Onsite Interview

Below is a roadmap I've created for you that has everything you need to help you succeed the Amazon interview process and receive an offer. **Preparation is absolutely essential and please use this as a checklist to prepare for the interview**.

Interview Format

1º Interview: Behavioral Questions + Coding & Algorithms & Data Structures (use this link to help review: http://cslibrary.stanford.edu/110/BinaryTrees.html)

2º Interview: Behavioral Questions + Coding & Problem Solving

3º Interview: Behavioral Questions + Problem Solving & Design (logical & maintainable/software/Object Oriented Design)

4º Interview: Behavioral Questions + System Design OR Component Design

GENERAL ADVICE:

Be Specific: Reference data points or metrics that justify decisions you've made.

Ask Questions: Ask clarifying questions. There are often ambiguous situations to deal with in the work place, and so there will be a few in your interviews. Asking questions will give you a clearer understanding of the challenges presented by the team, and gives the interviewers insight into how you dive deep on issues and solve problems. This can make a huge difference in you interviews.

Be Honest: Some interview questions may be negatively oriented. (ex. "Can you tell me about a time when you didn't meet a deadline?") We all have setbacks, but what's important is how you handle them, and what you learn from them.

Take Ownership: Be mindful of appropriately using "I" vs. "we" statements. Spend more of your time speaking to your responsibilities and what you've accomplished, as oppose to what your team as a whole accomplished.

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SECTION 1 - Amazon Leadership principles

The principles are an important aspect of who we are at Amazon and the culture we maintain.

As you review the 16 principles be prepared to answer a questions about your work delivering on a project, challenges you might have faced, problems you had to work through, meeting a deadline, etc. You will be expected to walk us through various example in your life in which you exhibited the leadership principles.

Ideas when preparing for the Leadership Principles:

Ownership: Think about situations where people said this is not my job and what did you need to do on that situation?

Customer obsession: Thinks about situations where you went out of your way to satisfy your customer.

Bias for action (goes together with deliver results): Think about times where you had to make decisions quickly by taking very calculated risks especially when there was a lack of data.

Have a backbone, Disagree and commit: Think about times where you were able to push back on your manger or team members by presenting counter arguments with the help of relevant data or metrics. Think about how you influenced the your manager or team members to adopt to your approach.

STAR methodology

You must answer the Leadership questions using the STAR methodology

Situation: Open with a brief description of the Situation and context of the story (who, what, where, when, how).

Task: Explain the Task you had to complete highlighting any specific challenges or constraint (e.g., deadlines, costs, other issues).

Action: Describe the specific Actions that you took to complete the task. These should highlight desirable traits without needing to state them (i.e., initiative, intelligence, dedication, leadership, understanding, etc.)

Result: Close with the result of your efforts. Include figures or metrics to quantify the result if possible. Provide measurable specifics where you can, and be prepared to back them up.

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SECTION 2 - Coding Interview Tips

First steps first :

1. Before jumping into any code, answering any questions, etc. – ASK CLARIFYING QUESTIONS. Make sure you are fully aware of what they want to see by asking questions to get more data as needed. They want to see you dive deep into what they are looking for. You will purposefully be asked ambiguous questions throughout the interview to gauge your problem solving skills.

2. Code in the language you are most comfortable using. As you are putting your code on the board THINK OUTLOUD and walk them through the steps you are taking. It is important to show them your thought process as you answer their questions. Engage them in why you are doing what you are doing.

3. They will be gauging your ability to take coaching, come up with alternate solutions, and show your ability to analyze a problem and come up with various solutions.

4. Your goal must be to provide the interviewer with the most optimal solution

- You will be asked to determine the efficiency and runtime (time/space) complexity for all coding questions.
- Aim to optimize the efficiency of your code to make it run faster.
- You must be able to code fast but at the same time it **must be clean, clear and concise**.
- Be ready to explain how its built-in structures and operations work under the hood,.
- Be especially careful with concise built-in expressions that might have a linear cost underneath (such as list.delete(element) or list.search(element)'.
- Don't worry too much about a perfect, fully compilable syntax, **but the code should be syntactically correct for the most part**. If you don't recall a particular syntax construct, be clear with the interviewer about the assumptions you're making.
- Use proper variable naming functions.
- Interviewers do not consider pseudo code as a complete solution to a problem.
- Account for all edge cases and corner cases.
- Test code in your mind if possible.

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SECTION 3 -
Coding Interview Tips

Data Structures and Algorithms Preparation :

You must be able to explain the inner workings of common data structures and be able to compare and contrast their usage in various applications.

You must be able to solve problems in Linear time.

You may be asked to solve problems with use combination of two or more data structures.

Absolute Must Haves :

1. Hash Tables – you must be able to explain how internals of hash tables work for example hashing.

2. Linked Lists

3. Big O Notation - you will be asked to determine time/space complexity in almost all your interview questions, and how to optimize your code for better time/space complexity. You are extremely likely to see a question where the solution will involve the use of hash tables.

4. Trees (especially Binary Search Trees) - be ready to explain how a binary search tree works a) if it's balanced and b) if it's not balanced.

5. Algorithms: Breadth First Search/Depth First Search, Binary Search, Merge Sort and Quick Sort, Sorting

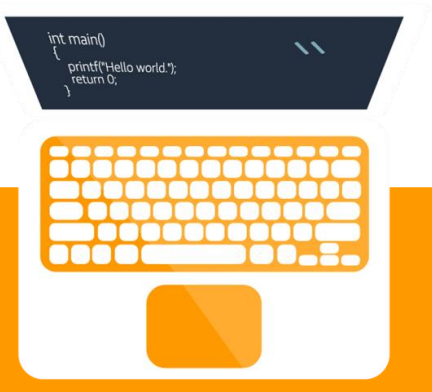
6. Arrays, Recursion, Stacks/Queues, Bit Manipulation, Traversals, etc

Problem Solving:

This competency measures the ability to take something complex, identify the problem, break-it-down, and solve it.

The interviewer will share with you an ambiguous problem statement. It may be more difficult to understand what the problem is and will need to ask clarifying questions to understand how they can start solving the problem.

Divide the problem into smaller pieces in order to solve it.



Logical and Maintainable:

This competency measures the ability to write maintainable, readable, reusable, and understandable code.

You'll have to perform a component design and object oriented design properly.

Take care of duplicates, abstractions, proper variable names

Inheritance / classes

Divide the problem into small pieces, small pieces of code, instead of a messy function

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SECTION 4 - System Design and Component Design

Component Design:

Object Oriented Design – Very important for Junior level candidates
Review OOD concepts. You can refer to this doc for the review:
https://www.educative.io/courses/grokking-the-object-oriented-design-interview/g7Lw3O0A2Aj
This video simulates well the Component Design interview
https://dev.to/candidateplanet/interview-prep-object-oriented-design-questions-featuring-sam-techdebtor-1b4l

Be ready to define classes, attributes, abstraction, methods and the relationship between components during the exercise
Make sure to explain the trade-offs and the choices you make during the exercise

System Design:

This interview will test your understanding of distributed systems, concurrency/multi-threading, scalability, performance, operational excellence, etc. Please use this link to prepare
https://www.hackerrank.com/domains/distributed-systems/client-server/page:1

System Design Introduction for Interview (and other great videos from Tushar Roy
System Design Primer
Netflix System design - YouTube
System Design Interview Question: DESIGN A PARKING LOT - asked at Google, Facebook - YouTube

IMPORTANT TIPS AND RESOURCES:

Highly Recommended: "Cracking The Coding Interview, 6th Edition" by Gayle McDowell.

The chapters on Systems Design (scalability), Object Oriented Design, Data Structures, and Algorithms are important for your Amazon interview.

You will most likely have to solve a graphing problem involving a hash map and some sort of search problem using a common data structure or algorithm like a binary search tree, divide and conquer, depth vs breadth, etc.

Practice questions on Hacker Rank:
https://www.hackerrank.com/interview/interview-preparation-kit

YouTube Link for Data Structures, Algorithms and CS Concepts in general:
https://www.youtube.com/user/mycodeschool

- https://www.careercup.com/page?pid=trees-and-graphs-interview-questions
- http://codercareer.blogspot.com/p/binary-tree-interview-questions.html
- Google "binary search questions"
- https://www.hackerrank.com/challenges/tree-height-of-a-binary-tree
- https://www.hackerrank.com/challenges/tree-level-order-traversal
- https://www.hackerrank.com/challenges/find-the-running-median
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