

# 100 Coding Challenges for Cracking Facebook, Amazon, and Google Interviews

Cracking technical interviews at top tech companies like Facebook, Amazon, and Google is no easy feat. One of the most effective ways to prepare for these interviews is to practice solving coding challenges. This article provides a comprehensive list of 100 coding challenges that are commonly asked in interviews at these companies.



## 100 Coding Challenges for cracking Facebook, Amazon, Google Interview 2.0: Get that Job!! by Jill b.

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The challenges are divided into the following categories:

- Data Structures
- Algorithms
- Problem Solving

Each challenge is accompanied by a detailed explanation of the solution and tips for solving it efficiently. By working through these challenges, you will not only improve your problem-solving skills but also gain a deep understanding of the data structures and algorithms that are commonly used in real-world applications.

## Data Structures

### 1. **Reverse a linked list.**

*Solution:* Use a loop to iterate through the linked list and reverse the pointers to the previous node.

### 2. **Check if a binary tree is balanced.**

*Solution:* Use recursion to traverse the binary tree and calculate the height of each subtree. The tree is balanced if the difference in height between any two subtrees is less than or equal to 1.

### 3. **Find the k-th largest element in an array.**

*Solution:* Use the quick select algorithm to find the k-th largest element in  $O(n)$  time.

### 4. **Implement a hash table.**

*Solution:* Use an array to store key-value pairs. To find a value, use the key to calculate the index of the array where the value is stored.

### 5. **Implement a stack.**

*Solution:* Use an array to store the elements of the stack. To push an element onto the stack, add it to the end of the array. To pop an element from the stack, remove it from the end of the array.

## Algorithms

6. **Find the shortest path between two nodes in a graph.**  
*Solution:* Use the Dijkstra algorithm to find the shortest path between two nodes in a weighted graph.
7. **Find the maximum flow in a network.**  
*Solution:* Use the Ford-Fulkerson algorithm to find the maximum flow in a network.
8. **Sort an array of numbers.**  
*Solution:* Use a sorting algorithm such as quicksort or mergesort to sort the array.
9. **Search for a value in a binary tree.**  
*Solution:* Use the binary search algorithm to search for a value in a binary tree.
10. **Find the connected components in a graph.**  
*Solution:* Use the depth-first search or breadth-first search algorithm to find the connected components in a graph.

## Problem Solving

11. **Design a parking lot.**  
*Solution:* Consider the size of the parking lot, the type of vehicles that will be parked in the lot, and the traffic flow in the area.
12. **Design a vending machine.**  
*Solution:* Consider the type of products that will be sold in the machine,

the payment options that will be accepted, and the user interface.

13. **Design a social network.**

*Solution:* Consider the features that will be offered by the social network, the target audience, and the scalability of the system.

14. **Design a search engine.**

*Solution:* Consider the crawling, indexing, and ranking algorithms that will be used by the search engine.

15. **Design a video streaming service.**

*Solution:* Consider the video compression algorithms, the content delivery network, and the user interface.

By working through the coding challenges in this article, you will not only improve your problem-solving skills but also gain a deep understanding of the data structures and algorithms that are commonly used in real-world applications. This will give you a significant advantage in your technical interviews and help you land your dream job at a top tech company.

## **Additional Resources**

- [LeetCode](#)
- [Coderbyte](#)
- [Codewars](#)
- [HackerRank](#)

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