

Round 1:

Q1. Given an integer array, how do you generate a uniformly random permutation of the array. You can use a random no generator (and assume that it generates truly random nos). I was also asked about the probability of generating each permutation and how my solution would accomodate that.

Q2. Design a data structure to efficiently access anagrams from a words database (Words db: 256M, RAM 4G)

Round 2:

Q1. Given a 2-D array with each row and column sorted, search a number.

Q2. This was coding. He asked me to code while he'd come back after 10 mins. Given a linked list, swap each pair of nodes. 1234 becomes 2143. Don't know why he asked this, though.

Google Hyderabad Interview Question (3 Rounds combined)

1) How to store N points so that you can query the k nearest neighbours for a point most efficiently. Assume that the distance function is very simple. The order can obviously not be smaller than N.

Ans: I derived at a simple Min Heap kind of structure and he was satisfied but said a better structure based on min heaps concept will do it more efficiently.

2) How to make a class so that you can instantiate only one object from the class

hint (any new object will overwrite the previous one)

hint (how about static something)

3) Search anagrams of a given word in dictionary

4) Test cases a simple function of prototype

```
node* function(char **str,int N){ }
```

5) Test cases for google's homepage

6) A Queue Datastructure using two stacks, code it on blackboard.

Ans: I answered the simplest 2 stack thing and coded the same too.

Then he asked if I can improve the efficiency. Arrived at using a active array concept where you do not need to repute all the elements in to the original array, but set a flag as which array contains the elements and perform the operations accordingly.

7) Assume that you have some kind of mapping which says

M[4]= 7;

M[7]= 4;

You want to write a function

```
int f(int n) {  
    }  
}
```

which given one number returns the other, assume you know the numbers already. Conditional operators/if else/switch and any comparison not allowed

Ans: Use of the Swapping without temporary concepts e.g

```
return 11-n
```

```
return (7 XOR 4)XOR num
```

```
return 7*4/num
```

he was still expecting more answers I gave bad answers like making a hash or making an array storing in key value format.

8) 50 Red balls/50 Black balls, 2 boxes, how do you fill all the balls in the boxes so that probability of drawing a Red ball is maximized.