | Set 50

R1 Telephonic  
 1) Given a large int array, sort it. The ints are in the range 1-10.  
 2) In a 2-D array of 0’s and 1’s find the row with max 1’s, given that the array is sorted row wise.

R2 F2F  
 1) Find the maximum contiguous sum in an array. Had to write test cases as well.  
 2) don’t remember

R3 F2F  
 1) On a screen, there are multiple rectangles drawn, when a user clicks on any point, find the smallest rectangle enclosing this point.  
 2) Design poke feature in Facebook

R4 F2F  
 1) Implement file read operation asyncronously.  
 2) there are N large log files in sorted by timestamp. Merge them.  
 3) there are N large files containing operations sorted based on name to be done on an address book.  
 Address book is stored as name value pair in another file which is sorted based on name. Apply these operations and store in a new address file.  
 Had to write code and test cases for this.

R5 F2F (Hiring Manager)  
 1) some discussion on foreground and background thread.  
 2) What is common in 2 threads of the same process and what is the difference.  
 3) how would you communicate between 2 processes.  
 4) can we create connection between 2 processes similar to tcp connection.  
 5) difference between tcp and udp.  
 6) are packets lost in tcp if network is never lost.  
 7) create a macro for reversing an int in terms of byte e.g. an int has 4 bytes numbered 1234 the macro should return 4321.  
 8) in a 2-D array of chars, if a user selects any 4 boxes, check if these are continuous or not. continuous boxes are those which lie in 3×3 sub array surrounding the box.  
 9) design auto complete feature.  
 Some other OS questions on threads only.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-50/>

Category: [Interview Experiences](http://www.geeksforgeeks.org/category/interview-experiences/) Tags: [Microsoft](http://www.geeksforgeeks.org/tag/microsoft/)

# Microsoft Interview Experience | Set 51 (For SDE Intern)

Recently Microsoft visited our campus for SDE intern. The process took over 4 months.

**Round 1 (Online MCQ’s)**  
 Time-30 mins  
 This round consisted of 25 questions on C,C++,Aptitude(Probability) and OS.  
 60 students out of 150 were shortlisted for the next round.

**Round 2 ( Online Coding Round)**  
 Time-90mins  
 1) Write a function to check whether the string is valid or not.(Check Balanced Parenthesis{},[],()).  
 \*/header Stack.h was added in C++/\*  
 <http://www.geeksforgeeks.org/archives/6547>

2) Write a recursive function to form a list containing intersection of two given linked list without creating new nodes.

<http://www.geeksforgeeks.org/intersection-of-two-sorted-linked-lists/>  
 <http://www.geeksforgeeks.org/union-and-intersection-of-two-linked-lists/>

Students who solved both the questions were selected and some who solved one question were selected too.  
 37 students were shorlisted for the next round.

**Round 3 (Telephonic interview)**  
 Time-27 Min  
 -Firstly , the interviewer introduced himself. Then asked me to do the same.He asked to me bring a pen and a paper.  
 -He asked me to briefly describe everything I had written in my resume.  
 -Questions on my project  
      -Random Funtion  
      -Questions on Sql and Oracle  
      -What difficulties I faced during my project  
 -Asked me to whether I would like to answer Question on DS or puzzles.I said both.  
 -DS  
      -Height of tree in O(n).  
      – Find the minimum level where leaf node is found.  
      -When would height of tree and minimum level leaf node be equal.  
      -What is a height balanced tree.  
 -Puzzle  
      -Given a tray of red and blue balls.Separate red on left and blue on right with minimum swaps.  
      -Solve the same with Red, blue and green balls.(traversing only once!)

Only 9 were shortlisted for the further interviews. I was lucky enough to be one of them.  
 We were called to Microsoft India Development Center, Hyderabad. There were total 23 students from IIT indore, IIT hyderabad,

IIIT hyderabad and some other institutes.

There were 3 f2f interviews.

**Round 4 (Technical) (30 mins)**  
 1)Resume discussion.  
 2)Write an algorithm to merge two sorted linked list in place.I wrote an algorithm then he asked me to  
      -do it without using double pointer.  
      -without a dummy node  
      -asked me how would i test my solution.  
      -all possible test cases and how would my code respond to them.  
 <http://www.geeksforgeeks.org/merge-two-sorted-linked-lists/>  
 General discussion about project.  
 \*\Simplest round!\\*  
 Soon after the fourth round some of us were called for the next round.

**Round 5 (Technical) (35 mins)**

1)Nodes at K distance from the root.He asked me to write the test cases. I wrote around 15.He was satisfied.  
 2) What is deadlock?  
      Conditions of deadlock.  
      Write a code to show deadlock.  
      Explain Bankers Algorithm.  
 3)Given a column number, find its corresponding Excel column name.  
 <http://www.geeksforgeeks.org/find-excel-column-name-given-number/>  
 He told me That i have good coding skills.

**Round 6 (Was supposed to be HR but Technical!! ) (30 mins)**  
 He asked me how my previous interviews went.  
 Asked me terms like  
 -Garbage collector  
 -Unicode  
 -Ascii etc.. (around 10!)

1)Given n (no. of elements of array){1,2,3,4,5,6,7,8} , K (no of elements in one row or column as specified)(eg. 3)  
 and A boolean variable Col & Row. When Col =True We have to print elements of array like-  
 1 4 7  
 2 5 8  
 3 6  
 And when row= True  
 1 2 3  
 4 5 6  
 7 8

2)Assume a computer screen.All the pixels are colored black. Given (x1,y1) and (x2,y2) you have to color the line joining these

two points Black.  
 (Hint:The line is not always going to be a diagonal straight line. Sometimes we may have to go vertically up and then sideways)  
 The interviewer was helpful and patient.

The experience was Grand! The people were so down to earth ! Every interview felt like a simple peer to peer conversation.  
 All i would suggest is Geeks For Geeks And u need Nothing to do 😀

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-51-for-sde-intern/>

# Microsoft Interview Experience | Set 52 (Fresher)

**Round 1 (Microsoft College Code Competition)**  
 There were 6 problems to be solved in 1h30, if I recall correctly. My team solved 3 of them and ended in 2nd place.

80 people from my university participated in the contest. Microsoft selected around 6 for the final interview round.

**Round 2 (Final interview, on-site)**  
 3 interviews of 45min each, with 15min of interval in between. In these breaks, we talked to the recruiter. If you do okay in one of the interviews, but not great, you get one extra interview.

1) Run-length string encoding.  
 Link: <http://www.geeksforgeeks.org/run-length-encoding/>

However, there were additional restrictions:  
 (a) resulting string shall be written to the input string.  
 (b) maximum extra memory allowed is (length of string – 1) bytes.  
 (c) if the resulting string will be longer than the input string, the algorithm can abort and leave the string dirty.

Behavioral: I was asked about my background.

2) Lowest common ancestor and Reverse words in string  
 Links: <http://www.geeksforgeeks.org/lowest-common-ancestor-binary-tree-set-1/>  
 <http://www.geeksforgeeks.org/reverse-words-in-a-given-string/>

Behavioral: talk about the most interesting project, and what I learned from it.

3) Given a list of events with start time and end time, find the events which have conflict with any other.

How would I decide which feature should be implemented next in an operating system.

Behavioral: talk about my favorite project and one instance where I had to convince other people,

**Additional comments:**

1. Overall experience was pretty nice. Microsoft paid for all expenses for us to visit their office. The recruiter looked after us as well, really no complaints.

2. Two of the interviewers were very down to earth, despite all their experience and high positions. Conversation with them flowed naturally, and I had a great time.

3. One of them (from question #1), however, had a very bad attitude toward the candidates. He didn’t study the problem well enough to assess solutions that weren’t similar to his, and made disrespectful comments about our ideas to solve the problem in our own way. This is not just my opinion, as I also asked other candidates.

I perfect’d interview 2, did good in interview 3, but was not good enough in interview 1 (for the reasons already stated). I was not given an offer then.

What I can say is: no matter how well you prepare, you still rely on the interviewers. Study hard and hope to get interviewers that are nice and don’t want to lower you.

Good luck to you all.

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-experience-set-52-fresher/>

# Microsoft Interview Experience | Set 53

**Round 0 –**  
 Second max element in BST

Sort an array of integers such that –  
 – All odd numbers are in left side and sorted in increasing order.  
 – all even numbers are sorted in decreasing order and start where odd numbers end.  
 Eg –  
 I/P – 2, 3, 4, 5, 8 , 10, 12, 11  
 O/P – 3, 5, 11, 12, 10, 8, 4, 2

I used quick sort partition logic to separate odd and even numbers and then ran quick sort on both halves.

**Round 1 –**  
 Assume an RAM of size 1024 bytes. There are multiple processes running on the system. Your application will get this information –  
 (Thread Id, Memory Block, time, R/W) – which essentially tells that the thread T was using memory block M at time t and operation could be read or write.

Memory conflict is defined as –  
 – Let x be standard unit of time measurement.  
 – Multiple read operations at the same location are not cause of conflict.  
 – One write operation between x+5 to x-5 to location M, will be cause of conflict for a thread accessing location M at time x.  
 – Example – If thread T1 accessed memory location M at time x+1 and if a thread T2 accesses location M before time x+6 then T1 and T2 are candidate of conflict given one of then do write operation.

You are given with the list of threads accessing memory locations, you have to find conflicts.

Example –  
 (1, 512, 1, R)  
 (2, 432, 2, W)  
 (3, 512, 3, R)  
 (4, 932, 4, R)  
 (5, 512, 5, W)  
 (6, 932, 6, R)  
 (7, 835, 7, R)  
 (8, 432, 8, R)

O/P –  
 Thread 1 & 3 conflicts with thread 5  
 All other operations are safe.

**Round 2 –**  
 <http://www.geeksforgeeks.org/turn-an-image-by-90-degree/>

Level order traversal ->  
 Using queue  
 Using recursion

**Round 3 –**  
 <http://stackoverflow.com/questions/746082/how-to-find-list-of-possible-words-from-a-letter-matrix-boggle-solver>  
 > My solution was mutation of this – <http://www.geeksforgeeks.org/mobile-numeric-keypad-problem/>

**Round 4 –**  
 3D boggle solver and 3D cross word solver.  
 Design data structure to store and give a solution.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-53/>

# Microsoft Interview Experience | Set 54 (For SDE)

**Round 1 (45 mins):**  
 Tell me about yourself.

1. Given an array of strings with **R**, **G** & **B** as characters. **Sort** the array such that all R comes first, followed by Gs & followed by Bs. Do it in **O(n)** time complexity. (**Paper Code**)  
    For eg. array is:  
         **I/P: G G R B R B B G R B R**  
         **O/P: R R R R G G G B B B B**

**Hint:** Same problem as sorting strings of 0s, 1s & 2s.

Done using the same logic as that of sorting 0s, 1s & 2s in no time. Interviewer was happy. \*:) happy

2. Can you do the same above program using **Singly Linked List (SLL)** & **Doubly Linked List (DLL)** in **O(n)** time complexity.

Done it using DLL comfortably.  
 But using SLL I got stuck as we’ve to keep track of PREV pointer every time. He wanted it to be done in a SINGLE PASS if possible. Was not able to do this for SLL.

**Round 2 (1.30 hrs):**

Tell me about the projects you’ve worked on.

1. **Matrix Multiplication** of 2 matrices. Both of the matrices are **Distributed** across a cluster of nodes. And matrices are of huge size (**BigData**). How can you multiply these matrices efficiently. He wanted to know the approach only but not the actual code.  
 (He asked me this Distributed problem esp. as I’ve worked on **Apache Spark & Hadoop Distributed architecture** in my project. So he was very keen to check my knowledge in the Distributed & BigData domain.)

**Hint:** Think in terms of **MapReduce** jobs.

**My approach**: As we know that in matrix multiplication, ith row is multiplied with jth column, (i+1)th row is multiplied with (j+1)th column, & so on till (n-1)th row with (m-1)th column.

**Map** each ith row to jth column, (i+1)th row to (j+1)th column & so on till (n-1)th row to (m-1)th column.  
 The idea is to make **Keys as ROW** index **& Values as Column** index.  
 While doing the **Reduce** operation, Multiply the respective Rows & Columns using above Mapped Rows & Columns. B’coz generally in the Reduce operation of MapReduce jobs, Spark/Hadoop brings all of the mapped data into one Server to do the computation & stores the result. So in the Reduce operation, Spark/Hadoop will bring only the mapped Row & Column while doing the actual multiplication. We need NOT to bring all Rows & Columns data at once.

This was my approach. One can think of the other approach also & share their better approach too.

Laterally he asked me about MapReduce jobs in further details & asked me about Hadoop & Distributed architecture (NameNode, DataNode, etc.). Some questions on Scalability.

2. Given an **N-ary tree** with **thousands of nodes** in it. **Pair** (Join) the **Leaf nodes** which do **NOT SHARE** the common path. i.e. Two Leaves can be Paired only if they do NOT have **Intersecting path**.

For example,

A  
 / | \  
 B C D  
 / / | \  
E F G H

**Leaf nodes**: E, F, G, H & D

**Possible Pairs in O/Ps:**  
                     a) (E-F), (G-H) or  
                     b) (E-G), (F-H) or  
                     c) (E-H), (F-G) or  
                     d) (E-D), (F-G) or  
                     e) (E-D), (G-H) or  
                     f) (E-D), (F-H) or  
                     g) (D-H), (F-G) or  
                     h) (D-G), (F-H) or  
                     i) (D-F), (G-H)

**Note:** If we pair(join) say, **(E-F)** then we can NOT pair any of the **(D-G)** or **(D-H)** as they SHARE the COMMON path from A to C.  
 i.e. E-B-A-C-F —> (E-F) pair  
        D-A-C-G —> (D-G) pair  
        D-A-C-H —> (D-H) pair

So the above case is **NOT** possible.

Also if there are **EVEN** number of Childs, then exactly n/2 pairs are possible. In case of **ODD** number of Childs, 1 of the Childs will be left **Unpaired**.

I’ve told him using **BFS** as it traverses each Edge exactly **ONCE**. The idea was while doing BFS traversal, Pair Childs of a Visiting node if both of their Childs are Leaf nodes.  
 If the Visiting node has only **ONE** Child (Left Child or Right Child only) then store this Child in the TEMPORARY array (Array of Pointers to the Childs).  
 Once the BFS traversal ends, Pair the remaining Childs in the **TEMPORARY** array one by one.  
 Again he was NOT satisfied as BFS works **LEVEL-WISE**. So he told me what if some of the nodes have **SKEWED** sub-tree with thousands of nodes.  
 I got stuck. 

He told me to apply **Mathematical Induction**.  
 If we can prove for the Base Case that at least **2K** Childs can be Paired. Then we pair & prove it for **2K+2, 2k+4, , , , , , ,2K+n** Childs too.  
 I was Blank in MI concepts.  
 Was **NOT** able to solve this problem. 

He was so impressed \*:) happy with my 1st problem’s approach using MapReduce. He was a little bit satisfied with the 2nd problem’s approach. So I’ve been forwarded to 3rd round.

**Lunch time.** Soooooooo Good. Food was so good. Really liked it.

**Round 3 (50 mins):**

He had quickly looked at my CV. Then he asked me to tell something about the projects that I’ve worked on & working on. As I’ve worked mostly on **Machine Learning** & **NLP** domain, he asked me few questions about **NLP**. How will you Scale your current project.

1. Given a sentence, Reverse it **Word-by-Word**.  
    For example,  
       **I/P: “Microsoft Azure is one of the best Cloud solutions”**  
        **O/P: “solutions Cloud best the of one is Azure Microsoft”**

   So easy. Given on GFG.   
    Done it in no time.  
    He asked me do it in a **SINGLE PASS**. As the solution requires **2 PASSES** of the sentence. (1st for reversing each individual word & 2nd for reversing WHOLE sentence).  
    Got stuck.  Taken a long time to think about this. Couldn’t able to do this. Finally he asked me another question.

2. Detect a **Loop** in a **Singly Linked List**. \*:) happy  
    Given the GFG approach. He was Happy.

3. **Remove** the Loop in above SLL.  
 Again given the same GFG solution. 

I’ve been told to wait for the 4th & Final round.

**Round 4 (Design Round):**

What do you know about **Cloud Computing**.  
 Do you know anything about **Microsoft Azure**.

Design a **WindowsBox** just like **DropBox** Cloud storage.

Provide all the services **IaaS**, **PaaS** & **SaaS** using **Service-Oriented Architecture (SOA)**.  
 Have given very Low-level design. NOT up to his expectations. As I’ve NOT worked on Cloud Technology earlier.   
 NOT able to perform well in this round. 

**Advise**:  
     Prepare for the **Design** questions **& Scalability**.  
     One can go through this link: <https://www.quora.com/How-should-I-prepare-system-design-questions-for-Google-Facebook-Interview>  
     Watch out this video. Its very good.  
     They look for the basics of **Data Structures & Algorithms**. (esp. Linked Lists & Tree)

Lastly, GeeksForGeeks is the best source for all. GFG really helped me a lot in the preparation.

Thanks 

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-experience-set-54-for-sde/>

# Microsoft Interview Experience | Set 55 (For Software Engineer 2)

**Skype round 1: (10 min)**  
 Print a tree in zigzag order. For Example for the given input tree:-

1  
 2 3  
 4 5 6 7

The output would be:-

1  
3 2  
4 5 6 7

Code for the logic in any language that you are comfortable in.

**Skype Round 2: (10 min)**  
 Find if two given strings are anagrams of each other or not.  
 Anagrams example: LISTEN and SILENT.  
 Code for the same. Test cases for the code. (Positive and negative)

They called me to Hyderabad for an F2F immediately after Skpe rounds, (I managed to postpone it to the next week).

**Face2Face Round 1: (45 min)**

**Question 1:**  
 Given a character array which each position is filled with either a single digit numbers or a comma,  
 Array of 22 characters:-  
 [](http://d2hc1qfcrygj4j.cloudfront.net//wp-content/uploads/image1.png)  
 Write a code to reply true if we find a set of three set of numbers separated by a comma such that  
 X , Y, Z and Z = X + Y  
 In the array above 77+22 = 99 so return true.Code for the same with negative test cases.

**Question 2:**  
 If in a given Doubly Circular Linked List a couple of next pointers are corrupted, give the logic to rectify them all.

**Face2Face Round 2: (1 hour)**  
 Given a number in an int variable, write a code print its value in words, covering all possible corner cases.  
 Ex → 34567 = thirty four thousand five hundred and sixty seven.  
 Negative test cases for the same.

**Face2Face Round 3: (1 hour 15 min)**  
 **Question 1:**  
 Given a scheduler arrangement with some jobs having unique job ids and every job id has a number of tasks with unique task ids for that job.  
 Example:-

Job id : 500 Task id : 700  
 Task id : 300  
 Task id : 350  
 Job id : 600 Task id : 400  
 Task id : 350  
 Task id : 600  
 Job id : 1000 Task id : 800  
 Task id : 100  
 Job id : 200 Task id : 650

Write a Code for listing the job ids + task id combination in round robin fashion.  
 Example:-

Job id : 500 Task id : 700  
Job id : 600 Task id : 400  
Job id : 1000 Task id : 800  
Job id : 200 Task id : 650  
Job id : 500 Task id : 300  
Job id : 600 Task id : 350  
Job id : 1000 Task id : 100  
Job id : 500 Task id : 350  
Job id : 600 Task id : 600

Choose any data structure of the input (array of structures or linked lists or queue).  
 Design Test cases for the same.  
   
 **Question 2:**  
 Given a BST, create a Doubly Linked List from the same in place.  
 Tree node -> left pointer = DLL node -> previous pointer  
 Tree node -> right pointer = DLL node -> next pointer

**Face2Face Round 4: (with the Director) (1 hour approx)**  
 He asked typical HR questions like  
 Why Microsoft?  
 Where do you yourself 10n years from now? Blah blah.

**Question 1:**  
 Given a mess of 3 balls (colored red blue and white) write an algorithm + program with the most efficient way to sort them color wise. (Dutch National Flag Problem)

**Question 2:**  
 Given a string print the string with alternate occurrences of any character dropped.

Example:- input string → It is a long day Dear.  
 Output string → tisalongdyDea.

Modification:- Consider alphabets with both cases as same occurrence.

Output string → Itsalongdy ea.

Position was software Engineer 2. MSFT does not have SDE and SDET anymore, All roles shall be SE from now on.

Thank you geeks for geeks. This site is a Marvel for job aspirants.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-55-for-software-engineer-2/>

# Microsoft Interview Experience | Set 56 (For SDE 2)

First Round (F2F) 1 hour:  
 ———————————-

1. Given an image with a lot of pixels, find all the pairs of pixels that are strongly connected.

2. Given an N-ary tree with thousands of nodes, pair the leaf nodes which do NOT SHARE the common path. i.e. Two Leaves can be Paired only if they do NOT have a common edge that was used in a previous pairing.

For example,   
 A  
 / | \  
 B C D  
 / / | \  
E F G H   
Leaf nodes: E, F, G, H & D  
  
Possible Pairs in O/Ps:  
 a) (E-F), (G-H) or  
 b) (E-G), (F-H) or  
 c) (E-H), (F-G) or  
 d) (E-D), (F-G) or  
 e) (E-D), (G-H) or  
 f) (E-D), (F-H) or  
 g) (D-H), (F-G) or  
 h) (D-G), (F-H) or  
 i) (D-F), (G-H)

Note: If we pair(join) say, (E-F) then we can NOT pair any of the (D-G) or (D-H) as they SHARE the COMMON path from A to C.

i.e. E-B-A-C-F —> (E-F) pair  
 D-A-C-G —> (D-G) pair  
 D-A-C-H —> (D-H) pair

So the above case is NOT possible

I tried using a couple of solutions.  
 Later on used Mathematical Induction (upon his hint)  
 Basically, a pairing for n = 2 leaf nodes is true  
 Assume a pairing exists for n = 2k leaf nodes (k > 0)  
 Now you need to prove a pairing exists for n = 2k+2 leaf nodes

So basically you just have to see the cases where you can insert the new nodes differently  
 I will probably try to contribute with an article on this.

Code was asked for both the questions.

Second Round (F2F) 45 mins – 1 hr:  
 —————————————————  
 1. Given a tree, and a pointer to some node in the tree, print the left most element in the same level as that node  
 2. Given a C-string, convert it into its ascii string. Ex: “CAR” -> “676582” (C-67, A-65, R-82)  
 Conditions are that you have to write it in C and you have to do it in place.  
 3. Lots of questions on programs, Inter process communication, pthreads, java garbage collector etc that went for around 20 mins

Third Round (F2F) 1 hr :  
 ———————————  
 1. Reverse k-alternate nodes in a Linked List  
 2. Given two strings s1 and s2, find if there exists a substring in s1 which contains an anagram of s2 (in O(n))  
 3. Given an input of the calendar objects of 10,000 microsoft employees, input is a time interval T and an employee[] array, find the first interval where all the employees in the employee[] array are free for a minimum time interval T (i.e schedule the meeting)  
       I did this question using B+ trees and a Hash, I was told that max flow algorithms can be used.

Fourth Round (F2F) Hiring Manager – 1 hr:  
 ———————————————————-  
 1. Project/previous work  
 1. Design whatsapp’s back end systems: (we should be able to handle 1 million requests a second and transmit data with least latency)  
       I had used a lot of distributed systems concepts like message queues, sharding, CDNs, monitoring, InnoDB/MongoDB etc

Preparing questions on Scalability and Distributed Systems is highly recommended.

This site helped me a ton and I hope others will find their dream jobs too !  
 Thanks geeks 

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-experience-set-56-for-sde-2/>

# Microsoft Interview Experience | Set 57 (For SDE)

**Round 1 (45 mins)**  
 1) There was a detailed discussion on the project i did at Microsoft and also over the two projects mentioned in my resume.

2) There is a Bing log file containing the domain names. Design a cache memory system for faster dns look ups.( i suggested a Trie and a min heap based solution).  
 I was asked to make it space efficient. (I replaced trie with map)

3)There is a turn based 2 player game in which there are 9 pins and each player is allowed to pick either 1, 2 or 3 pins only. The last player to pick the pin is the loser.  
 Design winning strategy for such a game.

4) Generalize the above solution for n pins.

**Round 2 (45 mins)**  
 1)There is a large file with system memory limitations. How will you store it (i suggested Distributed system) and how will u work on it.

2)Suppose the large file contains name, address, Dob, pan no etc as attributes. Design class interface for such a system.The question was re framed again with more conditions which i am unable to recall now.

2)There was a detailed discussion over how the stl map data structure is implemented.

3) Discussion over hashing and collision resolution techniques.

**Round 3(40 mins)**  
 Discussion over my project followed by these questions:  
 1) Write the code to delete nodes in a binary tree which don’t lie in any path from root to leaf with sum>=k.

2)There is a rotated and pivoted array. Write the code to determine how many times the array is rotated. (i did it in O(log n)).

All thanks to geeks4geeks for helping me prepare for technical interviews.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-57-for-sde/>

# Microsoft Interview Experience | Set 58 (For Software Engineer)

Microsoft Interview for Software Engineer Hyderabad.

Round 1: (1 hr)  
 1. Given 3 sorted arrays. Find the common element of all the arrays in O(N) time and no extra space. If there is none, return false.  
 2. Double linked list: 1 goes to the next node and 1 to the random node. Copy this list. Extra space can be used.

Round 2: (45 mins)  
 1. Power of a number (x\*\*n) in O(log N) time  
 2. Given an array which has a duplicate except for 2 elements. Find them. We always have 2 such element.

Round 3: They said me a bye 

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-58-for-software-engineer/>

Category: [Interview Experiences](http://www.geeksforgeeks.org/category/interview-experiences/) Tags: [Microsoft](http://www.geeksforgeeks.org/tag/microsoft/)

# Microsoft Interview Experience | Set 59 (On-Campus)

Microsoft came to our campus. Branches eligible was CS and IT. There were a total of 5 rounds (and 1 additional group fly round).

**Round 1: MCQ round**  
 In this round there were a total of 15 MCQ’s and the time alloted was 30 mins.The questions were mainly from C++/Java output finding, pointers and references and basic puzzles.

I was able to solve 8-9 mcq’s. Luckily I managed to qualify this round  .

**Round 2: ONLINE CODING ROUND**  
 In this round 2 coding questions were given to us which need to be solved in 1hr time.  
 1st question:  
 You are given a matrix of dimensions m\*n where each cell in the matrix can have values 0,1 or 2 which has the following meaning :  
 0:empty cell  
 1:cells have fresh oranges  
 2:cells have rotten oranges  
 so we have to determine what is the minimum time required so that all the oranges will be rotten.A rotten orange at index [i,j] can rot other fresh orange at indexes [i+1,j] ,[i,j+1] ,[i-1,j] ,[i,j-1] .If it is impossible to rot every orange then simply return -1;

2nd question:  
 You are provided with a binary tree and given two integers n and k.You have to determine sum of data of all the nodes which are at a distance of k from the node which has data n.

I managed to solve question no. 2 completely and in question no. 1 segmentation fault came.

**GROUP FLY ROUND(ADDITIONAL) :**  
 The question given to each and every candidate was to design the user interface of Indian Railways website .

**Round 3: Technical round**  
 1. A brief discussion on my project.  
 2. How will you test a parachute ?

3. Real life situation -suppose you have developed a software and you have delievered it to some of your client .If your client is facing some problem with the software then how will you solve the issue.Discussion on it.

4. Given 1 billion numbers.Find the median of these numbers -i gave min & max heap soln ,O(n) median finding algorithm soln. Then he asked me to explain the median finding algo to a layman .I gave sorting soln.

5. One simple SQL query- given a table containing employee id,manager id,city and employee name.The manager himself is an employee who has an entry in the table. You have to print the details of the employee whose managers city is same as his city .

6. Questions related to DBMS-Normalisation,Denormalisation,Indexing structures etc.  
 7. Difference between object based and object oriented programming language.  
 8. Some other problems which i dont remember.

**Round 4: Technical Round**  
 1. Explain polymorphism to a layman-I explained with example of the word-bat  
 2. Under what circumstances we go for array and when we go for linked list.  
 3. Practical use of stack data structure.  
 4. Implement Push and pop functions in stack using linked list.

5. Given a number n you have to print all squares of number from 1 to n.  
 Ex-say n=5  
 output: 1 4 9 16 25  
 first I gave o(N^2) soln then He asked me to give O(n) soln-I did it .

6. Given a string .Find the maximum palindrome substring in the given string. I told him I have 3 solns for it -dp soln,find longest palindrome at every index soln,using suffix tree.He asked me to explain dp soln and to tell him best and worst case for it ?

7. Questions on why I used free() to free a memory allocated via malloc- questions related to garbage collection, single and double pointer,pointer as reference and pointer by value etc.

8. Then he asked a riddle-given three opaque containers and you have 3 labels on them.1 has label “mangoes” 2nd has label “Apple” and 3rd has label “Mango+Apple”. You are told that every label is wrong. You can open any container from top and can see content inside it by not every item-means if you open container having apple+mango in actual you may see only apple or mango or both.So which box you will open to correct all the labels.You can open only 1 container from the top and see its content.  
 9.Discussion related to my project-I have made a rail reservation system using HTML+php+CSS .So he asked what is in your project so that visitors will visit your site instead of Indian Railways site.Discussion related to it.  
 -I gave all the answers in this round :).

**Round 5: Technical Round**  
 1. Detailed discussion on my project.

2. Suppose you receive 1 million reservation requests at the same time and you have only 50 seats remaining to be allotted .how will you handle such situation. Long discussion on it. I gave him lots of solutions for it but he discarded all of them as there was some faults in every soln of mine. Finally I gave a soln using shared variable which stores no of seats available and the server spawns separate threads for separate requests. Then using a semaphore variable so that only 1 thread can access the shared variable at a time.He was convinced with the solution.

3. Given a number as input .Write a function which prints the number in string format .Ex-1234 will be written as “one thousand two hundred thirty four”. I gave a hardcoded solution. He asked me if I can reduce the program length to 1/3rd. I told him that I can use a function to reduce the solution length. He didn’t try to find bug in my solution. So he was ok with the solution of mine.

4. A lot more questions which i don’t remember.

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-experience-set-59-on-campus/>

# Microsoft Interview Experience | Set 60 (On-Campus for Internship)

Microsoft came to our campus. Branches eligible was CS and IT. There were a total of 4 rounds.

**Round 1: MCQ round**  
 In this round there were a total of 15 MCQ’s and the time alloted was 30 mins.The questions were mainly from C/C++/Java output finding, pointers and references and basic puzzles.  
 I was able to solve 12 + mcq’s. I managed to qualify this round.

**Round 2: ONLINE CODING ROUND**  
 In this round 2 coding questions were given to us which need to be solved in 1hr time.

1st question:

You are given a matrix of dimensions m\*n where each cell in the matrix can have values 0,1 or 2 which has the following meaning :

0:empty cell

1:cells have fresh oranges

2:cells have rotten oranges

So we have to determine what is the minimum time required so that all the oranges will be rotten.A rotten orange at index [i,j] can rot other fresh orange at indexes [i+1,j] ,[i,j+1] ,[i-1,j] ,[i,j-1]. If it is impossible to rot every orange then simply return -1;

2nd question:

You are provided with a binary tree and given two integers n and k.You have to determine sum of data of all the nodes which are at a distance of k from the node which has data n.  
 I managed to solve question no. 2 completely .Both using BFS.Here is my way of how I did it:-

1. Use BFS directly to traverse the array once and can obtain the solution in O(n^2) only.

2. Form a graph out of the tree with the found node as the source point and then do BFS Sum to find the required answer.

**Round 3: Face To Face Interview Round(150 mins)**  
 1. A brief discussion on my projects.(About 2048 game in JAVA and some other projects I did.)

2. To tell something about me and elaborate my hobbies .

3. List of stations and distances between them are given and find all pairs shortest distance.(Floyd warshall algorithm in O(V^3).)

4. Given 1 billion numbers.Remove duplicates in O(n) and the range of numbers are till 10^5.(I used A[abs(A[i])] method to change sign and remove.It impressed the interviewer a lot.)  
 5. Implement Dictionary(I asked about the basic layout and was told that lot of words have been already entered each having its definition,synonyms and antonyms).(I started from vector > , then HashMap, then Set > and then RB Tree approach too.)

6.I was asked to write the pseudo code for each of the above data structures and their complexities of search,insertion and updation.  
 -I gave all the answers in this round .

**Round 4: Technical Round(90 mins)**  
 1.I was asked to throw some light on some trending technologies.(I explained about Cloud,Big Data etc.) It took 30 mins and he looked impressed.

2. Next I was asked that if I were placed at IDC or IT then which one I will prefer and why.It was interactive session and finally I opted for MSIT mentioning him the reasons and he gave his final feedback on me.  
 -I gave all the answers in this round .

Hope my experience helps everyone.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-60-on-campus-for-internship/>

# Microsoft Interview Experience | Set 61 (On-Campus for IDC)

Microsoft visited our campus recently.

**Round 1: (MCQ) 30min.**

It was an online round with 15 MCQ and time given was 30 min. The round was hosted on cocubes.com Questions were mainly from C,C++,Java,OS.

Around 60 people were shortlisted in this round.

**Round 2 : (Coding) 60 min**

This round was also hosted on cocubes.com and had two programming questions.

1. Given an array of size n and an integer k we need to return the sum of count of all distinct numbers in a window of size k. The window slides forward.

e.g. arr[] = {1,2,1,3,4,2,3};

Let k = 4.

The first window is {1,2,1,3}, count of distinct numbers is 2….(1 is repeated)  
 The second window is {2,1,3,4} count of distinct numbers is 4  
 The third window is {1,3,4,2} count of distinct numbers is 4  
 The fourth window is {3,4,2,3} count of distinct numbers is 2

Hence sum is 2+4+4+2 = 12.  
 It was also given that the array elements are between 0 to 100.

2. Given a binary tree we need to make linked list out of the leaf nodes. Constraints were that it was supposed to be done using O(1) extra space. Also we can use node->right pointer to connect the linked list.

Around 30 people were shortlisted from this round.

**Group Fly Round:**

1. Given a linked list, Reverse it in k-chunks.  
 <http://www.geeksforgeeks.org/reverse-a-list-in-groups-of-given-size/>

Around 12 students were shortlisted in this round.

Personal Interview Round 1: (45 min)

1. Given an infinite stream of binary digits (0,1) and an input number n, determine if at any point the number is divisible by n.

I found the question actually tough… I first solved for some specific cases like n = 2 and n = 3. Then by discussions with interviewers I was guided towards DFA Based Division.  
 <http://www.geeksforgeeks.org/dfa-based-division/>

Complete code was required in this round. To solve this one it took nearly 30 min with discussion.

2. Assume you are manufacturer of a pen, what all parameters will you check to test a pen.

3. Continuing above how will you test the address bar in a Browser.

Both these questions were open ended. He just wanted to see how many cases I can think of.

**Personal Interview Round 2: (60 min)**

1. Print a matrix spirally.  
 <http://www.geeksforgeeks.org/print-a-given-matrix-in-spiral-form/>.

He then added further constraints such that if I want to print the matrix in a spiral way in clockwise and anti-clockwise sense. Also he added the constraint that he can start at any corner of the matrix. Detailed discussion on my approach was done. He was actually happy with the way I approached the solution.

**Personal Interview Round 3: (60 min)**

1. Detailed discussion on my Machine Learning Project which I had done in my internship.

2. Given an integer write a function to convert it into a string.

3. Given a string replace all spaces with ‘%20′  
 Took some time to solve this one but managed to solve it completely. He wanted me to check all the base cases.

**HR Round :**

1. Normal HR questions.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-61-on-campus-for-idc/>

# Microsoft Interview Experience | Set 62 (On-Campus for IDC)

Microsoft visited our Campus recently for IDC as well as IT Profiles.

**Round 1 (MCQ):**

It was an Online MCQ Round. There were 15 Questions in all. Time Duration was 30 Minutes. The Questions were mainly focused on C, C++ and JAVA. Only 1 Aptitude Question was there. There were different sets for different students.

Around 60-65 students were shortlisted.

**Round 2 (Online Coding):**

Round 2 was held on the same day. It was Online Coding Round. There were 2 Problems.

1. Given a Binary Tree. Create a Linked List of all the Leaf Nodes of the Tree using the Right Pointer of the Tree Node as the Next Pointer of the Linked List Node. Return the Head Pointer of the Linked List. We were not supposed to use any extra memory.  
 2. Given an array of Numbers and an integer K. Find the total number of Distinct Elements in the contiguous sub-arrays of size K each.

13 were shortlisted after this Round for the Interviews. While some 25-26 were shortlisted for an additional GROUP FLY Round. I was selected directly for the Interviews.

**Round 3 (Group Fly Round):**

I was selected directly for the Interviews from Round 2.

**Round 4 (Technical Interview 1):**

The Interviewer was quite friendly. He tried to make the environment comfortable for me. This round went on for around 1 hour and 40 minutes.

1. Tell me something about yourself.

2. Given a Binary Tree. Find the maximum width of the Tree. I told him that I will use Level Order Traversal approach, keeping the track of the level. He asked me to think of another approach. So I told him that I will store the Tree Data in an Array and the Left View of the Tree in another Array. After this, I will count the number of members between the two consecutive elements of the Left View Array. Then he moved on to the next question.

**Round 5 (Technical Interview 2):**

I was called for the Second Interview after half an hour. The Interviewer was quite friendly again.  
 1. She asked me to explain my Project. We had a long discussion on the Project.

2. Given an n-digit Number and a number k. You have to remove ‘k’ digits from the Number and give the shortest number from the remaining ‘n-k’ digits such that the sequence of digits remains same. For example, if the number is 637824 and k = 3. So you have to remove 3 digits from the given number. The number formed from the remaining digits should be the smallest possible and the sequence of digits must not be changed. So the output should be 324. I gave her an approach. But it failed. Then I used Dynamic Programming for this (Longest Bitonic Subsequence Concept).This Interview went on for 2 Hours and 15 Minutes approx.

**Round 6 (HR Interview 1):**

I was called within 2 minutes of my last interview for this Round. He asked me in which Programming Language I am comfortable. I said C. So he asked me a very basic question on Preprocessors. I told him the answer. But he told me that it is wrong. Basically, he was trying to check my confidence. But I remained with my answer and explained him how I got it. He smiled.  
 Then he asked me a question to check my Problem Solving ability. Given a soft copy of a Dictionary. You have to print all the unique subsets of the Anagrams together. Unique means that {eat, tea, ate} should appear only once. I gave him many approaches but he wanted the approach from a layman point of view. We discussed on this single question for 50-55 minutes. Then he gave me the statement ‘I am not very happy with your Problem Solving Ability’. But that was just to make me feel nervous.  
 Then he asked me the 3 Switch 3 Bulb Puzzle. I answered it. Then he asked me the Preferred Profile – IT or IDC. We had a discussion on this.

PS: Be honest with the Interviewer. Be open and ask questions.

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### Source

<http://www.geeksforgeeks.org/microsoft-interview-experience-set-62-on-campus-for-idc/>

# Microsoft Interview Experience | Set 63 (For Internship)

This is my first time writing an article so here goes. Microsoft came to our campus yesterday. I sat for both the IDC and IT process.

**Round 1:**  
 It was an MCQ round, 15-20 requestions. Mostly recursive questions, some aptitude and I/O.

**Round 2:**  
 Online coding i got two questions.  
 1. Window of k size in arr of size n, find all distinct element counts in those windows.  
 2. Connect all leaf nodes of a binary tree to make a LL. ( Don’t allocate any memory just set the right child pointer as next node)

**Round 3:**  
 Group Fly round.  
 We got two questions:  
 1. Length of longest palindromic substring in a string. I got an O(n^2) solution. Mentor asked me to optimize i tried but i couldn’t.  
 2. Merge two sorted arrays. Optimized from O(n) extra space to O(1) to no extra space.  
 Write all your approaches on the sheet even the pseudo code towards the end. Write comments.  
 Discuss with mentor. He should know who you are. Indent and write neatly.

**Round 4:**  
 Technical Interview.  
 OS questions.  
 1. Insert in a BST.  
 2. Find element in BST closest to k.  
 Some threading and java questions.  
 Be confident. Interviewer wasn’t responsive.

**Round 5:**  
 Technical Interview.  
 Basic DS questions, asked me what has been taught what has not been taught, what you know and what not. I told him i have done heaps also so he asked me basics of heap.  
 Next question proper code he wanted for finding 2nd largest element in array was helpful and wanted me to check edge cases and fix. I missed one and i thought i wouldn’t get through.  
 They understand your code easily so don’t think they will miss anything.  
 PLEASE INDENT. I wasn’t doing it initially so he was confused.  
 Asked about OOP and basics and stuff. I answered explained everything with examples. Run time polymorphism, Inheritance, encapsulation and stuff.

**Round 6:**  
 HR Interview.  
 Best round ever. The person was really very very nice and frank. Loved every bit of interaction. Gave puzzles like hour minute angle difference, some tricky ones like how many points lie west of north pole (Answer is none) since there is nothing there.  
 Asked me to implement a scalable device which can incorporate additional shapes later on. The device would output a shape on a matrix if input is shape name. He pushed me towards a hash table approach with O(1) lookup and the table containing the coordinates for matrix traversal.

Ultimately he offered me an internship in MS IDC.  
 I was offered an internship along with 4 others.  
 I sat through the MS IT procedure before IDC, the interviewer wasn’t very nice and made me feel demotivated. When i found an error in the solution he was trying to give me he was impressed. So be on your toes. Try and solve both questions in 2nd round as i was offered a bypass in IT. I skipped round 3 with 7 others.

I want to thanks Geeksforgeeks for everything. Every minute of my last few weeks was just GFG. It was an amazing feeling to get an internship.

Thanks a lot GFG! Amazing platform. Amazing articles.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-63-for-internship/>

# Microsoft Interview Experience | Set 64 (For SDE-2)

First Round (F2F) 1 hour:  
 ——————————————-  
 Write code for below 2 qns , not exact but concepts are 99% same.

<http://www.geeksforgeeks.org/sort-an-array-of-0s-1s-and-2s/>

<http://www.geeksforgeeks.org/find-number-of-islands/>

Second Round (F2F) 1.5+ hour(Design round):  
 ———————————————-  
 Asked me to design a URL shortening site like bitly. After few discussions i gave a soln like below method  
 <http://www.geeksforgeeks.org/how-to-design-a-tiny-url-or-url-shortener/>

Then there was lots of related questions of hashing , what to do to make it scalable, Design the server side.

But i didn’t had any WEB experience so i could not give proper answers for them how ever i tried answering all questions and told them that these are my ideas how ever i don’t ave any web experience so answers may be wrong .

Third Round (F2F) 1.5 hour+(Design round):  
 ———————————————

Started with what are the things you will consider for scheduling a meeting with say 5 -6 persons .

What are the things you will consider .

Prioritize each of them . Then for each person you have these inputs .

based on that find out best possible time slots for scheduling a meeting .

Also give priority to each of the slots .

Then questions on that .

other questions of why you want to join how u will cope up with the works which are different that the work you are doing .

Fourth Round (F2F) Hiring Manager – 15-20 mins:  
 ——————————————————————————

Questions on why you want to join how you will work then below question .  
 <http://www.geeksforgeeks.org/largest-sum-contiguous-subarray/>

I had justify lot of questions on why i want to change the domain after spending considerable amount of time etc,..

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-64-for-sde-2/>

# Microsoft Interview Experience | Set 65 (On-Campus for Internship IT and IDC)

Microsoft visited our campus for hiring FTE’s and Interns. I had opted for both Microsoft IT and IDC. The first couple of rounds were online rounds and were hosted on Cocubes.com

**Round 1**  
 It comprised of 15 MCQ Questions and time allotted was 30 mins. Every student had a unique set of questions which comprised of C,C++ (I/O), Data Structures, Java, and Aptitude. The questions required a decent amount of thinking.

**Round 2 (Online Coding)**  
 1. You are given a matrix of dimensions m\*n where each cell in the matrix can have values 0,1 or 2 which has the following meaning :  
       0:empty cell  
       1:cells have fresh oranges  
       2:cells have rotten oranges  
 So we have to determine what is the minimum time required so that all the oranges will be rotten. A rotten orange at index [i,j] can rot other fresh orange at indexes [i+1,j] ,[i,j+1] ,[i-1,j] ,[i,j-1]. If it is impossible to rot every orange then simply return -1.  
 This was to be done without allocating any extra space.

2. Connect all leaf nodes of a binary tree to make a LL. (Without allocating any extra space for the linked list).  
 **Now, around 30 students were shortlisted for Microsoft IT and around 40 for IDC. There were some people who got short listed for both. I was lucky enough to sit for both of them.**  
 **From here I will write the processes for IDC and IT separately.**

**FOR IT**  
 **Round 3(Group Fly Round)**  
 Some people who had a high score in the 1st and 2nd rounds did not have to appear this round. They were promoted for the next rounds.  
 There were two questions.

1. Given a string (Assume that its case insensitive and has no spaces), find the length of the largest palindromic substring.  
    While the brute force solution would have O(n^2) complexity, with some thinking you can arrive at a O(n^2) solution.
2. Given a string , return the length of the longest substring which comprises of consecutive characters.  
    Ex: abcxy  
    Output:  
    3  
    abc

Discuss your approach with your mentors and be very clear about it. Write comments on the paper code.

**Round 4 (Technical PI)**  
 The interviewer was nice and made me feel extremely confident. He went through my resume and asked me a few basic questions on data structures that we use. Also know the efficiency of using each data structure and there pros and cons.

He first asked me to write a code to implement the “Evaluate Function” of Microsoft Excel. I gave him the solution where we convert the expression from infix to postfix and then evaluate the postfix expression. However, I was aware that this solution would not work for 2 digit number (or results). So I suggested an improvement by taking input as a string and then converting the string into an integer. The interviewer was satisfied with the logic.

He then asked me if I knew anything about encryption. Though I didn’t have a very clear idea but I told him about some ciphers that can be used.

I had only one project on my resume. We had a 15 minute discussion of the challenges faced in making it and how it could be further improved.

The interview lasted for around 40-45 mins.

**Round 5 (As Appropriate AA)**  
 Now people who did relatively well in the previous technical round qualified for this.

The interviewer was again very warm. Though my CGPA was high, it kept decreasing every semester. He asked me the reason for this.

Then we discussed about my experience and work at one of the earlier places that I had interned. And he asked a few other questions like “Why Microsoft? “ and “What I can do to improve Microsoft?”.

Just be honest and confident about what you speak. And this round should go smooth.

**FOR IDC**  
 It followed a very similar structure like the IT interviews. The interviews here focused more on coding and databases. There were two Technical PI rounds instead of one after the group fly round.

The question tested the fundamentals and data structures.

There was a question on implementing a data structure to store a word along with all of its acronyms from a dictionary such that we can search it efficiently.

Thanks to GeeksforGeeks for building such a repository. I have learned a lot from this forum in the last one year. Awesome platform. And I would urge others who gain from this platform to contribute their experiences as well.

Cheers.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-65-on-campus-for-internship-it-and-idc/>

# Microsoft IDC Interview Experience | Set 66 (On-Campus for Internship)

There were 4 rounds in all

First Round  
 There were total 15 MCQ questions based on c, c++ pointers java output and one was on resource allocation graph. This round was on cocubes

Second Round  
 Around 60 people were selected and there were two coding questions  
 1. In a given array find i & j such that arr[j] > arr[i] and j-i is maximum  
 2. In a binary tree find product of all sum of values in a leaf node at same level  
 This round was again on cocubes

Third Round  
 Around 35 people were selected two questions were asked  
 1. In a BST two node values are swapped . Restore original BST  
 2. Given a sorted array find pairs such that their sum is closest to the given value  
 This one was on pen paper

Fourth Round  
 Around 20 people were selected for it  
 There was a single question it was expected to write code on a paper  
 Given a number find next bigger number by permuting its digits  
 After i solved this interviewer asked me to modify my algorithm for negative numbers

Final Round  
 There were 15 people  
 Interviewer questioned every one personally  
 Here are the few questions  
 1. Given a stream of running characters you have to identify anagrams and store only unique strings in a file  
 2. Given inorder and preorder traversals construct BT  
 3. Link-list is given it contains red, blue and green balls only sort it in place

Then some general questions were asked. Interviewer asked us to ask him something about microsoft and what will be work etc.

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# Microsoft IDC Interview Experience | Set 67 (On-Campus for Internship)

Microsoft had come to my campus for recruitment for both IT and IDC. Few selected students were given a preference between them. IF they didn’t qualify in one, they could go to the Other. I had chosen Microsoft IDC.

**First Round:**  
 It was conducted in cocubes.com. comprise of c,c++ and one java and one aptitude question.  
 around 200 people were shortlisted for second round.

**Second Round:**  
 Two questions were asked.  
 1) Given two arrays were digits of one array represent a number,maxmise the number by replacing it with elements of second array.  
 eg:  
 arr={3,1,4,5,6}  
 rep={1,9,5,2,3}

after replacement  
 arr={9,4,4,5,6}  
 one digit of rep can be used to replace only once.

2)convert the leaves of a binary tree to a linklist using its right pointer.(in place)

I had solved both and was selecetd to the next round along with 29 others

**Round three**  
 Find all substrings of a given string.  
 space can also be part of the substring

I had topped this round giving the most efficient solution.

**Round four: (Face to face)**  
 All contestant were asked the same question.

1)http://www.geeksforgeeks.org/search-in-row-wise-and-column-wise-sorted-matrix/

i gave the answer but was asked to justify my approach and was also asked to code in another approach.There were several questions asked to know the various approaches it can be done in.

2)find sum pair in a sorted array.  
 Again, i was asked questions regarding my approach

**Round 5**  
 Three of us were taken to a room. we were asked to code a DFA which checks the correctness of grammar of a sentence in C. The mentor was very helpful and friendly.

**Round 6**  
 HR round. Normal HR question like why should Microsoft hire you? etc.

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<http://www.geeksforgeeks.org/microsoft-idc-interview-experience-set-67-on-campus-for-internship/>

# Microsoft IDC Interview Experience | Set 68 (For SDE)

Hi, Following is my interview experience for SDE position in Bing Team.

– **Online Round :**  
 **Total questions 2.**

1. The question was big, like a story but it ultimately boils down to Longest Common Subsequence.
2. Don’t remember the question but it was a mix of level order traversal + searching.

– **Onsite : Round 1 : Duration around 1 hour**

1. Given a binary tree, connect all node in the same level. Node structure is : left, right, data, next. Each level next should point to the next right node in the level. For last node in each level, next should be NULL
   * Then, the question was extended : Toggle the linking every K level. Means, you will be given a tree root node and a number K. For first K level, you should link to next right node. Next K you should link to next left and so on.
2. Given a city containing n people, a mayor candidate is one who does not like anybody but everybody else likes him. You are given a function Likes(x,y), where x and y are people in the city.
   * Likes(x,y) = 1 if x likes y, O otherwise.
   * Question was to find the mayor candidate. O(n) solution was required.
3. Some discussion on app based taxi booking services, overall idea about how they are implemented, how it can be improved. Just general idea.

– **Onsite : Round 2 :**

1. Discussion about MTech project, previous work, my contribution etc.
2. What could you have done better in the last round?
3. How can you transfer a binary tree from one machine to another. How will you dump it efficiently in a file. How you will encode and decode it. Long discussion of different approaches.
4. Designing a parking lot system, how will you design the databases etc.
5. Reverse every alternate quarter of a linked list. For example, if the list has 12 nodes, then 1-2-3, 7-8-9 should be reversed, rest remains same. Code with all edge cases checked requited. Test cases for the same.

**– Onsite : Round 3:**

1. Discussion about previous work. Challenges faced.
2. Given a 2 D array of size mxn (say) and a location (i,j), write a function TraverseSpiral(arr,m,n, i, j) which will traverse the array spirally starting from location and moving clockwise.  
    Working code with edge cases checked required.  
    Test cases for the same
3. Stream of words are coming : ate, geek, tea, for, sam, eat. Build a data structure to store these such that, if a query was made to search a word: sat tea, it should return all the anagrams : tea, ate, eat present in the store. Long discussion on possible approaches.

**– Onsite Round 4: With Bing team GM**

1. Long discussion about dissertation, previous work. With stress given to contribution and challenges faced and how did I decided to resolve them
2. Why do I want to leave present company?
3. Some discussion about UI, what are the things to keep in mind while designing a mobile APP like amazon or flipkart. Which is better among them. What would you Iike to do to make them more user friendly.
4. Some discussion about multi thread system and synchronisation among them. Various approaches and their trade-off discussed.
5. High level discussion on how India Railway reservation system works catering to millions of request at a time.
6. Any questions from my side – I asked various aspects of work being done in Bing team. I emphasised on scenarios where a bing search gives more relevant results than a google search.

Overall, it was a great experience. Great food and snacks throughout the day. The interviewers were friendly, giving hints and all. I would also like to thank geeksforgeeks for being there always. I have been greatly benefited hence I am taking time in sharing a detailed and thorough description of the process from my perspective.

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<http://www.geeksforgeeks.org/microsoft-idc-interview-experience-set-68-off-campus-for-sde/>

# Microsoft IDC Interview Experience | Set 69 (For SDE)

Position : SDE BING TEAM

**1. Online round :**  
 This was for screening and had 2 questions:  
 i) max sum product of an array -> (take care of negative no.)  
 ii) Bridge building problem across cities.

**2. F-F round 1**  
 i) interviewer asked me why microsoft and why bing.  
 ii) reverse linked list in size of k  
 iii) design question on array of finding an element in an infinite array  
 iv) search element in a pivot and sorted array.

**3. F-F Round 2**  
 i) same question why microsoft and some project of current company  
 ii) if 2 diagonally opposite coordinates are given of a rectangle, tell where they overlapp or not.  
 iii) find longest substring without repeated character

**4. F-F Round 3**  
 i) why bing ? what do you know about bing?  
 ii) design how will you implement the most viewed bar in bing search, different approaches  
 iii) how to merge 2 unsorted arrays .(gave 3 solutions with complexity )

**5. F-F Round 4 (AA round :- as appropriate )**  
 i) discussion started with my college and studies and grades.  
 ii) moved on to how bing can scale up to google ? can it defeat  
 iii) whats the probability that it can defeat google.  
 iv) What are new features that can be implemented  
 v) views on bing fighting google.

Thanks a lot geeks for geeks 

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# Microsoft Interview Experience | Set 70 (On-Campus for IDC and IT)

Microsoft recently visited campus to hire interns for IDC and IT profiles.  
 I’d like to share my experiences.

1. **Online MCQ Round** – about 15 questions and 30 minutes – MCQ questions on cocubes.com  
    Problems were mostly output type questions in C and Java with a few questions on Combinatorics.
2. **Online Coding Round** – Two coding questions on cocubes, one hour provided.  
    First question was given a binary tree, write a function that returns a linked list of the leaves of the tree such that  
    a) Nodes in the linked list are in the order of left-most leaf to right-most, i.e, head is the left-most leaf  
    b) Using constant ( O(1) ) memory – storing the pointers etc not allowed  
    Second question was, given an array and a window size that is sliding along the array, find the sum of the count of unique elements in each window.

* For example, if the array were 1 2 1 3 3 and window size was three  
    
   First window - 1 2 1 - only two unique = 1  
   Second window- 2 1 3 - all unique = 3  
   Third window - 1 3 3 - only one unique = 1  
    
   Total = 1+3+1 = 5  
   Which was to be returned.
* Few people solved it in O(n) but most solved it in O(nk) where n is the size of the array and k is window size.

1. **Group Fly Round** – Two problems were given, to be solved in about twenty minutes (maximum)

* The problems were :  
   a) Given a sorted array that has been rotated, find the index upto which array is sorted.
* For ex : 3 4 5 6 1 2, the answer would be 3, because index of element 6 is 3.
* b) Given an array of numbers, find the largest product of three numbers in the array
* We were expected to code our solution, write the approach, time complexity and test cases.
* For the first problem, they expected a O(log n) solution, where n is the size of the array.  
   For the latter, they primarily wanted to check if the applicant accounted for negative numbers in the array and that the product could either be of three positive numbers or two negative and one positive number.

1. **F2F interview I** – Few theory based questions like abstraction in C++, volatile keyword.  
    Was given a problem – “Given an array of numbers, write a function that returns a balanced binary tree” . He also asked me to modify it to return a binary tree that is as close to symmetric as possible.
2. **F2F interview II** – Was first given a simple pattern printing problem – for example, if 16 is given, to print :

* 16 11 6 1 -4 1 6 11 16  
    
   if input was 10  
    
   10 5 0 5 10
* The challenge was to not declare any variables or use any loops. Gave a simple recursive function that used stack implicitly to print the pattern. He was satisfied.
* Second problem was, given two sorted arrays, to merge them in linear time and without using extra space, i.e, given an array with enough extra space to hold a second array and a second array, both of them sorted, to merge second into first and return it in O(m+n) time and O(1) space complexity, where m is size of first and n is size of second array.

1. **F2F interview III** – This was partly a HR interview too, where we discussed Microsoft and its services/ work culture / competition.

* The only problem was given a dictionary of all words, to print all sets of anagrams together, in time linear to the number of words in the dictionary.
* The interviews were really thought provoking and the interviewers were helpful and friendly. It felt like solving problems as a team and not at all like a test. The interviewers were quite receptive to our questions and patient.

About 70 people wrote the online MCQ round and about 30 made it to coding round. Some were called for interview directly and some had to go through group fly. Most of the candidates selected were those who went through group fly.

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<http://www.geeksforgeeks.org/microsoft-interview-experience-set-70-on-campus-for-idc-and-it/>

# Print a pattern without using any loop

Given a number n, print following pattern without using any loop.

Input: n = 16  
Output: 16, 11, 6, 1, -4, 1, 6, 11, 16  
  
Input: n = 10  
Output: 10, 5, 0, 5, 10

We basically first reduce 5 one by one until we reach a negative or 0. After we reach 0 or negative, we one one add 5 until we reach n.

Source: [Microsoft Interview Question.](http://www.geeksforgeeks.org/microsoft-interview-experience-set-70-on-campus-for-idc-and-it/)

**We strongly recommend you to minimize your browser and try this yourself first.**

The idea is to use recursion. It is an interesting question to try on your own.

Below is C++ Code. The code uses a flag variable to indicate whether we are moving toward 0 or we are moving toward back to n.

// C++ program to print pattern that first reduces 5 one   
// by one, then adds 5. Without any loop  
#include <iostream>  
using namespace std;  
  
// Recursive function to print the pattern.  
// n indicates input value  
// m indicates current value to be printed  
// flag indicates whether we need to add 5 or  
// subtract 5. Initially flag is true.  
void printPattern(int n, int m, bool flag)  
{  
 // Print m.  
 cout << m << " ";  
   
 // If we are moving back toward the n and  
 // we have reached there, then we are done  
 if (flag == false && n ==m)  
 return;   
   
 // If we are moving toward 0 or negative.  
 if (flag)  
 {  
 // If m is greater, then 5, recur with true flag  
 if (m-5 > 0)   
 printPattern(n, m-5, true);  
 else // recur with false flag  
 printPattern(n, m-5, false);  
 }  
 else // If flag is false.  
 printPattern(n, m+5, false);  
}  
  
// Driver Program  
int main()  
{  
 int n = 16;  
 printPattern(n, n, true);  
 return 0;  
}

Output:

16, 11, 6, 1, -4, 1, 6, 11, 16

**How to print above pattern without any extra variable and loop?**  
 The above program works fine and prints the desired out, but uses extra variables. We can use two print statements. First one before recursive call that prints all decreasing sequence. Second one after the recursive call to print increasing sequence. Below is C++ implementation of the idea.

// C++ program to print pattern that first reduces 5 one   
// by one, then adds 5. Without any loop an extra variable.  
#include <iostream>  
using namespace std;  
  
// Recursive function to print the pattern without any extra  
// variable  
void printPattern(int n)  
{  
 // Base case (When n becomes 0 or negative)   
 if (n ==0 || n<0)  
 {  
 cout << n << " ";  
 return;   
 }  
   
 // First print decreasing order  
 cout << n << " ";  
 printPattern(n-5);  
  
 // Then print increasing order  
 cout << n << " ";   
}  
  
// Driver Program  
int main()  
{  
 int n = 16;  
 printPattern(n);  
 return 0;  
}

Output:

16, 11, 6, 1, -4, 1, 6, 11, 16

Thanks to AKSHAY RATHORE for suggesting above solution.

This article is contributed by **Gautham**. Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above

### Source

<http://www.geeksforgeeks.org/print-a-pattern-without-using-any-loop/>

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Writing code in comment? Please use [code.geeksforgeeks.org](http://code.geeksforgeeks.org/), generate link and share the link here.

# Microsoft Interview Experience | Set 71 (Off-Campus)

**Written test:**  
 They conducted written test in HackerRank and an hour duration. They asked me to implement the functions for the following two problems.  
 1) Maximum product Sum of an Array.  
 <http://www.geeksforgeeks.org/maximum-product-subarray/>

2) Building bridges problem.  
 <http://www.geeksforgeeks.org/dynamic-programming-set-14-variations-of-lis/>

**Technical Interview 1:**  
 He is very friendly and given hints to me while solving problems.  
 1) First he asked me about an overview of my current project then most challenging thing faced in the project. After my response, he asked me what you learnt from that challenging thing.

2) Given an array of integers of the size of n, it contains zeros in random positions, we need to move all zeros to end of the array in a single scan without extra space.  
 <http://www.geeksforgeeks.org/move-zeroes-end-array/>

3) Merging point of two linked lists.  
 <http://www.geeksforgeeks.org/merge-two-sorted-linked-lists/>

4) questions related to programming languages  
     a) about inheritance  
     b) about classes and interfaces  
     c) abstract classes and virtual functions, …

5) He given a situation and asked me to design required classes and functions which are useful to program that situation.

6) The last question is given a number we need to find the next nearest number in 2^n.  
 input: 127 output: 128  
 input: 129 output: 256

**Technical Interview 2:**  
 He asked me very simple questions, but he wants to cover each and every corner case.  
 1) Reverse group of elements in a linked list  
 <http://www.geeksforgeeks.org/reverse-a-list-in-groups-of-given-size/>  
 2) perform push,pop and min operations of stack in O(1) time.  
 <http://www.geeksforgeeks.org/design-and-implement-special-stack-data-structure/>

**Some suggestions:**  
 1) Practice on paper, don’t practice on the computer.  
 2) While practicing, we should try do the question our own then see the answer, don’t go directly to the answer.

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