PLACEMENT PREPARATION
QUESTION BANK 2019-2020

Accolite

Internship:

Technical Questions :
Online Test:

-DBMS - Functional Dependency and normal form questions
-DSA - output questions, trees
-C program output questions
-MCQ Questions from gfg os

Full Time:

Technical Questions :
Interview:

-Build a hospital management system , library system
- Question related to inner join outer joins dbms queries
- Os-producer consumer problem
- Data structure -reversing linked list , searching in rotated linked list,blocked queue implementation 'TRIE' data structure
- Virtual function ,dynamic polymorphism full working code
Project related queries.
-Basic OOPs concept, DBMS basics(Transaction, SQL etc), Programming (Backtracking, Recursion, Sort, Real-time top 10 data, Maze problem, Queue etc)
- pointers and use of static keyword.
- Implement stack from scratch and what data structure would you use to implement it and why?
- Given a number, print whether it is prime or not?
- Give the data model for the situation: Design a system where there were X tables in a restaurant and 9-11 was the timing of the place. Make reservations keeping in mind all possible constraints.
- Given a tree and print paths from root to every leaf node.

HR Questions :
-Hobbies,where do you see yourself in 5 years, what would you like to do in future?
-Location, Introduction.

Adobe

Internship:

Technical Questions :

Interview:

1. OOP concepts- polymorphism, abstraction, inheritance, encapsulation along with examples.
2. arraylist vs array
3. Complexities of heap sort etc.
4. Count the occurrences of a word and report the word with maximum occurrence using file handling.
5. Implement a binary tree and write some of its functions.
6. Given a sorted array rotated at some unknown pivot. Find the index of the given element in the array.

Online Test:

-MCQs related to linear algebra and probability
-Write a pseudocode for this question in the link.
https://leetcode.com/problems/h-index/description/.
- Given an NxN square matrix, each element of the square matrix is either -1,0, or 1. A path is indicated by any number >= 0. 1 is a token. Whenever a token is encountered, the score is increased by 1 and the element at that position becomes 0 (path without a token). The objective is to go from (0,0) to (n-1, n-1) and back while maximizing the score and then return the score. Points acquired via a path that does not lead to the destination can not be added to the total score. While going from (0,0) to (n-1, n-1), the player can only move down once or right once on each move. While going back the other way the player can only move up once or left once on each move.

Full Time:

Technical Questions :

Interview:

1. Project Discussion as on CV.
2. APTITUDE QUESTIONS
3. Abstract Class in Java
4. How is Hashmap implemented internally?
5. What is paging, virtual memory, thrashing, how to prevent it?
6. Sorting algorithms (selection, bubble and insertion sort) and their complexity.
7. Draw and explain working on the page table.
8. Least Recently Used Algorithm.

9. Mutex, Scheduling algorithms.
10. (JAVA) What is an arraylist and how does it work?
11. (PUZZLE) You have two candles. Each burn for 60 minutes. How can you measure 45 minutes using this ?
12. (JAVA) How does the garbage collector work in java?
13. (PUZZLE) You have 27 coins laying flat on a table, each with a head side and a tail side. 5 of them are heads up, 22 are tails up. You can't feel, see or in any other way find out which side is up. Split the coins into two piles such that there are the same number of heads facing up in each pile. How did you do it?
14. Rotate the square matrix by 90 degrees.
15. Given a binary tree and a light source fitted above the tree. Print those nodes values whose shadow will be formed.
16. Given an array of integers, find the first missing positive integer in the array.
17. There is a single lane road such that no car overtake any other car. Cars are moving at different speeds on the road. Now given the speeds of the car, find out how many clusters of cars would be formed and in each cluster how many cars would be there.
18. Rope Cutting Problem
19. Searching in a BST.
20. Two nodes of a BST are swapped, correct the BST.
21. ZigZag Tree Traversal
22. Detecting loops in a linked list.
23. Print matrix in a spiral fashion.
24. Find the node at nth position from the end in a linked list in 1 iteration.
25. Write Preorder traversal iteratively.
26. BFS, DFS traversal.
27. (PUZZLE) Two trains are on the same track and they are coming toward each other. The speed of the first train is 50 km/h and the speed of the second train is 70 km/h. A bee starts flying between the trains when the distance between two trains is 100 km. The bee first flies from the first train to the second train. Once it reaches the second train, it immediately flies back to the first train … and so on until trains collide. Calculate the total distance travelled by the bee. Speed of the bee is 80 km/h.
28. (PUZZLE) 2 jars having capacity of 100 balls each. There are 50 green balls and 50 black balls. Divide the 100 balls in the two jars such that the probability of finding black ball is the highest.

Online Test:

-MCQ APTITUDE QUESTIONS,
- CODING QUESTIONS:

1. FORM THE WORD ‘hacker’ FROM THE GIVEN STRING, IF POSSIBLE.
2. CALCULATE THE NUMBER OF WAYS A PERSON HAS TO TAKE A FIXED NUMBER OF STAIRS, IF HE CAN TAKE ONLY 1,2 OR 3 STEPS AT A TIME.

HR Questions :

-What you want to do in the next 10 years.
- Given a scenario in which the manager is not agreeing to you how will you proceed

- Family and Education Background.
- Which type of team would you like to work in, Cutting Edge Technology or Standard Products, why not the other, give reasons?
- What will you do in case you do not like the project assigned to you?

Airtel

Full Time:

Technical Questions :
Interview:

-Check if x is in the matrix, which is row sorted and column sorted. Time - O(N)
-Check number of occurrence of a number x in a sorted array of n elements.
-Given an array stream, print the stream on the basis of following conditions. If a[i] is divisible by 2 print AA, If a[i] is divisible by 3 print BB, If a[i] is divisible by 5 print CC, If a[i] is divisible by 6 print AABB and so on m conditions. Which data structure will be used to store these conditions and print.
- What is a hashmap and how to implement it, which data structure will be used to implement it.
- Design a library database (tables, E-R diagram) and then optimize it further.
- Iterative mergesort
- Sort based on frequency
- Egg dropping puzzle
- Even elements Insertion and deletion in linked list.
- Paging
- Merge k sorted lists
- Prim's algorithm from scratch and it's proof.
- Given a binary tree, check whether it is a BST or not.
- SQL query to find second max salary from an employees table which has a "salary" column.
- Code Dijkstra's algorithm.
- Explain deadlocks.
-Given two numbers represented by linked lists, create another linked list representing their sum.
-Given a sorted array, find the number of occurrences of an element. (Modified binary search)
-Given a rod of length n inches and an array of prices that contains prices of pieces of size smaller than n that you can sell (need not be all sizes). Determine the maximum value obtainable by cutting up the rod and selling the pieces.
-Given a bag of words (of large size) and an input word, print all the words in the bag that are anagrams of the input word in no more than O(n) time complexity.
- How will you define your own custom HashMap? If you had just an array that you could use to store data then how would you do it.
- Given a LinkedList, first detect if there is a loop in it or not, and then take the last element of

the loop and break the loop.
-Explain your favourite algorithm and code it out.

-Explain OOP concepts.
-Explain interfaces. Explain default methods that can be defined in interfaces (A new concept introduced in Java 8)
-If you were given a project, how will you choose what programming language you are going to work in?
-Level order traversal, Spiral order traversal, Right / Left view, Inward converging spiral order traversal of a binary tree.
-Best data structure to be used for an infinite number of incoming elements to be stored in a sorted manner.

Online Test:

- Given a list of integers, you have to tell how many of them are perfect squares.
- Given a list of n integers and an integer k, sort first k items of the list in increasing order and remaining in decreasing order and print the list.

HR Questions :
-"Tell us a little bit about yourself"
-"How many footballs can fit inside a commercial airplane"
-Define the work that you did in your internship?
-Are you a research-oriented person?
-What else do you like to do apart from academics?
-How do you like to work on a project? In a team, as an individual? And how do you go about working on it?
-Would you be comfortable in working on new technologies?
-Why did you want to join Airtel X Labs?

Amazon

Internship:

Technical Questions :
Interview:

-If there is a linked list in which each node points to the next node and to a Random node(part of linked list only). How do you clone that linked list?
-Given a BST with two of its node values swapped. Correct the BST.
-Given an unsorted array filled with multiple occurrences of 0, 1, 2. Sort the array in one traversal and O(n).

-Difference between Processes and Threads.
-Binary KnapSack
-SQL queries
-Find maximum sum path in n-ary tree.
-N x N matrix with rotten, fresh tomatoes and empty cells. Every second one cell in all directions is infected and thus fresh ones rot. Given the 2D matrix, return the number of seconds it takes for all the fresh tomatoes to rot.
- Find the two nodes which are a maximum distance apart in a tree and also write the code for it.
-Find the two nodes which are a maximum distance apart in an acyclic graph.
-Given a binary matrix which is sorted row wise and column wise, return the index of the row having maximum number of 1s.
- Given: pre-order traversal of a binary tree, whether or not each node is a leaf, each node has either 0 or 2 children. Construct the tree.
-Find the maximum value in a stack at any point of time.
-Given a string which contains only 'a' or 'b'. There is an operation by which you can remove any palindrome subsequence from the string. Find minimum number of operations required to make the string empty.
-Edit distance.
-Polymorphism, inheritance, java.
-Reverse linked list in groups of given size.
-Topological Sort
-Questions on projects on resume.

Online Test:
-Reasoning Questions
-Find element in sorted matrix.
-Implement algorithm for Round-Robin Scheduling with different arrival times.

Full Time:

Technical Questions :
Interview:

-Design a stack to extract max element in O(1)
-Given a row-wise sorted binary matrix, find the row with maximum 1s.
-Find max sum path in n-ary tree
-Design a hotel review system given customer reviews and 'magic' words. Return the best k hotels (with max number of magic words across reviews).
-Substring matching using Z algorithm.
-Tree Traversal
-Sorting Algorithm(heap sort)

-Array vs LinkedList
-We start with a value n in cash and we can choose to invest in a scheme. Here the return we get is floor(n/2) + floor(n/3) + floor(n/4). Each of these 3 numbers is a component that we can choose to reinvest to get a better return (no other amount can be invested after the first investment). Given an n, write a function which calculates the maximum possible return you can get by investing n. (eg: n=24 gives return 12+8+6=26. Now you can reinvest 12 to get a return of 6+4+3=13. Hence the max possible return from investing 24 is 13(not 12)+8+6=27. So 27 has to be returned.)
-Given a binary search tree, print the value of nodes from bottom to top in a zigzag manner.
-Given an array of integers, print all pairs whose sum is 0.
-Given n countries and q bidirectional roads connecting some of them, find the number of distinct continents.
-Given an array of size>=4, print the number d such that a+b+c = d where a,b,c,d are integers in the array.
-Given n chairs some of which are filled by k people, find the index at which one person can sit such that he is at maximum distance from his next nearest person. (O(n) time)
-Implement a list in a language of your choice (append, remove, get operations)
-Topological Sort
-Clockwise Spiral traversal of a BST.
-Reverse a linked list recursively.
-Given a set of 'n' strings, find whether they form a complete cycle. For example, set S = {abcde, efgh, hjia } forms a complete cycle because last character of 'abcde' matches first character of 'efgh' and similarly for 'efgh' and 'hjia' and from 'hjia' back to 'abcde'.
-Find the max area rectangle in a histogram?
-Given two string s1 and s2. Check whether the permutation of s2 is a substring of the string s1.
-Reverse linked list in groups of given size.
-Different methods of data augmentation
-Naive Bayes Algorithm

Online Test:
-Compress a given string in lexicographical order. ex: I/p-> bbbaaacc, O/p->a3b3c2.
- On the warship strategy, an optimal strategy to set the number of ships in each layer. Each ship has a value 'V' and next layer after that ship can have 0 to ((V*V+1)%M-1) valued ships. find (total number of ships)%M.
constraints: 1st layer has only 1 ship with value 'V'=2;
ex: I/p-> number of layers(N)=2,
M=3;
O/p -> 0
explanation: first layer has only 1 ship with value 2, therefore next layer can have ((2*2+1)%3)=2 ships. total number of ships=3, value returned 3%3=0;
-Replicate a linked list which has nodes pointing to the next node and random nodes as well.
-Find the square root of a rational number such that the difference between actual value and calculated value is less than 10e-6.

HR Questions :

-Why amazon?
-Tell me about yourself?

Axtria

Full Time:

Technical Questions :

Interview:

-Project related questions.
-How to cut cake in 8 pieces using three cuts.
-A runner is running 2 laps around a circle. He ran the first lap with a speed of 4m/sec . He ran the 2nd lap with some speed (say x). His average speed over the 2 laps was 8 m/sec. What is his speed during 2nd lap?
-Given 2 jugs of 5L and 3L each, you have to store 4L of water. How will you do it?
-There are 6 rounds in a gun. Your enemy put 2 bullets in those rounds with the condition that he put both those rounds consecutively. He fired the first shot at you but the round was blank. What is the probability that when he shoots the second time, the round will not be blank, i.e., you will be shot?
-Explain any one of your projects from the business point of view instead of the technical side.

HR Questions :

-Tell me about yourself?
-Tell me about your weaknesses and strengths ?
-Why axtria?
-Different situations about working in organisation
-Family Background
-Explain how one of your projects could benefit axtria.
-If another company offers higher compensation, would you leave us and take that job?
-What problems did you face while doing your project?
-Give a walkthrough of your resume.
-Why you don't want to pursue MBA.
-What are your hobbies?
-What is your dream company?
-Why should we hire you?

Daily hunt

Full Time:

Technical Questions :

Interview:

-Write code to print the shortest path in the given grid with obstacles.
-Edit Distance
-Given three people with loaded guns A,B,C each have a probability of making a correct shot as 1/2,1/3,1/4. Given the starting chance, what should C do to be safe?
-Write code to find the duplicate lines in a file, without using any collection (i.e. no maps, arraylist, dictionaries, etc.)
-Questions on projects and CV
-Check for balanced parenthesis. If not balanced, make it balanced by keeping all the opening parenthesis and it's child parenthesis as same.
-LRU Cache Implementation
-Whatsapp System design.

HR Questions :

-Why Dailyhunt?
-Why do you want to join this company? Why opt for an Engineering job and not go for business or any other field?
-Why do you want a job in bangalore when you live in Delhi?
-Tell me about yourself.
-How you see yourself after 5 years.

Dell

Internship:

Technical Questions :

Interview:

-Explain Docker, why docker.
-Why java swing and comparison with spring.
-Explain the scenario for safe car(IOT related).
-Anagram Code.
-Concepts of OS(Virtual memory, paging)
-OOP concepts
-Selection sort (comparison with other sorting algorithms)

-Difference between Java and C++
-SQL queries
-Exceptions in java

HR Questions :
-Where do you see yourself after 5 years?

Full Time:

Technical Questions :
Interview:

-Discussion on projects.
-Difference between c++ and java
-Find largest product of two numbers in an array
-Difference between abstraction and encapsulation.
-What is function overloading
-What happens when the computer is turned on?
-What are the two factors for judging efficiency of a program? Write an efficient algorithm to sort n numbers.
-How to allocate a 2D array dynamically?
-What are data structures? What are ADTs?
-Generate a random number from a given range with repetition and without repetition.
-Paging.
-Virtual memory
-Quick sort
-Check whether a string is palindrome.
-Java interface concepts.
-JDBC and resultset.
-Binary search in a shifted sorted array.
-All the approaches to find the middle node in a doubly linked list.
-How are IP addresses assigned in our mobile phones.
-What is a gateway vs a router. Where is the gateway for our home wifi network.
-How is routing done. Complete process.
-Difference between static and global variables.
-About RAID.
-Explain the recursion process in memory.

HR Questions :
-Where do you find yourself in the next 10 years.
-Your future goals

-What do you aim in life
-Questions regarding relocation and internship.
-Problems in relocating
-Hobbies
-Why Dell

Elucidata

Full Time:

Technical Questions :
Interview:

-Case Study: Data from a scientist's lab was shown. Some cells were exposed to three different conditions IFNg, LBS and LBS + IFNg. Due to these conditions, Some changes in the expression of genes were observed and recorded. The dataset also contained expressions for untreated cells. (In a matrix form)
1.What do you interpret from this data? What are the different comparisons that you will do with the data?
2. You can see that there are many missing values and some dirty values. What can you do about them? Which statistical measure (mean, median or mode) do you think is best to deal with the outliers regarding this data? Why?
3. What are other cleaning methods that you would apply to this data?
4. You see this plot in front of you which contains the distribution for this data. Is it normal or not? What kind of distribution is it? Can you normalise it? How?
5. After applying log normalization, does the distribution look normal? What does it look like? (Gaussian Mixture) How can we make it normal?
6. Clustering and PCA: What inferences do you draw after looking at the PCA plot and the clustering?
-Explain PCA. How can you use PCA to effectively reduce the effort in solving this classification problem (20000 genes, 9 classes).
-Design an algorithm to remove the NA values from the given dataset based on these conditions:
If all three values in a group are NA, delete the row.
If two are NA, then replace them with the third value.
If one is NA, then replace it with the average of the other two.
-Given that a researcher wishes to know if the whole genome expression pattern of a particular cell type changes when it is subjected to different treatments and the fact that you are given the whole genome expression data for the 4 treatments, which statistical technique would you use to conclude that there are significant changes for different treatments?
-Given a dataframe (of the earlier question) with named row and column names, can you tell which wet lab technique was used?

-Given the dimensions of the dataset, can you tell how many probes were used in the microarray experiment and how many samples were subjected?
-The four treatments had four replicates each. What are replicates and why are they used?
-A quality histogram is shown with the size of the reads on the y-axis and the number of reads with that size on the x-axis. (The plot was somewhat a traditional negative binomial distribution). Can you guess what percentage of reads will be classified as small reads? Can you comment on the quality of the reads and the data generated?
-Given the differential expression heatmap of all the samples on one gene (4 or 5 probes corresponded to that 1 gene), what conclusions can you draw from the figure? (Red denoted high-expression, blue denoted low-expression with the faint colours of the gradient denoting in-between values).
-Given that the researcher wants to remove technical outliers and not lose genes of interest, out of mean, median and mode, which statistic would you suggest for this purpose? (The mean/median can be used but you don't want to remove highly expressed genes which are of biological importance).
-Given a probability distribution, can you name which distribution it is?
-Quantify how many computations that solution would take if you have 20,000 features for 3 samples each of 3 classes. How would the solution scale if we increased the number of samples and the number of classes?
-Now given the same dataset (with 9 samples total from 3 classes and 20,000 features), you are given a new sample which does belong to any 1 of the classes but you don't know which one. Suggest a technique by which you'll try to find out which class does it belong to.
-In case the new sample is not similar to any one of the 3 classes, what would you do to find which class does it belong to? Can correlation be used? On what basis would this correlation-based approach fail?
-Given mass spectrometry data, how would you calculate the ratio of parent amino acid reading for the 6 samples to the readings of the same amino acids with the highest carbon labelling? Some amino acids have as low as 2 different carbon labelings and some amino acids have as many as 12 carbon labellings. (Jumping criteria in the dataframe). Quantify how large the jump size for the least number of computations.
-Now given those ratios that you have, we wish to divide those ratios with all the readings of that amino acid.

HR Questions :
-What are your dreams and aspirations
-Where do you see yourself in 5 years
-Why do you want to join Elucidata
-industry vs academia.
-startup vs big company.
-What do you know about the work culture of Elucidata.
-Why did you choose to do a bachelors in xyz and masters in xyz
-Your journey at IIITD.

Endurance

Internship:

Technical Questions :

Interview:

-Find the number in the array which doesn't have a copy in the array
-Design student portal. (Explain all the database, system, network concepts used)
-Bélády's anomaly
-SQL queries
-git commands

Full Time:

Technical Questions :

Interview:

-How will you make a database for an office (like the employees, departments and other things) and how will you apply SQL queries on that database.
-If you were to handle the memory optimisations, how will you do it?
-Different states of a thread.
-Topological Sort
-Dbms(constraints, trigger,Normalisation, Inner join)
-Reverse a linked list.
-Reverse Linked list in groups of k
-Checked unchecked exceptions in java
-Why string is immutable
-Search for a element in rotated sorted array
-For each index in element find maximum element from the remaining sub array greater than current element else store -1.
-Scenario where we require indexing and where we don't want to use it
-Difference between list and tuple in python.
-What happens in the backend after we hit some url.
-Osi model,protocol in each layer.
-MVC model.
-Client Server communication.
-How to build an API.
-SQL Queries
-Java Abstract class vs Interface.
-Design a secure user registration and login system that supports 2 factor authentication from the user view till the back-end and database schema. Questions on scalability, attacks and their

prevention and other data storage and analytics questions related to the solution and in general.
-Difference between http and https. What attacks does https prevent?
-Simple OOP concepts.
-What are different kinds of HTTP requests?
-Difference between a "git pull" and "git fetch" ?

Expedia

Internship:

Technical Questions :
Interview:

-Given arrival and departure time of trains tell minimum number of platforms required
-Given a big number in the form of a linked list add 1 to it.
-Finding the missing number in an array containing numbers from 1-100.
-Finding middle of a linked list.
-Internal working of HashMap
-Left Join,Right Join,Inner Join.
-Rain Water Trapping Question of array.
-Rotating an array n times.
-Rat in the maze problem
-Sort an array containing only 0s 1s and 2s , in linear time and no extra space.
-Given two linked lists, which represent two numbers, return another linked list which is the sum of the two linked lists.
-Diameter sum in a binary tree
-Given a sorted and rotated array, find the minimum element in it in O(logn) time.
-Print the first non-repeating character of a string
-Find the length of a linked list.
-Print the nth node from last of a linked list
-Find the maximum subsequence with two distinct numbers.
-Minimum Spanning Tree
-A person has bought some tickets for going from one city to another. Given the source city and destination city for each ticket, output the sequence in which the person will travel the cities.
Example: Input: Delhi --> Chennai,Goa ---> Mumbai,Mumbai --->Delhi
Output: Goa --> Mumbai --> Delhi --> Chennai
-Check if a given binary tree is a BST or not.
-There are n people at the party. Out of these n people, 1 is the mayor and rest are civilians. The mayor does not know any of the civilians. All the civilians know the mayor. The civilians may or may not know each other. You are given an API which takes two arguments A and B and returns True if A knows B, otherwise it returns False. Also it is given that if A knows B, then B knows A (provided A and B both are civilians). You need to find who is the mayor out of the n

people.
-Find the common node in two linked lists.
-Find the character which when removed from the string , makes it a palindrome
-Write the code for the data structure Linked List in Java.
-Find the minimum and maximum of an incoming stream of values.
-How to instantiate an object in javascript?
-Give the different types of indexes in DBMS.
-What is normalisation in DBMS?
-kth largest in a stream
-reading/writing b-tree in a file.

Online Test:

-Merging 2 strings such that the characters of 2 strings appear alternately in the output string.
-Given an array of strings , and queries. Each query has L and R denoting the starting and ending index of the array. Find the number of strings from L to R which start and end with a vowel.

HR Questions :
-Tell about yourself
-Why Expedia
-Something about the tech projects you have done
-Have you worked in a team & faced any problems with your teammate ?If yes, how do you act in that situation?
-How do you resolve conflicts in a team project?
-Designing an app for conducting hackathons.
-What did you learn from the morning(Company's Presentation)?
-Introduce yourself. What was the best thing you liked about the presentation (given by the company)? What is the current project on which you are working?
-What are the qualities of a leader.
-How will you make a person contribute to a group project if he/she fails to do so.
-What do you think is better leading a team or working as a team member.
-Give ideas about building an application which helps in management of students in the interview process

Full Time:

Technical Questions :
Interview:

-You have 25 horses. Find the fastest 3 horses in the minimum number of races given you can only race 5 horses at a time.

-Given an array, rotate it k times, inplace, clockwise or anticlockwise.
-Given a deck of cards, find the missing card among the deck.
-There are n people at the party. Out of these n people, 1 is the mayor and rest are civilians. The mayor does not know any of the civilians. All the civilians know the mayor. The civilians may or may not know each other. You are given an API which takes two arguments A and B and returns True if A knows B, otherwise it returns False. Also it is given that if A knows B, then B knows A (provided A and B both are civilians). You need to find who is the mayor out of the n people.
-Linked list cycle detection and starting point of the cycle.
-Convert the binary tree to balanced bst.
-Rat in a maze
-Length of the longest sequence with only two digits can occur.
-Sort the array containing integers 1,2,3 in O(n)

HR Questions :

-You have to design an app and you have to make 4 teams among a group of 40 members for this app. How would you go about it? If Team A comes up with a feature that disrupts the features of Team B and this creates a dispute, how would you solve this?
-Given a group of 10 people, 4 of them are first-time travellers, 2 of them have restrictions about the food they eat, 2 of them are physically-disabled. List the questions you would ask them to plan a trip for them.
-Describe your experience working for a team.
-How do you handle a team member who does not do a lot of work?
-Describe what you did in a situation where you came up with an idea that was better than the idea of one of your group members.

Goldman sachs

Internship:

Technical Questions :
Interview:

-Trapping Rainwater.
-Smallest Subarray whose sum equals a given number.
-Find a number of negative integers in a matrix whose rows are sorted and continuous.
-Sorting Algorithms
-Two integer input streams are given. Integers are being retrieved from them indefinitely. Find the maximum of all integers retrieved at any point of time.
-Write a Java class to read/write a file.
-Merge two min heaps.

-Given the price of a stock on different days you need to give an algorithm to maximize the profit. You can only buy and sell the stock once. Buying should be done before selling.
-Given any integer between (0-9999) represent it in words. For instance 1011 is represented as One Thousand Eleven.
-What is the difference between SQL and NoSQL Databases. Their advantages and disadvantages.
-Given a URL shorten the URL into 7 characters.
-If someone types the shortened URL on the Client side how will the System work to deliver the actual Address to the System.
-There are two infinite incoming streams of numbers at any instance that return the maximum value among both the streams till that instance.
-Write the code for Insertion and Deletion in a Binary Heap.
-Given two strings, How will you check that they are anagrams.
-Given two arrays of size M and N find the Union of these two arrays. What will be the solution if one of the arrays is very large in size.
-Longest Common subsequence.
-What is your approach while debugging your program. How can you debug if there is a 503 Error code with Internal Server Error.
-Find if a Binary tree is BST or not.
-Kth Max Number
-Puzzle: n rooms, n people with ids from 1 to n. All the rooms have lights which are initially off. A person with id i goes and toggle all the rooms i, 2i, 3i... after each person has visited the rooms, which all rooms will have light on?
-Alien dictionary
-Singleton paradigm
-What is SQL? How would you explain it to your nephew?
-Return 2 elements in an array that sum up to k

Online Test:

-Given a string on length n (1 <= n <= 1e5) consisting of lower case latin letters. Find the lexicographically smallest subsequence of length k (1 <= k <= n).
-Knight on chess board problem

HR Questions :

-Give a brief introduction about yourself.
-There is a problem on the client side. You and your team are out for lunch and you receive a call from the Management team to fix the problem. How are you going to help the management team to fix the problem? They don't know how to code and you also don't know the source code.

Full Time:

Technical Questions :

Interview:

-Given row and column wise sorted matrix find a number
-Prison puzzle
-Find the number of negative elements in a row wise sorted matrix.
-Rain water problem.
-Kth smallest element in a row wise and column wise sorted matrix.
-Given ranks of various students. Find the minimum number of candies that should be distributed so that each student gets at least 1 candy and people who are adjacent, the one with higher rank should have atleast one more candy than the one with lower rank seated adjacent to him.
-How would you implement a HashMap?
-Find a triplet in the given unsorted array with sum equal to a given number
-Convert Java code to equivalent functional programming code.
-Delete n elements from circular linked list.
-Thread vs Process
-Shared memory between processes

Online Test:

-Infix expression to postfix expression

HR Questions :

-Why do you want to work at GS?
-Why GS?
-How you would solve a conflict in the team.
-Why did you choose computer science.
-If your friends leaks exam paper what would you do

Harman

Full Time:

Technical Questions :

Interview:

-Reverse a number
-Delete a node without its head pointer given

-Convert a binary tree to its mirror image
-Detect loop in a linked list.
-Given a sorted linked list, arrange it in following order i.e. 1st min -1st max -2nd min- 2nd max...
-Projects mentioned in the resume
-Reverse a Linked list between 2 specific nodes 'm' and 'n'. Handle all the edge cases.
-Given the center of the circle as (0,0), radius as 'r' and total number of points as 'n', generate 'n' equidistant points that lie on the circumference of the given circle.

HR Questions :

-Tell me something about yourself which is not mentioned in your resume.
-Describe who you really are.
-Strength & weakness.
-What do your friends think is the best quality about you.
-Strengths and weaknesses.
-If you have to get help in your work from somebody, how will you convince him/her.
-What do you know about Harman?
-Why Harman?

Hcl

Full Time:

Technical Questions :

Interview:

-OOP concepts.
-What is BigData.
-Blockchain Technology.
-Difference between C and Java.
-Sorting Algorithms and their run-time.
-What is a firewall?
-What is the "yield" keyword in python
-What is the friend function in C++.
-What is function overloading in java.
-What is the final keyword in java?
-Write an example code explaining function overriding
-Asked about SOAP vs REST webservices.
-Asked what I know about Cloud computing.
-How are AWS and VMWare different as a company
-What are collections in java?
-What are the OSI model layers? Name and explain briefly.

-What is swap space?
-What is paging?

HR Questions :

-Your strength and weaknesses, your approach towards the team
-Why HCL?
-Introduce yourself.
-Explain any major problem which you faced during your project.
-How do you expect your boss to be like?
-What would you do if you had a fight with any of your colleagues?
-Being a fresher, how would you imagine the corporate world to be like?
-Any questions?

Infoedge

Full Time:

Technical Questions :

Interview:

-What is the JVM? Why is Java considered machine independent?
-How does the java garbage collector work? What are the disadvantages? What is a generation garbage collector?
-What is polymorphism? Give an example. What are the different types of polymorphism?
-Write code for the singleton design pattern.
-BST: write code for insert, search and delete
-OOPs concepts.
-What is HashMap and how is it implemented?
-Reverse an ArrayList.
-Find the number of elements of a linked list.
-Suppose you have an array of 1 to n and a number is missing how would you find the missing number.
-Design and code abstract level design of BookMyShow.
-Locking and types of locking
-Given an array, print the repeating element.
-Merge two sorted arrays.
-Difference between pointer and functional pointer.

Make my trip

Full Time:

Technical Questions :

Interview:

-Given N Array Tree, and Pointers to root node (A) and some other node (B) in the tree. Make Node B root without swapping.
-Simple SQL Queries.
-Given a circular list, find the next greater element.
-Java OOP Concept.
-Given 3 threads print number in sequence

T1	T2	T3
1	2	3
4	5	6...

-Find pairs of anagrams in an ArrayList of String.
-Bottom View of a Binary Tree
-Sub array with given sum
-No of ways to partition a given set of words.
-Design Problem.
-Diameter of a N-ary tree.

Online Test:

-Given a string, you want to know the rank of the original string if all unique substrings of the string are sorted in lexicographic order.
-Given an input n, you need to tell the number of ways you can form an array A of size n from the first n natural numbers such that for any index i, A[i] != A[i+1] + 1.

HR Questions :

-Basic Introduction, Interest, etc.

Mathworks

Internship:

Online Test:

-Given an array of numbers give min no. of moves to make all the numbers equal , here 'move' is defined as incrementing consecutive n-1 numbers by 1.
-Given an array of numbers, arrange numbers in such a way that value is maximised
value = x[0]*x[1]*x[3]....., here x[i] is equal to a[i] if i%2==0 and x[i] is equal to 1/a[i] if i%2!=0

HR Questions :
-Tell me about yourself.
-If I ask your friend about you, what will he/she tell?
-If I ask a professor here about you, what will he/she tell?
-What do you know about Mathworks?
-In which office would you like to work? (Bangalore or Hyderabad)
-GD on Open Source vs Licensed Products
-Discussion on projects done.
-What are you interested in pursuing after B.Tech?
-What does MathWorks do ?
-Are u willing to stay full time at MathWorks?
-What are your hobbies?
-What are your strengths?
-What are your weaknesses?
-Explain ML in layman's terms
-How the internship would be helpful to you.
-How proficient are you in the mentioned programming languages: python, java, c++.
-Tell me one thing you would like to work upon or improve.
-What field do you want to work in.

Full Time:

Technical Questions :
Interview:

-FIR IIR filter
-Questions from resume projects and certifications
-Time and frequency domain sampling
-What information can be derived from impulse response
-Advantages and drawbacks of 5g
-Static variables
-What is OOP and why is it needed. Example.
-Scope of variables
-Flow of a C or MATLAB program

-Draw FSM for a given sequence detector.
-Write the verilog code for above FSM.
-Write it's C, python and matlab code as well.
-Blocking , non blocking assignment, and other verilog and FPGA basics
-RTL to GDS flow in detail.
-Describe Melay and Moore machines
-Draw 110 sequence using shift register. Write C code for this FSM.
-Sorting Algorithms.
-Write a structure for representing a node of a binary tree.
-What is the four color theorem?
-Given two structure definitions A and B, what will be the sizes of each object? (refer to)
-Storage classes in C
-Given a system which maintains a log file and adds an entry every hour, an error occurred at a particular time. How would you find where and what the error was?
-Given a tool which analyzes a number of xml files for semantic correctness and is slow in evaluating the files individually. How would you trace the bottleneck in the tool?
-How to Measure 45 minutes using two identical wires?
-Heaven and Hell Puzzle
-Print right view of binary tree.
-Rotate a mxn matrix.
-Mutex vs Semaphore
-Paging, Scheduling
-virtual functions, dynamic and static binding.
-Given a linked list, find the if loop is present in it or not. If present, find out where?.
-How to implement XML parser efficiently, expecting an high level diagram not code.
-Design pattern.

HR Questions :

-Challenges faced in IIIT.
-How do you manage your projects along with the course going on?
-Why would you prefer mathworks over any other company?
-Tell me about something you have learnt valuable in recent times.
-Introduction
-Preferred Location
-Why should we take you?
-What risk have you taken and Failed?
-One major decision you took for yourself?
-Where do you see 5 years from now?
-Name of your technical interviewer.

Media.net

Internship:

Technical Questions :

Interview:

-Given an array, form another array in which elements are pairwise coprime.
-Given an array, give the longest increasing subsequence such that the difference between the consecutive elements in the subsequence is also increasing.
-Why is the disk read/write slower?
-Explain hashing and its types.
-Difference between TCP and UDP working.
-Given a tree and a value K. Each node has some value V. You need to find a connected component of the tree which contains K nodes, and the average of the values of those nodes is maximum over all possible k-connected components of that tree.
-Given a number M and a number N. You can perform only 2 operations on M any number of times. Add `1` to the number. Multiply `2` to the number. You need to form N from M. Count the minimum number of steps required to do it.
-What are deadlocks? How to avoid deadlocks?
-What is a critical section?
-What is the difference between interface and inheritance?
-Why to use interface over abstract classes?
-What is Thrashing?
-What is Starvation? Define it in terms of programming (not OS)?
-What happens when you enter a url on your browser?
-Which data structure will you use to implement Priority Scheduling?
-Questions on Flask, Ajax
-What are promises in JavaScript?
-Explain the concept of Virtual Memory.
-Why is the critical section needed?
-How to synchronize threads?
-What are the conditions for deadlock to occur?
-Find a minimum number of moves to form a particular string from an empty string of the same length. In each move one can add a character from some index till some another index, replacing the previous characters at all those positions.
-Advanced Binary Search, Two pointer approach
-Given an array A of size n - where 1 <= Ai <= m denotes color of that index and 0 denotes the index is uncolored. The beauty of array is denoted as the (1 + count of indices 'i' such that a[i] != a[i+1]). Given a 2D cost array such that cost[i][j] denotes cost of coloring i'th node to color j. Find

the minimum cost to color the entire array such that the beauty is exactly k, return -1 if not possible.
INPUT - array A[], cost[][], integer k, m, n.
-Given an array A of size n, compute the maximum value of (A[x] + A[y] - x + y) for 0 <= x,y< n. Intended Space complexity O(1) and time complexity O(n).
-Give an algorithm to select k random integers from an infinite input stream, such that the probability of each number getting selected is the same. Intended Space Complexity - O(k)

Full Time:

Technical Questions :

Interview:

-You are given a weighted undirected graph having N cities, weights representing the distance between cities. There are hotels in H cities (mentioned in input). Every day, you can travel at most k units. You stay in a hotel that night and resume your journey the next day. Compute the minimum days to reach from source city S to destination city T - Expected complexity is O(N^3)
-You are given 2 strings A and B. You can perform the following operation -delete a character from string A and insert it in the beginning of string A. Find the minimum number of operations to convert string A to string B. Expected complexity is O(N) where N is the length of the string.
-Find the number of ways to put N candies in K boxes such that each box gets at least one candy; the boxes are indistinguishable.
-There are N balloons in a row, each has a number (A_i) on it. Popping the i^th balloon (2 <= i < N) gives you A_{i - 1} * A_i * A_{i + 1} coins and rearranges the balloons, maximize the total number of coins by popping all balloons except two.
-Given a graph with n cities and bidirectional roads (weighted graph). Some cities have hotels. You are allowed to travel only k distance in a day and then rest overnight at a hotel. Determine number of days to go from a source to a destination.
-Given pairs of players who cannot play against each other. Determine if they can be split into two teams.

Online Test:

-In a binary tree, the diameter sum between two leaf nodes is defined as the sum of all the nodes in the unique path when traveling from one leaf to the other. Assume that the tree is a complete binary tree and every leaf node is at the same depth from the root of the tree. Find the value of maximum diameter sum in a binary tree.
Note that the maximum diameter may be a single leaf node as well (since a single leaf node is also a valid diameter - the trivial path of length 0 from the leaf node to itself)
-You are given a binary tree in the input defined by the following grammar rules.
NODE_VALUE := lowercase english alphabet .
NODE_DEFINITION := NODE_VALUE (LEFTCHILD_DEFINITION RIGHTCHILD_DEFINITION)

Thus a definition such as "a(b(..)c(d(..)e(f(..).)))" refers to a tree with 'a' as the root, whose children are 'b' and 'c'. 'b' has no children. 'c' has two children 'd' and 'e'. 'd' has no children. 'e' has one left child 'f' and no right child. Note that after every 'english character' there is always an opening round bracket '(' that starts the definition of the subtree that is defined under the node. For any position that is empty, there is a '.' character.

You draw the tree as follows.

Write the root on column 0
Write the left child of the root on one column to the left of root and right child of the root on one column to the right of the root.
Continue writing the subtree, such that if the value at a node is written in column 'x', then the left child is written in column 'x-1' and the right child is written in column 'x+1'.

You are given a column number 'x'. Print all the values in column 'x' in sorted order ('a' < 'b' < 'c' and so on)
-You are given a square matrix of integers. The cost of travelling from a cell A to cell B is the sum of numbers in all the cells which lie on the path between A and B, inclusive.
You need to travel from the top left cell to the bottom right cell, and back, minimizing the total cost of travel, subject to the following conditions:
(i)You cannot use squares on the leading diagonal of the matrix (Apart from the top left and the bottom right cells.)
(ii)When travelling to the bottom right corner, you may only move rightwards or downwards. Similarly, while travelling back to the top left corner, you may move only leftwards or upwards.
(iii)Your first move while going from top left to bottom right should be rightwards. Similarly, your first move while going from bottom right to top left should be leftwards.
-Tcp/ip, subnets,process.

Media.net sre role

Full Time:

Technical Questions :
Interview:

-Explain the entire process of how www.google.com is resolved ?
-Questions on Data structures (dictionary implementation).
-TCP/IP model
-Subnetting, switch, hub, classful addressing, classless addressing, etc.

Media.net(devops)

Full Time:

Technical Questions :

Interview:

-How a DNS request is made
-Difference between sql and NoSql and their advantages and disadvantages
-HTTP Headers and SSH Handshake
-Process vs Threads
-Course Projects basic overview
-How to make Android apps better
-How load balancer works
-RAID in operating system

Online Test:

-Application Layer Protocols like HTTP, LDAP
-Subnetting (Ex: Valid subnet masks)
-Process and Threads
-Linux Commands(Basic) and Regular Expressions
-TLB in operating system

HR Questions :

-Describe yourself
-Challenges faced while working on projects
-Hobbies

Microsoft

Internship:

Technical Questions :

Interview:

-Linked list
-Implement "BigInteger" class in any language. It should support basic operations like addition and subtraction.
-Given a list of strings of size n, print top k strings of highest frequency of occurrence.
-Insertion in min heap.
-Convert currency given in string to integer.

-Print duplicate rows in a 2D matrix having only 0s and 1s.
-Remove Duplicates from a sorted linked list.
-Solve tree having numbers as the leaves and operators as the non-leaf nodes.
-Input: aaabbcdda Output: a3b2cd2a using O(1) space and O(N) time.
-Inorder and preorder of a tree without using recursion in O(1) memory.
-Construct binary tree given inorder and preorder traversals.
-Check if two binary trees are mirror images of each other.
-Minimum length of subarray sorting which will make the complete array sorted.
-Array of length n consists of numbers between 1 to n-1. Find the first repeating element.
-Add 2 numbers stored in form of a linked list.
-Given a string. Is it possible to rearrange it so that no 2 adjacent characters are the same.

Full Time:

Technical Questions :
Interview:

-https://www.techiedelight.com/change-elements-row-column-j-matrix-0-cell-j-value-0/
-Min heap implementation.
-Converting indian currency from English string to integer. Eg -> one lakh twenty thousand --> 120000
-Finding similar rows in a matrix storing binary values(1,0).
-Print an array in clockwise manner. The function should also have a flag variable. If flag is false, then start printing in anti-clockwise manner
-Given a linked list where each element has another pointer which is initially set to null, point it to the next larger element in the linked list.
-Check if the values in an unsorted integer array are in AP.
-Connect nodes at same level.
-How to create a graph in python?
-How to detect duplicates in a contact list if two contacts are considered duplicate if any one of the three attributes match.
-Find loop in linked list
-Reverse linked list in O(1) space complexity
-Trie data structure
-Concept of paging
-Locks in OS.
-Given a number in string format. Find the next closest palindromic number.
-What’s multithreading? What’s the issue in Multithreading? How is it handled?
-Given a circular linked list, break it into two circular linked lists. (Single traversal)
-Given a list of intervals for events, club the overlapping events and return the new list.
-Given a list of numbers, find the minimum pairwise XOR.
-Given 3 numbers - n,m and o. Insert m into n at the oth index of its binary format.
-Rotation of image, closest common parent node in a tree

-Given a mobile keypad, WAP to print all the strings that can be generated from a given number sequence. For eg: input : 234 output : ADG,AEG,AFG,ADH,AEH,AFH,BDG,BEG,BFG...
-Given 2 processes having multiple threads if one of the thread of process 1 writes hello world in a location and saves the address of that location in a file what will the thread of process 2 read at that location.
-Difference between heaps and stacks.
-Design and implement LRU cache.
-How to prevent deadlock when using multiple threads in hashmaps?

Online Test:

-Find whether 2 passwords are the same or not. 2 passwords are considered to be same when one can be transformed to other by swapping characters at position i, j where (i+j) %2==0
-You have to distribute n chocolates to k students , such that first student gets 1, second gets 2 and so on, if after giving chocolates to kth student still you have chocolates left you have to give k+1 chocolate to 1st , k+2 chocolate to second and so on. Find the number of chocolates given to some jth student.

HR Questions :
-When did you write your first code?
-Which was your first programming language?
-How did it feel to overcome a problem that you'd been stuck on but finally figured out?
-About projects, difficulties encountered and how you overcame them
-What do you want to do in future?
-Family background

Morgan stanley

Internship:

Technical Questions :
Interview:

-How to count no of words in each page of a book. Make a class book then paragraph the line and describe full working code.
-Merge k sorted arrays
-Sorting Algorithms.
-Heaps

Online Test:

-BFS
-Bracket completion
-Max flow (ford fulkerson).

HR Questions :
-Why do you want to do an internship at Morgan Stanley?
-Have you been to MS office before?

Myntra

Internship:

Technical Questions :
Interview:

-Total number of pairwise overlaps in n ranges.
-First loop in a linked list.
https://www.geeksforgeeks.org/find-first-node-of-loop-in-a-linked-list/
-What are templates in c++ . Difference between templates in c++ and Generics in Java.
-Find the maximum sum contiguous array.
-Static vs dynamic programming
-Java OOP Concepts.
-Implement LRU

HR Questions :
-Talk about your favourite books

Full Time:

Technical Questions :
Interview:

-Backtracking (DP).
-DLL to BST
-Dijkstra.
-Given a string, find if it is nth periodic.
-What is a static and a functional language.
-Longest increasing subarray
-Convert linked list to a BST
-Check if BST is valid

HR Questions :

-Temperament judgement in situations
-What is a team according to you?
-What are your thoughts on Digital India?
-Rank your preferences: work quality, work life balance, compensation

Nucleus software

Internship:

Technical Questions :

Interview:

1. What is a Singleton? Implement it in code.
2. Given an array and an integer k, check weather any subarray has the sum k.
3. Given a stack , reverse the stack without using any other data structure (like any other linked list / queue or stack)
4.Merge sort
5.Quick sort
6. Case where quicksort has max time complexity
7. Binary / Linear search
8. https://www.google.com/amp/s/www.geeksforgeeks.org/leaders-in-an-array/amp/

HR Questions :

-Why Nucleus?
-Resume based

Full Time:

Technical Questions :

Interview:

-Reverse elements of stack in O(1) space.
-Print the number of sub arrays in an array whose sum is K(given).
-Write a program To calculate x^y where x and y are given.
-Code for Dijkstra algorithm, Modifications in that code for undirected graph
-Explain all oop concept in details

Online Test:

-2 simple programming based on mod and bfs

-MCQ on following :
English, aptitude , Java based questions and CS fundamentals were asked in the test.
(Total 65 problems)

HR Questions :
-Why nucleus software?
-Questions related to resume.
-Why do you want to join the company.
-Tell me your strengths and weaknesses.
-What do you do in your free time?

Nvidia

Internship:

Technical Questions :
Interview:

1. Digital electronics: counter Design. Synchronous and asynchronous reset. Difference between Asynchronous and synchronous counters.
2.Some questions on verilog: Blocking and non-blocking, how asynchronous reset is implemented on hardware.
Most of the questions were from basic digital electronics.
3. What is Multilevel Queue Scheduling? How it is different from Priority Scheduling.
Given Arrival Time, Burst time of Processes. Draw its Gantt chart by Preemptive SJF.
4.What is multithreading? Is multithreading useful for uniprocessors?
5. Compare Thread Switching and Process Switching. Which one is fast?
6. What are Semaphores? Give an example by using semaphore such that it ensures mutual exclusion property of the critical section?
7.What are Wait and Signal? Write their implementation.
8.What is a memory leak? Give an example. How can it be avoided?
9. What is the complexity of the binary search? Prove it. Is it suitable for Linked List?

Philips

Full Time:

Technical Questions :

Interview:

-Given an integer array, print the number of occurrences of each integer.
-Find loop in linked list.
-Insert element at the second last position in a linked list using only one loop.
-BFS/DFS.
-What is cloud computing ?
-Is it possible to hide an IP address ? If yes, give a scenario and reason.
- Given an array sort half of the array in ascending order and half as descending order.
- Quicksort algorithm
- Given a linked list check whether it is a palindrome or not.
- OOPS concepts with examples.
- Give a scenario where your operating system can crash.
- Deadlock and mechanisms to avoid deadlock.
- Questions regarding project and resume.

HR Questions :

-Your strengths and weaknesses.
- How do you choose your group partner?
- Where do you see yourself after 5 years.
-Why Philips?

-Are you open to criticism or get offended if someone criticizes you about your work ?
- Explain your best project, give reason.
- Why should we hire you ? Which quality of yours you think is best?
- Difference between hard work and smart work.
- Questions regarding resume.

Qualcomm

Internship:

Technical Questions :

Interview:

1. Finite state machine
2. Setup time and hold time
3. FlipFlops
4. 8:1 Multiplexer using 2:1 mux

5. Verilog
6. CMOS Inverter
7. Explain something from DSA and then explain it's practical applications
8. Explain semaphores and priority inversion
9.Many technical questions related to digital circuits, embedded logic and integrated electronics

HR Questions :

1.Tell me about yourself
2. Discussion on project work
3. Why do you want to join Qualcomm

Full Time:

Technical Questions :

Interview:

-Verilog Code
-Setup and hold question
-Latch and Flip Flop
-Explain RTL to GDS flow.
-CMOS inverter layout.
-PTL logic disadvantage.
-Counter design.
-FSM design.
-Btech project.
- Difference between mutex and binary semaphore ?
- What are volatile variables in C ?
- Name scheduling algorithms, Difference between them.
- How does the dispatcher work?
- WAP to print fibonacci sequence
- Tell about different types of caches?
- STA , Setup hold questions ,verilog question related to synthesis , projects related questions, avoid setup hold
-Find out the two missing numbers of an array of length N-2 which are having numbers from 1 to N.
- Write code of doubly linked list in C.
- What is priority inversion in an Operating system?
- Tell me about the methods by which 2 processes communicate with each other?
- Add two numbers without using plus operator.

- Reverse a number without using extra space.
- Find out the max of two numbers without using condition and loops.
- Reverse linked list, Process synchronization, Cache policies, C programming in depth, OS, Computer organisation, puzzles
- Discussion on course projects
- Draw Process's Memory Layout
- How does Heap and Stack grow?
- How does memory get allocated dynamically in c?
- Differences between malloc and calloc?
- Explain Virtual Memory and how it is implemented?
- Storage classes in C
- What does static keyword do and how memory gets allocated to it(wrt C)
- Program to update bits from position 2 to 5 in an integer making sure the other bits remain unchanged after overriding.
- What is the use of an external variable? dangling pointers? memory leak? Delete the node with even data? Storage classes?
- Based on mostly RTL to GDS flow..asked me to write down each and every step
specific tools used for synthesis,DFT, etc.
- Write down the c code for Palindrome
advantages of DFT. How testibility improves?
- Static timing analysis for flip flop and latches, Clock gating, synchronous and asynchronous reset
-Design a latch using mux
-Applications of toggle flip flop
-Design an up counter using T flip flop
-Given a particular requirement and asked me to design the digital design for that.
-Write the verilog code for clock division
-Make divide by 3 counters. Also draw the waveforms.
-Does setup and hold violation occur in only master-slave flip flops?
-Write code for synchronous set and asynchronous reset. Also draw the hardware.
-When to prefer mealy or moore machine?
-What is coverage?
-What is a synchronizer? How does it work?
- Explain working of CMOS inverter.
- Draw the charge discharge capacitance curve of the CMOS inverter
- Explain the DC characteristics of CMOS inverter
- Explain the process of fabrication of CMOS inverter with diagram
- Explain what is short circuit power and how does it occur in CMOS
- Explain the RTL to GDS flow in brief
- What is the difference between pre CTS STA and post CTS STA
- Explain Floorplanning and power planning
- Setup and hold time
- What is the impact of clock uncertainty on the setup time and what will happen to the clock

period after STA due to this
- Explain physical design in short
- What are the input files to floorplanning
- What is lef file and what all does it have
- What is technology lef and cell lef file
- Draw a 3 bit Asynchronous Counter and explain its working
- Difference between Floorplan and placement
- What is core utilization in floor plan?
- Why power rails are used in the circuit instead of directly using power rings for making connections
- What all is included in clock uncertainty
- The metrics of routing
- Given a circuit calculate the maximum frequency of operation of it
- Project description,question on digital electronics on topic especially counters, setup hold questions,latch up,RTL to GDS flow,CTS,STA
- What is priority inversion?
- What are semaphores?
- What is the difference between NULL and Void?
- Given 2 integers, tell which is the minimum and maximum without using for loop or any conditional operator(if, switch etc)?
- Puzzle questions
- Given 2 integers A and B, find A + B without using the '+' operator.
- Write a programme to reverse a linked list?
- Given a sorted linked list convert it into wave form? ie given 1->2->3->4->5->6->7->, convert it into 1->7->2->6->3->5->4->
- Detect loop in linked list.
- Find the middle of a linked list.
- Heap and stack section in operating system. Question about what is dll and how linking is done in case of these.
- Here does program code reside in memory , stack, heap or somewhere else?
- Different sorting algorithms you know and comparison in them on the basis of use cases.
- String palindrome check code.
- What is Deadlock? Conditions for deadlock, solution for deadlock. Deadlock detection, Dynamic memory allocation. Malloc vs calloc vs realloc.
- Allocate 2d array memory using pointer.
- Is there any memory leak in the system?
- Find memory leaks in large system code.
- Find a loop in a linked list. Count the number of elements in the loop.
- Paging concepts.
- Multithreading vs multiprogramming. (threads vs process) with code for threads.
- Thrashing and belady's anomaly.
- Volatile variable in C.
- Derive pythagorean triplets

- Spin lock
- How can spin lock permanently block a high priority process
- Volatile keyword in c
- Make tree from inorder preorder
- Bubble sort
- Linked list reversal
- What is a context switch? Why do we need that? What happens during a context switch? (This was a detailed question)
- What is mosquito noise in images?
- Puzzle - There are 27 balls. All of them are of the same weight, except one which is heavier than the other 26. You have a beam balance. How many times do you need to use the beam balance to find out the heavy ball?
- Introduce yourself. What did the last interviewer ask?
- Asked me in detail on one of my Hackathon Projects?
- What are callbacks? What is the practical use of callbacks?
- What is virtual memory? Why do we need it?
- What is demand paging? Explain in detail the links between degree of multiprogramming, thrashing, demand paging and schedulers.
- Puzzle about 3 boxes with 2 balls inside (black or white) with mixed labels on them. https://math.stackexchange.com/questions/818597/puzzle-about-3-boxes-with-2-balls-inside-black-or-white-with-mixed-labels-on-t?rq=1
- Declare following :
a. An array of 10 int pointers.
b. A pointer to an array of 10 integers.
c. A pointer to a function.
- Default access specifier of function in struct of C++.
-. Which data structure will you use for implementing preemption in OS
-. How will you implement a circular doubly linked list
- Half a number using bitwise operators.
- Syntax of function pointer, pointer to a const int, const pointer to an int.
- Write C code to delete a linked list node.
- Pseudo-code to find 'n' Pythagorean triplets.
- 25 horses 5 tracks 3 fastest puzzle.
- Difference between Mutex and Semaphore.
- MOSFET characteristics...
- Race around condition and meta stability...
- Single ended and differential sense amplifier...
- Low power design...
- Arguments for pthread_create.
- Difference between break and continue.
- Write a function to compare two strings
- Storage classes in C
- Dynamic memory allocation. Malloc vs calloc.

- Static keyword in depth like where it is stored when global and when local to function?
- Make a stack using an array. Write push & pop.
- Puzzle - 8 batteries are there in which 4 are dead and 4 working. A torch which needs 2 working batteries to glow. Find the min number of iterations in which the torch glows.
- Diff b/w char arr[] vs char *arr ?
- Wap to check if any header file is repeated. Assuming no preprocessing is done and there are nested header files also.
- Write a function which takes an integer value and a memory address. I have to take out last 3 bit from LSB from value and set these bits to 2nd,3rd & 4th bit positions of integers whose address is given(keeping rest bits same)6. Virtual memory? Use?
- Draw layout consisting register,Alu, cache , main memory and Hdd.
- Write back vs write through cache.
- Code in C to dynamically allocate a 2D array of integers?
- Why do we use Cache? What can be the problems in having a single cache in a multiprocessor environment?
-SRAM circuit with less than 6T
-Clock tree synthesis explanation
-Two verilog codes for counter and clock division and brom
-Half Adder, full adder
-Which is better NAND or NOR
-Describe Semaphores and write the code for the same, Mutex, paging, dropout, projects in detail, neural networks, puzzles
-Draw state machine for input 101 etc.
-Virtual Function, Schedulers, Inheritance, memory structure for C programs, Virtual Memory, Round Robin
- Write a program to compute the length of a linked list. Can it be done in < N time.
- What is a virtual table in c++?
- Difference between struct and class?
- Difference between new and Malloc?

Online Test:

-output questions
- finding error in code
- pointers
- basic question on linked list and queue
- computers
- digital (for VLSI people)
- communication (for CSP people)
- coding schemes- block codes, huffman coding.....
- filters -linear and nonlinear
- probability

- type of system -linearity and time invariability
- set of questions for the test
- Convert (1000) (octal) to Hexadecimal
- Questions from Java Inheritance, Inner Class
- Question from Linked List about insertion using provided custom rules
- Data interpretation type questions on pie chart
- Area of square and rectangle based question
- probability...Q. How many different words are possible using PHOTO?- Group formation based question...form a group such that it satisfies given conditions and 3-4 questions were asked on that.

- C - switch case, identify the line no. at which error will occur, find the output (one should be able to identify when the runtime/ compile error takes place)
- Data Structures (linked list, binary search)
- dynamic memory allocation
- Scheduling Concepts..Ex: Fixed time quantum is there for which scheduling?
- Digital electronics very basic or-and gate based question
- VDF stuck at fault(stick diagram based question)
- When the bitmap is changed then is the no. of gates increased, decreased or remains the same for SPARTAN 3E?
- 8086 related basic questions.
- binary addition output, Reduce the boolean expression
- Kmap based question
- identify the 2's complement number 00110111
- flip flop based questions
- excitation table identify
-Rtl to gds flow
-Drc clean question

HR Questions :
-Introduction.
-Preferred location.
-Flexibility with location.
-Why Qualcomm?
-Why shouldn't Qualcomm hire you?
- Which department interests you more?
- Calculate 45 minutes using two rods and a matchstick.
- Apple, orange and mix of these buckets are placed but with all having incorrect labels. Find correct labels by just taking fruit from one bucket.
- 1000 wines, 10 prisoners can be killed, find the only wine that is poisoned.
-Conditions
- Describe your experience of the interview you faced today.
- Do you have a role model? What do you have learnt from him?

Rbs

Internship:

Technical Questions :

Interview:

-Project Based Questions (how was your approach novel, dataset used, results)
-BOTH PUZZLES: one 3 and one 5 litre jar, make 4 litre out of them. Find if 4 points are equidistant from each other or not.

HR Questions :

1. Where do you see yourself in 5 years?
2. Any FinTechs that may be aware of.
3. Why do you want to join the company?
4. What will you do if you are given a project that is not under your expertise?
5. How will your interest in sports help you in your career?

Full Time:

Technical Questions :

Interview:

1.Tell me about your projects.
2.A puzzle to pour 4 litres of water using two jugs of 3 and 5 litres resp.
3.Which technologies you have worked on ?
4. What is ML?
5. What is normalisation, explain with examples?
6. Explain all normal forms with an example?
7. Difference between data mining and data warehousing?
8.Factorial of a number, Thread based output questions, OOPD based output questions (parent and derived class with virtual keyword), object overloading and overriding.
9. Given a sorted array and a number X. Find if any pair exists in an array whose sum is equal to the number. Algorithm should be in O(N) time.
10. Given an arraylist whose values are the indices. Find if the cycle exists or not.
For example:
Arr[1, 2, 1] : should return true
Are[1, 2, 3] : should return false

11. Project discussion
12. Questions on multithreading:
i. What are the functions of multithreading
ii. How inter thread communication happens
iii. How inter process communication works
iv. Why thread pool is important
v. What is cache invalidation
vi. How do you eliminate false sharing from cache
13. Technical questions were mainly based on the projects mentioned in the CV, apart from that basic Data structure questions based on java were asked.

Online Test:

1. Find if there is a circle of indices in the given array.
2. Find if there exists a pair with a given sum X.
3.GIVEN A SORTED LIST AND AN INTEGER X, RETURN TRUE IF YOU FIND 2 NUMBERS IN THE LIST WHOSE SUM TURN OUT TO BE X, AND ALSO WHEN A SINGLE NUMBER ON THE LIST IS EQUAL TO TRUE. ELSE RETURN FALSE.
4. GIVEN A LIST OF NUMBERS, WRITE AN ALGO TO CHECK WHETHER THE NUMBERS POINT TO EACH OTHER AND THEREFORE IS A CYCLIC LIST VIA THEIR INDICES. FOR EXAMPLE [1,2,1] IS A CYCLIC LIST AS AT POSITION 1, 2 IS THERE AND AT POSITION 2, 1 IS THERE. [1,2,3] IS NOT A CYCLIC LIST.

HR Questions :
1. Why RBS?
2. What are your strengths and weaknesses ?
3. What is your goal in life ?
4. Cut the cake in 8 pieces by 3 cuts.
5. Expectation after 5 years?
6. A situation based question
7. Explain your project, Tell me about yourself, Strengths and weakness, You have an ML profile so if you do not get a job related to ML how will you manage?, How do you see yourself in 5 years?
8. What do you know about RBS?

9. What problems you faced in team projects and how could you solve them.
10. How will you communicate to different stakeholders of the company?
11. Given power what would you like to change in your institution?

Tcs research

Internship:

Technical Questions :

Interview:

1. difference between AI,ML,DL
2. SVM's (functioning)
3. Why neural networks? and its drawbacks

Full Time:

Technical Questions :

Interview:

Neural networks
Backpropagation
Sigmoid function
Linear algebra
1. Asked about internship and a project on SAR imaging.
2. Radar based technical questions.
3. STFT
4. How to import .bit file in python, how to connect matlab to python
5. Sensors used in projects, and their working.
6. Stationarity of a signal
7. Adaptive signal processing algorithms RLS, LMS, NLMS, BLMS.
They were interviewing me for Radar signal processing or antenna design.
8. Heavy details on Projects
9. Eigenvalues and Eigen Energy
10. Deep Learning very in depth topics (because i applied for DL)
11. How Adam works, Hyperparameter selection using RL
12. Discussed coursework projects.
13. What is precision, recall, type1, type2 error, Eigenvalue?
14. What is PCA, how does it work?

15. Just a single round which went around for about an hour. The entire interview revolved around the projects mentioned in my resume that I had done at IIITD in courses like SML, IR, CV, AI and Data Mining.
16. Basic computer vision concepts like SIFT, corner detection, filters, CNN and its various optimisation techniques, loss functions all were asked.
17.Difference between Bagging and Boosting

18. Types of Regularisation
19. How to decide number of levels in Decision tree
20. How does overfitting happens in random forest
21. How to build a random forest
22. What is bias and variance
23. K fold cross validation
24. Naive Bayes model
26. Explain your ML project.
27. basic working principles of RADAR.
28. dealing with stationary and mobile targets in RADAR imaging
29. application of two RADARs working at slightly different frequencies.
30. working principle behind MIMO
31. advantages of MIMO
32. how is MIMO useful
33. basic working principles of RADAR.
34. dealing with stationary and mobile targets in RADAR imaging
35. application of two RADARs working at slightly different frequencies.
36. working principle behind MIMO
37. advantages of MIMO
38. how is MIMO useful
39. What is data warehousing? How is it different from databases?
40. What is being used in a data warehouse to store data?
41. Difference between star schema and snowflake schema?
42. Merge sort and it's complexity.

HR Questions :

-HR only verified all the details and some questions about the preferred location.
-Flexible to join any location?
-Flexible to take any area of research?
-Question regarding job location

Telekom digital

Internship:

Technical Questions :

1. Stable sort/ Unstable sort
2. MergeSort and QuickSort which uses what algo
3. About my project i.e. docker and containers
4. Paas Iaas Saas difference

Full Time:

Technical Questions :

Interview:

-Tell the difference between Java and Python
-Is Bash similar to Python
-How is Python and Object oriented language
-0/1 Knapsack in consideration with multiple objects can come.
-Array reordering with the index array given.
-Find out the number of maximum guests in the party provided in and out time.
-Process and Threads.
-DBMS queries.
-Project related Question.
-Maximum sum contiguous subarray, Indexing in DBMS, LRU implementation, count the number of subset with sum k

Tower research

Internship:

Technical Questions :

Interview:

1) Find a pair with a given sum in a Balanced BST.
2) ACID properties DBMS, SQL vs No-SQL
3) Paging, Segmentation
4) You are given n strings, each of length m and consisting of letters 'a' and 'b'. You have to form another string of length m consisting of letters 'a' and 'b' such that the longest common subsequence of the n+1 strings is minimized.
5) What is normalization?
6) Given a BST and a number X, find two numbers in the tree that sum up to X if they exist.

Online Test:

Given multiple binary trees, group the nodes in different sets such that a node is not grouped with any of its ancestors.

HR Questions :

-Is this your first interview?
Do you plan to pursue higher studies?

Zomato

Full Time:

Technical Questions :
Interview:

-What is a Singleton class?
-What is the difference between static and final keywords in Java?
-Given two threads and two matches such that one thread when lit takes 60 mins to burn. How can we measure 45 mins?
-Given n songs in any data structure, randomly shuffle them such that a song can be repeated only after all songs are played. (Time - O(n) Space - O(1)) .
-Find whether a pair with sum =k is present in a sorted array or not.
-Various questions on OOPs concept and java.
-Question on data structures, and problem on the standard maze problem.

Round 1:
1. In depth discussion about my internships and technologies used.
2. Various questions on Python internals - pass by value vs pass by reference, weakly typed vs strongly typed languages.
3. Questions on how big I think Zomato is, the size of their tech team etc.
4. Given a number of orders placed and peak timings, how many riders would zomato need for a day?

Round 2:
1. Given n sticks of lengths l1, l2, ... ln, the cost of combining two sticks is li+lj (the sum of their lengths). Find an efficient way to combine all the given sticks into one while incurring minimum cost.
2. Given a very large number of strings, you have to find the product of the lengths of strings that have no characters in common. Return the maximum such product possible in complexity less than n^2 (n= no. of strings). Why would your method work, and what is the worst case complexity for it?
3.A system has the following functions. Insert (A, B). Query 1: Return all pairs of (A, B) sorted using B value. Query 2: Return all pairs sorted with B value where B is in range (B1, B2). Design the system.

Online Test:

1. Average waiting time for processes under preemptive scheduling.
2. Number of possible order of input of keys under a hashing scheme so that a specified final arrangement is generated.
3. Write a function to check if 2 strings have the same letters in the same order eg: hhhhhiiiirrrreeed and hired returns 'yes' and ghired and hiredg returns 'no'
4. Given an array of strings consisting of left and right parentheses, write a function to find the number of possible pairs that can be made such that the pair of strings concatenated forms a balanced parenthesis sequence.
5. Mcq based on the calling of constructor and destructor in a class.

HR Questions :

Why Zomato?
Your strengths and weaknesses.
What do you think Zomato does?
What is the reputation of Zomato in your college?