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Job Interviews

Google System design interviews

A Anonymous
May 16

Have an on-site coming up in a week or so for a SWE.

Google Software Engineer System Design Interview

Questions

1. Based on the posted material on the web, it seems the scope is focused on OODesign, classes, data structure, and some logic along with some system flow/architecture diagrams, and performance/scale coverage. Is the above approximately accurate or there are other topics?
30 words minimum.
2. When you ask system design questions, will you provide guidance on what to focus on? What's the process of the interviews?
30 words minimum.
3. How do you evaluate whether it's a pass or fail? Can you share your evaluation process?
50 words minimum.

2 Answers

D days Google
May 17

+ Ask

1. Based on the posted material on the web, it seems the scope is focused on OODesign, classes, data structure, and some logic along with some system flow/architecture diagrams, and performance/scale coverage. Is the above approximately accurate or there are other topics?

Yes, that's basically correct. From my personal experience, not much people test on classes (as you can imagine, different programming languages have their own class features, so it's hard to have a generic class related question that works on all programming languages). I also don't think there's much computer architecture related question (if that's what you meant by architecture). Most system design question is very general, and interviewers usually evolves the question based on how the interviewee respond to it and interviewee's background.

2. When you ask system design questions, will you provide guidance on what to focus on? What's the process of the interviews?

Of course. The key of the interview is not to make it hard for the candidate, but work with the candidate together on a question to understand how the candidate thinks. Usually I always tried to hint/lead the candidate to the correct approach. If candidate is heading towards a wrong direction, I always hint them to another direction. Of course, the more hints I gave, the less likely I'll give you a good review, so don't rely on hints to heavily, it will hurt your review.

For me, after I described the question, I usually gave the candidate 3-5 mins to think on it, and then discuss with the candidate about the approach they have. If the candidate finish the question early, I'll also asked some follow-up questions.

3. How do you evaluate whether it's a pass or fail? Can you share your evaluation process?

For system design question, I'd like to understand how the candidate approach a problem. There's usually no absolute correct solution (although there will be solutions that we considered correct), the important part is the process. Even if you couldn't get the perfect solution, as long as you show your thinking process and show your understanding of designing a system in general, then it's good enough. For instance, do you understand different data structures/algorithms and their trade-off, do you know common scaling techniques, do you know how to improve performance at a lower level (OS, computer architecture, etc).

A Anonymous ★★★★★

I'll be sure to take your advice! It's comforting to know it's more the process and not the result. Thanks!

1. Based on the posted material on the web, it seems the scope is focused on OODesign, classes, data structure, and some logic along with so system flow/architecture diagrams, and performance/scale coverage. Is the above approximately accurate or there are other topics?



It depends on what level you're interviewing for. L4 and below you will get OO design and maybe some systems design related questions and you're only expected to know the high-level details. When you're interviewing for L5 and up you're going to be asked systems design questions, with the expectation that you can define the goals/requirements of the system, define the high-level architecture, deep-dive into some components, and identify the bottlenecks. I'm assuming you're interviewing for L3/L4 since you're asking this question.

2. When you ask system design questions, will you provide guidance on what to focus on? What's the process of the interviews?

The expectation with system design questions is that the candidate will drive the interview. The interviewer will be quickly able to tell whether you are experienced or not in designing systems when you don't know what the right area of focus is, because that's part of the interview, knowing what to focus on. For example, Twitter is complex because of the fan-out problem and celebrity tweets with millions of followers. If you ask them what to focus on it's clear that you don't know the bottlenecks of the system.

The interview starts off with a purposefully vague ask: design X. It's your job as the interviewer to constrain the problem into something both you and the interviewer can agree on, and then to dive deep into the problem. There's really no structure to the interview, because the interview can go many different ways, but typically it starts off with defining the goals of the system, constraining the problem, coming up with the data schema, key data flows, high-level architecture, bottlenecks/problems in the initial design, deep-dive into specific components, performance analysis, solutions to scalability problems, and talking about further optimizations/features.

3. How do you evaluate whether it's a pass or fail? Can you share your evaluation process?

This is pretty hard to do as a candidate. If you know the scope of the problem you were given, you would be able to evaluate whether it's a pass or fail. As for the evaluation process, I personally ask the same question to every candidate so that I can try to get a fair assessment of the interview. It's really about how far and in-depth the candidate can go without fumbling. Any time a candidate seems like they're uncertain about something, I test them in that direction to see if they really know what they're talking about. I ask them what they would do if the problem was slightly different, to see if they understand the tradeoffs of certain decisions. Since there's no right or wrong answer to system design questions, it's all about the depth in which the candidate understands the tradeoffs of design decisions, and to see how detailed of a system they could build out in the 45 minute window.

A Anonymous ★★★★★

Thank you for the advice! I'll be sure to ask you more questions if I have any!



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