

DEShaw Experience

Round 1

There were 2 coding questions(leetcode medium level I would say), and some MCQs(LR, DI, etc). Time wasn't sufficient to solve all MCQs

Round 2

It was a one-one video conference on hackerrank.

- 1) Celebrity problem(<https://www.geeksforgeeks.org/the-celebrity-problem/>): Initially told the indegree approach, later optimized it to the stack based approach.
- 2) You are given 2 functions, get(), and put(char c). You have an input buffer containing a stream of digits(you don't know how long). You need to add 1 to the entire number in the buffer and write it using the put(char c) method. You should do this in 1 pass of the input stream. You can read the digits from most significant to the least significant(L->R). You should write digits in the order most significant to least significant.
- 3) You can atmax purchase 2 stocks. Need to find the maximum profit that can be made. (Buy Sell Stock)
- 4) Difference between overloading/overriding. If 2 functions are the same but have different return types, what is it called?
- 5) Oops concepts, inheritance, etc.
- 6) Difference between mutex and semaphore
- 7) Some questions on SQL joins, difference between left join/ right join,etc
- 8) Explain the process of compilation of a program

Virtual Onsite

Round 3

Here there were 2 interviewers, same hackerrank.

- 1) Tell me about yourself.
- 2) What is your favourite subject. Told OS. They were interested and asked me to explain any particular topic in OS that I was really interested in. Told them about context switching. Were satisfied.
- 3) Coding q - You have N machines with a speed $s[i]$ and reliability $r[i]$. You need to make a cluster with atmax k machines such that the cluster score is maximum. Output -> Print the max cluster score possible. Score = sum(speeds of all the machines selected to be

in the cluster)*min(all the reliabilities of all the machines selected to be in the cluster).

Example: S = [4,3,2,1], R =[1,2,3,4]. Say you pick all 4 for cluster, then score = (4+3+2+1)*min(1,2,3,4). $N \leq 1e5$, $k \leq N$

- 4) Implement LRU cache.
- 5) How does Tiny URL work? How would you design Tiny URL? Since you know flask, explain the entire design starting from user to how it goes to the servers, etc and how they are handled, etc. I mentioned that the shortened url could be based on hash of the original URL, but they were like there could be collisions, how would you ensure there are no collisions at all, I told them about double/triple hash, etc.
- 6) Some SQL tables were given, had to write an SQL query using some joins, etc
- 7) Explain everything you know about OOPS, told them everything.
- 8) What are virtual functions, and how are they resolved?
- 9) How much would you rate yourself out of 10 in Javascript? I said 6 thinking it was less, but unfortunately they said you must be good then :P.
- 10) Is javascript single threaded or multithreaded. Told single threaded
- 11) What are promises. Explained them.
- 12) How are async calls handled given javascript is a single threaded language? Didn't know. Took a calculated guess and said maybe time sharing but wasn't sure.
- 13) Write a class in javascript. Told them, I worked on it a year ago, and that I don't remember the syntaxes.
- 14) Difference between lists and tuple in python?
- 15) What are generators?
- 16) What is a decorator?
- 17) Write a decorator for division operation. Wrote most of the functionality, but told them i don't remember the exact syntaxes, and all.
- 18) Does python have a garbage collector?
- 19) Do c/c++ have a garbage collector?

Round 4

Here also, there were 2 interviewers, same hackerrank.

- 1) Given a string. Create the lexicographically largest string out of its characters, such that any character can consecutively occur at max k times. Need not use all the characters.
Ex: abbzb, k = 1, ans = zbab $n \leq 1e5$
- 2) Was asked to explain pastry and mini-torrent projects.
- 3) How are databases implemented? Told them about B-Trees.
- 4) How is indexing done in databases? Told them about dense, sparse, later asked pros and cons of each.
- 5) Was asked to write an SQL query given some tables.
- 6) Again was asked questions on OOPs, base class pointers, etc.
- 7) Some more questions were asked, can't recollect though.