

For interviews in IT, software engineering, and related roles in tech

Introduction:

Technical interviews are a common part of the recruiting process for technical jobs, or jobs that require a very specific skillset. This guide will specifically focus on jobs that require computer programming skills. Technical interviews typically assess a candidate's technical skills, problem-solving skills, and critical thinking skills, in addition to gauging the candidate's fit in the company and passion for the role. Parts of the interviewing process might include an at-home technical assessment, a first-round interview or phone screen, and a second-round interview that includes technical questions, logic/problem-solving questions, and fit questions.

To prepare, focus on 5 areas:

1. Review the job description.
2. Research the company/organization.
3. Practice solving tech problems/coding.
4. Review the fundamentals of your technical skillset.
5. Practice your interviewing skills.

To get started, check out these [Interview Pro Tips](#) on nailing the technical interview. Then, use this guide to practice and prepare for all components of a technical interview, from the at-home technical assessment to the "fit" interview and more!

Company-Specific Resources:

1. Google

- Tips:
 - i. Google's technical interviewing will often first consist of a survey and coding exercise (given 7 days to complete a 90-minute coding exercise), then 4 technical interviews and 1 fit interview. For the coding exercise, it is important to cite any resources used; integrity is important.
 - ii. In the interview to gauge your fit into the company, they tend to ask hypothetical questions in which there is no right/wrong answer. During the technical interviews, they interviewer is evaluating how you solve problems and whether you can analyze in depth and evaluate a solution. It is most important to ask questions and think out loud! They are more concerned with your thought process than you getting to the right answer.
- Sample Question:
 - i. Implement this function: `bool isPalindrome(char *str, int length);`
 - ii. Examples: "ABCBA" -> true, "ABBA" -> true, "ABC" -> false, "ABA" -> true, "AA" -> true, "A" -> true, "" -> true
 - iii. Clarify the problem. Ask questions. Examples: What are the edge cases? What constitutes a palindrome? Does case matter? Do spaces matter (ex: is "AB VBA" a palindrome)?
- Resources:
 - i. [Preparing for your Google Interview: Coding](#) Googlers share targeted advice for the coding portions of Google's interview process for technical and engineering candidates, covering tips for communication and collaboration advice, algorithms and data structures, and more!
 - ii. [Google Careers for Students: Engineering & Technical Jobs](#) Google is and always will be an engineering company that thinks big and takes risks. Use this page to find open roles at Google in the engineering & tech disciplines.

2. SAP

- Tips:
 - i. SAP hires all year round for new grad positions, so recruiters suggest creating a job alert on their website. This will help ensure you never miss a new opportunity.
 - ii. Recruiters can see all of the jobs that you have applied to, so they would be confused if you apply to, say, 50 jobs in multiple areas. It is alright to apply to a few different jobs in the same area, but be sure that you are qualified for each job and that each job is relevant to your career goals/skillsets.
- Resources:
 - i. Participate in a free virtual project-based learning program through [SAP's Technical Consulting Experience on Forage!](#) Get practical skills and experience from SAP USA, and even leverage this experience on your resume and during technical interviews. Learn how to build your resume through Forage with their [Referencing Guide](#).

3. Fast Enterprises

- Tips:
 - i. According to VU on-campus presentations from Fast Enterprises, their technical interviews often include three components: a problem-solving test, a logic activity, and a set of interview questions to gauge fit.
 - ii. For the logic and problem-solving activities, the interviewer wants to understand your thought process. Think out loud, show your work, do not get defensive, keep trying, and allow the process to show that you have passion and that you are teachable.
- Sample Logic Question:
 - i. There are three boxes. One is labeled "APPLES" another is labeled "ORANGES". The last one is labeled "APPLES AND ORANGES". You know that each is labeled incorrectly. You may ask me to pick one fruit from one box which you choose. How can you label the boxes correctly?
 - ii. ANSWER: Pick from the one labeled "Apples & Oranges". This box must contain either only apples or only oranges. E.g. if you find an Orange, label the box Orange, then change the Oranges box to Apples, and the Apples box to "Apples & Oranges."

Technical Coding Mock Interview Questions:

Adapted by [Springboard](#)

1. How Do You Reverse a String?

Solution: There are many methods available to reverse a string in Python, including:

- Slicing
- Use join
- Loop

The below Python snippet shows an example of the loop method being used to iterate characters in reverse order and then append them.

```
def reverse(myString):
    reversedString = ""
    index = len(myString)
    while index:
        index -= 1
        reversedString += myString[index]
    return reversedString
```

2. Write a Program to Find the Prime Factors of an Integer.

Solution: First, as long as the number is divisible by 2, print out 2 and divide it by 2. Now that you have an odd number, loop from 3 to the square root of the number, incrementing by 2 each time. While the number is divisible by i, print it out and divide by i. Lastly, if the remaining number is larger than 2, print it out.

```
void PrintPrimeFactors(int number)
{
    while (number % 2 == 0)
    {
        Console.WriteLine(2 + " ");
        number /= 2;
    }
}
```

```

}

for (var i = 3; i <= Math.Sqrt(number); i+= 2)
{
    while (number % i == 0)
    {
        Console.Write(i + " ");
        number /= i;
    }
}

if (number > 2)
    Console.Write(number);
}

```

3. How Do You Reverse a Singly Linked List Without Recursion?

Solution: The principle of reversing a linked list without recursion is the same, and is in fact much simpler than the recursive solution. There is almost never a scenario where you should use recursion to iterate a linked list.

```

void ReverseList(LinkedList linkedList)
{
    LinkedList.Node prev = null;
    var current = linkedList.head;

    while (current != null)
    {
        var next = current.next;
        current.next = prev;
        prev = current;
        current = next;
    }

    linkedList.head = prev;
}

```

4. How do you add an element to the middle of a linked list?

You can insert an element in the middle of a linked list by modifying the middle element to point to the new node. Next, modify the new node to point to the next node (which the middle node had previously pointed to).

```

void Insert(LinkedList.Node insertPos, LinkedList.Node newNode)
{
    var oldNext = insertPos.next;
    insertPos.next = newNode;
    newNode.next = oldNext;
}

```

See additional questions/solutions for practice with [Hackerrank Coding Questions with Solutions](#).

Practice your technology interviewing skills with [Big Interview](#), Villanova's online training platform where you can practice virtual interviews and receive industry-specific interviewing questions!

Sample Logic Questions for Technical Interview:

Adapted by [Indeed Career Guide](#)

The following scenario is a logic question that could be used in a technical interview.

You are standing in a room with three light switches. The switches all correspond to three different light bulbs in an adjacent room that you cannot see into. With each of the light switches starting in the off position, how can you find out which switch connects to which light bulb?

- Sample Answer: "I would turn on the first switch and let it stay on for a few minutes. Then, I'd turn the first switch off and quickly turn on the second switch. Then, checking the room, I'd see the second bulb turned on and feel the other two bulbs to see which one is warmer. The warmer bulb is the one I just turned off, so that belongs to the first switch, while the bulb that's on belongs to the second switch. The third switch would belong to the bulb that is off and coolest to the touch."

Here is one more example of a logic/problem-solving question that could be used in a technical interview. The interviewer will be more interested in your problem-solving skills and how you approach the problem than the right answer.

How many pennies, if they are stacked on top of each other, will it take to reach the top of the Empire State Building?

- Sample Answer: "First, I need to know how tall the Empire State Building is, as well as how tall a penny is when laying flat. Assuming one penny is a 1/4 inch high, I can divide the height of the building by the height of the penny to get the number of pennies I'll need to stack."

For more practice with logic/problem-solving questions, check out the resources below. Remember to always explain your thought process and never be afraid to ask relevant questions!

1. [10 Logic Questions You Might be Asked in an Interview](#)
2. [Top 20 Interview Puzzles for Software Engineers](#)

"Fit" Interview/Behavioral Interview Questions

Sample Questions:

1. Tell me about yourself.
2. What do you know about ____ (company/organization)? Why are you interested in us?
3. What is your greatest strength/weakness?
4. What are the top three factors that contribute to your success?
5. Tell me about a time you felt you worked your hardest?
6. If you could be a kitchen appliance, what would you be and why?
7. How do you keep your technical skills up to date?
8. What are the pros and cons of working in an Agile environment?
9. Tell me about a time you geeked out about something.
10. Tell me about a side project you're working on or a technical project you've completed in the past.
11. Do you know the term inheritance, or database? Describe this term to me as if you were speaking to someone nontechnical.
12. What questions do you have for me?

See additional practice questions with Forage ([5 Technical Interview Questions for All Careers](#)) or Indeed ([13 Common Technical Interview Questions Plus Example Answers](#)).

Coding Practice Resources for Technical Interviews

These resources are all meant to help candidates sharpen their technical skills in pursuit of job opportunities. Some of them even have Skills Certifications Tests to help make your resume, LinkedIn profile, and job applications stand out! They also can serve as a great resource to help you prepare for at-home technical assessments that an employer may provide to you as part of their hiring/interview process.

1. [Hackerrank](#): A platform to help candidates sharpen their technical skills and pursue job opportunities.
 - a. [Get your Skills Certified](#)
 - b. [Coding for Interviews Practice Problems](#)
2. [Leetcode](#): A platform for enhancing your programming skills and preparing for technical interviews.
3. [CodeSignal](#): A platform to practice for technical interviews, including a certified assessment that can be attached to job applications.
4. [CoderPad](#): A platform for companies to assess your coding skills and for candidates to prepare for interviews with detailed guides and a "sandbox" for coding practice.
5. [Forage](#): A platform with virtual experiential learning projects from top employers in the tech industry; candidates can use the programs as practice for technical interviews, all while showcasing their knowledge to recruiters in the field.