

2020-05-07 Last Day of Class

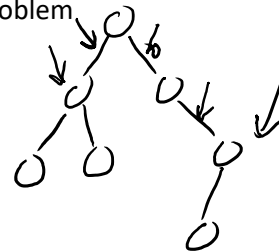
Thursday, May 7, 2020 12:53 PM

Important Agenda Items

- There's a practice exam on ZyBooks
- Exam topics
 - Comprehensive
 - Guaranteed questions on...
 - Vectors
 - Hash tables
 - Trees
 - Possible questions on...
 - Priority queues
 - Graphs
- Exam is 12:40-2:30 on Tuesday
 - Log on to zoom prior to receive exam code
- You have until Tuesday during our final to turn in the final source code for your project
 - Be sure that it compiles and runs without crashing
 - Be sure to include in your readme any special instructions.
 - Also note if something is broken

Common Interview Question Categories

- Hashtable question
 - Almost always disguised with a theme that doesn't make it very obvious that you need a hash table
 - Often you'll be presented with a string manipulation problem that at first appears very hard but then if solved with a hash table becomes very easy
- Tree question
 - Usually require the use of recursion / use of a traversal.
 - Amazon e.g. To calculate the "distance" between two nodes in a BST
 - Variation of the common ancestor problem
 - Often involve the application of simpler functions
 - E.g. height, path distance, etc.
- String manipulation problems
 - How many mutations would be required to convert string X into string Y
- On sites will usually have you code some sort of greedy algorithm (often applied to graphs)
 - Helps to know Dijkstra's algorithm and how it works
- (Much less common): Ask you to solve weird questions and see how you react
 - Why is it colder in Alaska?
- (Guaranteed): Architecture question
 - Given some system spec, how would you design the system (e.g. what client/server setup, what might the DB look like, how would things interface, etc.)
- Becoming more common are "project-based" interviews
 - If you're unlucky, they'll give you a product spec, put you in a room, and 4 hours later expect a code demo.
 - Usually with this type it's you might be able to ask about the tech stack that you'll be using so you can practice. Highly advised!
 - If you're slightly more lucky, you'll be assigned a partner to work with and you'll collaboratively code



- Adam likes this one a lot
- Also becoming more common: GitHub interview
 - Person in charge of hiring looks at your github and decides if you know how to program and if you're creative and such.
 - If they like what they see, they'll give you call and ask you to explain some of your code.

Suggested topics

- Definitely basic data structures that we've covered
 - Also look into tries
- Dijkstra's algorithm / basic pathfinding without weights.
 - Know both a DFS and BFS search
- Huffman coding trees
- Dynamic programming techniques
 - Levenshtein edit distance algorithm
- Stable marriage algorithm
- Bit manipulation (boolean operations, bit shifting, bit masking)
- Matrix operations
- Algorithm analysis. EXPECT to be asked the runtime (and sometimes space) complexity for any answer you provide.