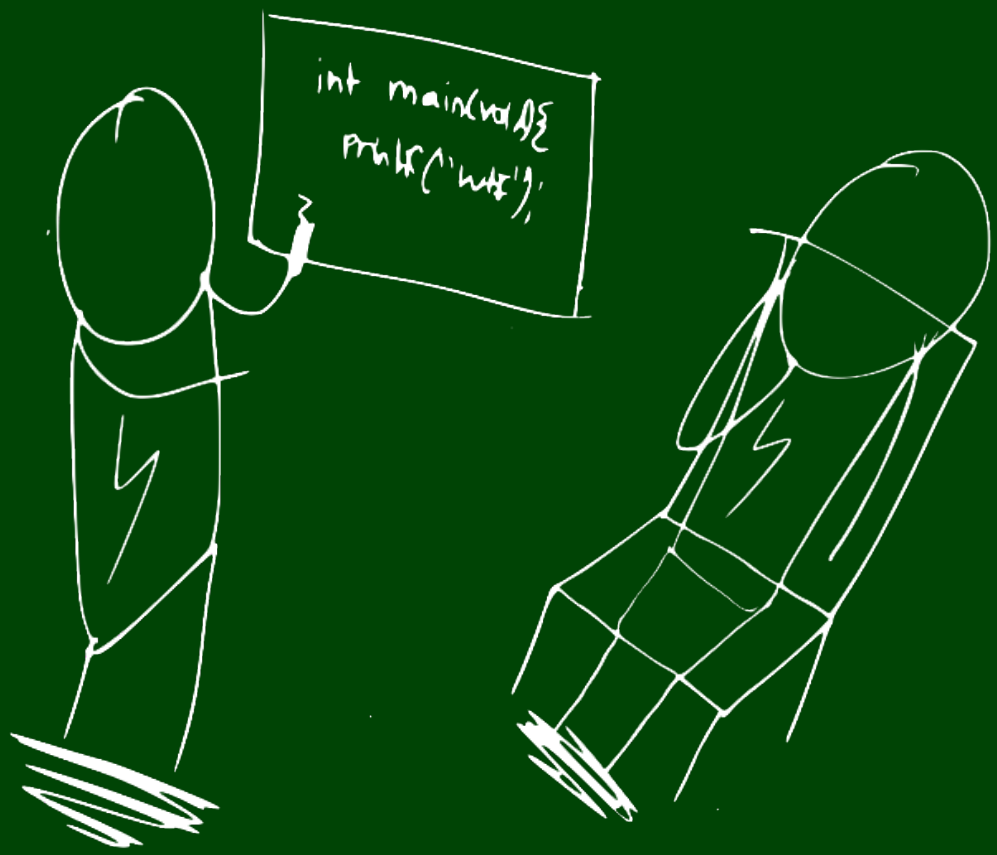
CS 3

Introduction to Software Design

Interviews



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Overview

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   - 1-2 technical phone interviews
   - 1-2 technical on-campus interview
   - 1-2 online programming challenges
3. On-site interview day(s)
   - 2-7 in-person technical interviews
4. Follow-up technical phone/video interview(s)

Outline

- Always remember: they are there to recruit you!
- At job fairs, it's usually engineers–these are your peers!
  - Otherwise, they are often non-technical
- The process is **people** oriented
- Be positive!

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- Be a reasonable person...

The Five Areas (Steve Yegge)

1. **Coding.** The candidate has to write some simple code, with correct syntax, in C, C++, or Java.
2. **OO design.** The candidate has to define basic OO concepts, and come up with classes to model a simple problem.
3. **Scripting and regexes.** The candidate has to describe how to find the phone numbers in 50,000 HTML pages.
4. **Data structures.** The candidate has to demonstrate basic knowledge of the most common data structures.
5. **Bits and bytes.** The candidate has to answer simple questions about bits, bytes, and binary numbers.

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What I'm looking for here is a total vacuum in one of these areas. It's OK if they struggle a little and then figure it out. It's OK if they need some minor hints or prompting. I don't mind if they're rusty or slow. What you're looking for is candidates who are utterly clueless, or horribly confused, about the area in question. –Steve Yegge

Their Questions

- Tell me about a time when you...
  - collaborated by dividing tasks, delegated, pair programmed
  - had a conflict with a teammate
  - couldn't solve a homework problem
- Tell me about the hardest bug you've ever had
- Tell me about a project you're working on
- Why do you want to work here?

What To Expect: Behavioral Questions

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Your Questions

- What's the most exciting part of your job?
- What's the most interesting problem you've solved at X?
- ...anything that demonstrates you actually care about the company
- ...anything else you can think of!

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Themes

- Interviewers care about bugs in your code
- Interviewers care about your design
- Interviewers like "iterative questions"
- Interviewers expect you to generate test cases and run through them line-by-line

Essential Topics To Study

- DFS/BFS
- Binary Search
- Standard Data Structures: arrays, stacks, queues, trees, hash tables, graphs
- Sorts: merge sort, quick sort
- Recursion
- Dynamic Programming

Outline

Approaching Behavioral Questions

- An interviewer who doesn't like you is a wasted opportunity
- Your attitude **matters!**
- Don't spew "canned" responses
- Be excited both when you're talking and when they're talking
- Take break time to "re-center" if you're shaken

- Talk through **everything**!
- Ask for clarification on edge cases
- Do not discount the "trivial" brute force solution
- When the interviewer gives you a hint. . . do not ignore it
- Iterate on your solution
- If you've seen the problem, say so. But expect to code it anyway.
- Simple errors are usually forgivable
- Run **every line** of your code through your test cases

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- . . . Keep Talking . . .

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Let me tell you a story. . .

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Generic Advice

- Get used to coding without a computer
- The interview is **timed**; do not underestimate this!
- Do not do your first few interviews at places you care about
- Be reasonable

Google Criteria

- Does the candidate know how to use data structures and algorithms?
- Is the candidate's code well designed?
- Does the candidate write idiomatic code?
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Google Process

- Campus Interview / Phone Screens
- On-site Interviews with "effectively random" engineers
- Engineers submit feedback to recruiter
- "Hiring committee" collates feedback and makes decision
- "Executive committee" reviews decision
- You get hired!

Microsoft Criteria

- Adaptability
- Collaboration
- Customer Focus
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Microsoft Process

- Campus Interview / Phone Screens
- On-site Interview with **members of the team you'd be working on**
- Your interviews are usually with multiple teams that have been pre-chosen by Microsoft
- The team decides very quickly

Dropbox looks for **combining** data structures/algorithms with systems knowledge. It's not enough to know one or the other.

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- Determine if two strings are anagrams of each other
- Determine if an element exists in an unbounded stream with unknown size in $\mathcal{O}(\lg n)$ time
- Implement semaphores

Outline

So . . . , you didn't get it

Companies prioritize NOT making a **bad** hire
over making a **good** hire!