System Design Interviews

A step by step guide

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➡ System Design Interviews (SDIs) are unstructred.

➡ In SDIs, people are asked to answer open-ended design questions.

➡ What could be a good strategy to answer a system design question?

➡ Follow these seven steps.

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Step 1: Requirements clarifications

➡ Make sure you know the exact scope of the system by asking questions.

➡ Start the interview by asking a few questions.

➡ Not all things can be clarified at the beginning; keep asking clarifying questions throughout the interview.

Step 2: Back-of-the-envelope Estimation

➡ Establish a reasonable estimate of the size of the system you wish to design.

➡ Try estimating the resources (storage, CPU, memory, network, etc.) required to build the system.

➡ Later, this will help when you focus on scaling, partitioning, load balancing, caching, etc.

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Step 3: System Interface Definition

➡ Describe the interfaces of the system.

➡ Define what APIs are expected from the system.

➡ This will not only establish the exact contract expected from the system but also ensure that you have not gotten any requirements wrong.

Step 4: Define Data Model

➡ Define the data model, what tables the system will have and what fields each table will contain.

➡ Defining the data model will also clarify how data will flow between different components.

➡ Later, this will guide the partitioning and management of data.

Step 5: High-level Design

➡ Draw a block diagram with 5–6 boxes representing the core components of your system.

➡ Identify enough components that are needed to solve the design problem from end to end.

Step 6: Detailed Design

➡ Dig deeper into 2–3 major components.

➡ Interviewer's feedback should always guide you towards which parts of the system you should explain further.

➡ Describe various options, their pros and cons, and why you chose one over the other.

Step 7: Identifying and Resolving Bottlenecks

➡ Identify and discuss as many bottlenecks as possible.

➡ A few examples of bottlenecks are the single point of failure, network transfer rate, I/O rate, CPU and memory limits, etc.

➡ Describe different ways to mitigate the bottlenecks.

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➡ Prepare well and stay organized during the system design interview.

➡ To distinguish yourself from others, follow the above steps! See more details on SDIs in "Grokking the System Design Interview" on DesignGurus.org

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