Technical Interview Questions

# We've included questions for a cross-section of IT roles. These are popular roles that our clients often ask us to fill.

## Senior Database Administrator Questions

These are scenario questions. Get your candidates into "what if" discussions to assess their experience and understanding of the "big picture".

### Imagine you're a senior DBA and I'm your manager. Explain to me why we shouldn’t switch to MYSQL or Oracle.

An experienced senior DBA should understand the advantages and disadvantages of the major database platforms.  They’ve most likely answered this question before in a previous role, from a manager or developer who was convinced MYSQL or Oracle is a better platform than the one they were using.

In addition to assessing technical knowledge, this type of question gives you the opportunity to see if the candidate is willing to take a stand for something he knows is right. Look for them to be comfortable suggesting alternative ideas.

### Imagine I’m a developer. Explain why a unique key is necessary on my table.

Try to really get into your role as the developer - or bring in one of your toughest developers to play this role.  Challenge the candidate. Will a unique key really improve performance? manageability?  Is this just your opinion? Is there proof?

This type of challenge will help you assess if they can think and explain clearly in easy to understand verbiage. This is a great was to the assess candidate's team communication.

### Now imagine I'm a project manager and I need a new SQL server. What questions do you ask me?

You could really get into role-playing here by introducing a brochure from any third party application and say the project manager wants to set this up.  Look to see if the DBA asks pertinent questions like:

How big will the database be?  This should lead to further to questions about whether the database can be added to an existing server.

How critical is the database?  This should lead to questions about clustering, disaster recovery, high availability.

What’s the company standard on virtualization?  This is in essence asking if we'd be able to save money by using a virtual server.

If the candidate comes back with a blank stare and doesn’t know where to begin, then they haven’t done many deployments.  If you rarely do new deployments, or if you’re hiring a development DBA, that may be ok provided they still have some basic knowledge about sizing.

# Database Administrator Questions

These are simpler/more generic questions that can be asked. We did not include answers to these.  
The questions with an asterisk (\*) are also appropriate to ask a database developer.

1. How do you enforce relational integrity in a database design? \*
2. When is it appropriate to de-normalize a database design? \*
3. What is the difference between OLAP and OLTP? \*  
   When is it appropriate to use each one?
4. What is a SAN?   
   How is it used?
5. What is SQL clustering?   
   Describe its use.

1. What is ETL?   
   When should it be used?
2. What are the most important database performance metrics?   
   How do you monitor them?
3. What are transaction logs? \*  
   How are they used?
4. Explain the difference between optimistic and pessimistic locking. \*
5. What is the difference between a delete statement and a truncate statement? \*

# Java Developer Questions

1. What is JVM? And why is Java referred to as the "Platform Independent Programming Language"?

JVM, or the Java Virtual Machine, is an interpreter which accepts ‘bytecode’ and executes it.  
Java is referred to as a "Platform Independent Language" as it primarily works on the notion of ‘compile once, run everywhere’.

1. What is the Difference between JDK and JRE?

“JDK” is the Java Development Kit. It is a software bundle that can be used to develop Java based software.  
 “JRE” is the Java Runtime Environment. It is an implementation of the Java Virtual Machine which actually executes Java programs.

1. What does the ‘static’ keyword mean?

The static keyword means that the variable or function is shared between all instances of that class as it belongs to the type, not the actual objects themselves. So if you have a variable: private static int i = 0; and you increment it ( i++ ) in one instance, the change will be reflected in all instances.

1. What are the Data Types supported by Java?

This is one of the most common and fundamental Java interview questions. This is something a candidate should have right at their fingertips when asked.

The eight Primitive Data types supported by Java are:

|  |  |
| --- | --- |
| int | A 32-bit (4-byte) integer value |
| short | A 16-bit (2-byte) integer value |
| long | A 64-bit (8-byte) integer value |
| byte | An 8-bit (1-byte) integer value |
| float | A 32-bit (4-byte) floating-point value |
| double | A 64-bit (8-byte) floating-point value |
| char | A 16-bit character using the Unicode encoding scheme |
| Boolean | A true or false value |

1. What is the difference between StringBuffer and String?

String class is used to manipulate character strings that cannot be changed. Simply stated, objects of type String are read only and immutable. The StringBuffer class is used to represent characters that can be modified.

1. What is the difference between Override and Overload in Java?

Overloading occurs during compile time and Overriding occurs during runtime.  
You can use method overload in the same class but you can only use override in a sub class.  
Overload methods are bonded using static binding and Type of reference variable is used, while Override method are bonded using dynamic bonding based upon actual Object.  
Rules for Overloading and Overriding are different. In order to overload you need to change its method signature but that is not required for overriding.  
Private and final methods cannot be overridden but can be overloaded in Java.  
Overload methods are faster than Override in Java.

1. What is Java Exception Handling? What is the difference between Errors, Unchecked Exception and Checked Exception?

Anything that’s not Normal is an exception. Exceptions are the customary way in Java to indicate to a calling method that an abnormal condition has occurred.

* An Unchecked Exception inherits from RuntimeException (which extends from Exception). The JVM treats RuntimeException differently as there is no requirement for the application-code to deal with them explicitly.
* A Checked Exception inherits from the Exception-class. The client code has to handle the checked exceptions either in a try-catch clause or has to be thrown for the Super class to catch the same. A Checked Exception thrown by a lower class (sub-class) enforces a contract on the invoking class (super-class) to catch or throw it.
* Errors (members of the Error family) are usually thrown for more serious problems, such as OutOfMemoryError (OOM), that may not be as easy to handle.

1. What is the difference between byte streams and character streams?

Byte streams: For reading and writing binary data, byte stream is incorporated. Programs use byte streams to perform byte input and output.

Character streams: Character streams work with the characters rather than bytes. In Java, characters are stored by following the Unicode (allows a unique number for every character) conventions. As such, characters become platform independent, program independent, language independent.

1. What is the difference between ArrayList and LinkedList?

ArrayList - Random access; Only objects can be added.

LinkedList - Sequential access. The control traverses from the first node to reach the indexed node. The LinkedList is implemented using nodes linked to each other. Each node contains a previous node link, next node link, and value, which contains the actual data.

1. What is the use of the ‘SimpleDateFormat’ and how can you use it to display the current system date in ‘YYYY/MM/DD hh:mm:ss’ format?

SimpleDateFormat is a concrete class which is widely used by Java developers for parsing and formatting of dates. This is also used to convert Dates to String and vice-versa.

Most Enterprise level Java Applications use the SimpleDateFormat for handling user dates. Basic understanding of this class is absolutely necessary.

# Business Analyst Questions

Due to the nature of most Business Analyst positions, the person filling this role will need to have very strong interpersonal skills. Many of these questions deal more with soft-skills than some of the more technical roles.

## What do you think are key strengths a business analyst needs to possess?

A good response will include both technical and non-technical attributes

1. What business documents have you been responsible for creating and maintaining?

A good response will include most (if not all) of the following:

Project vision document

Requirement Management Plan

Use cases

User stories

Business Requirements Document

Requirement traceability matrix (RTM)

Functional Requirements Specification (FRS)/ Functional Specification Document (FSD)

System Requirements Specification (SRS)/ System Requirements Document (SRD)

Test cases

An adequate response should include at least these:

Business Requirements Document

Use Cases

Functional Specifications

Requirement traceability matrix (RTM)

1. How have you handled difficult stakeholders?

Look at the candidate's soft skills, particularly their communication abilities. Working with people from different areas of the company and perspectives is an area where nontechnical skills are key.

# Software Tester/Quality Assurance Analyst Questions

## What is a requirement and how is it different from a specification?

Requirements are gathered from the customer/stakeholder to outlines their needs.  These needs are translated into specifications which are provided to the development team.

## What are the differences between a test plan and a use case? What are some elements of each?

A test plan encompasses all of the components of the test strategy.  It can include the application to be tested, the scope of the testing, the testing activities, roles and responsibilities and deliverables.    
  
A use case describes how the user interacts with a specific function/feature and how the system responds.  It can include diagrams, flowcharts and pre- and post- conditions.

## What is the difference between the severity of a bug and the priority of a bug?

The priority of a bug is determined by how urgently it needs to be fixed.  Some factors to consider  
when assessing priority are what else needs to be fixed and how important this bug is relative to the others.

The severity of a bug is measured by the impact the bug has on the application.  How much damage can be caused to the integrity of the data in the system if the bug causes an incident?

## What is the difference between unit testing and integrated testing?

A developer performs unit testing on the modules he has changed.

Integrated testing encompasses testing the entire system with the changed modules included.  It is end-to-end testing of the application.

## That is the difference between white box testing and black box testing?

White Box testing allows a tester to understand the process and validate the data before, during, and after processing but prior to the output.  Validation steps within the process may be necessary in white box testing.

Black Box testing involves some form of data that is input into a process and the validation of the output.  A tester cannot see inside the process.  They can only see the output. 

## What is automated testing?

Large systems can involve hundreds of test cases.  An automated tool can be used to record the actions associated with a test case.  This may include menu choices, buttons and clicks.  These tests can be performed much faster than manual tests.  Whenever code changes are made, the automated tests can be rerun and the logged results can be verified against the expected results.

Next:

Ask the candidate what automated tools they have experience with. This may or may not be a necessity for your company. If it is and you have specific tools that are used, you should decide if you want someone that has that experience with that specific tool or if experience with other automated tools will suffice.

## **What is portability testing?**

This refers to moving and testing an application on different platforms.  An application may require testing on different windows operating systems.  The time involved and the challenges that occur should be documented as part of the test results including any instability and adaptability.

1. Good discussion topic --- ask about ad hoc testing. No matter how much automation may be involved, it is always a good idea to have a tester on hand that enjoys trying the unexpected to try to break the system.

Many QA analysts follow the requirements and specifications and test to ensure the system does what the system is designed to do. However, many systems fail when nobody tests to make sure the system *does not* do what it *should not* do.

End-users are constantly using applications in ways that they were not intended -- it is the job of a good tester to ensure that no combination of steps will break the application or cause bad results.

# System Engineer Questions

1. What experience do you have working in a computerized environment?

You should look for answers with details. The candidate should be able to describe a web product deployment built on Microsoft stack or perhaps their deployment of SQL server data patches. Maybe they managed a company's Windows or Intel systems. Whatever systems they talk about, encourage them to share details of their involvement in the project.

1. What types of documentation were you responsible for writing as a system engineer?

If the candidate starts listing types of documentations like release notes, internal documentation, environment diagrams, configuration documents, reports to managers -- ask for details. What data was included in management reports? What level of detail was included in environment diagrams?

1. Describe your troubleshooting and debugging expertise.

The candidate should be able to describe details of issues they had in production and non-production environments. Ask the candidate to describe in detail specific instances related to corporate website issues, SFTP and SMTP sites and services, etc.

1. Do you have experience with product integration services?

If the candidate needs clarification on this question, ask them to describe in detail any involvement they've had with batch processing or real-time web services.

1. Tell me about your involvement in defining release plans.

**The candidate should be able to describe the interaction between the QA team and product management -- or similar teams. They should be able to walk you through team coordination and various team lead/manager approval procedures.**

1. Describe your professional experience in system maintenance and implementation.

**Look for responses that describe** core duties **in detail. They might include any or all of these:** troubleshooting, debugging, data backup, automation of updates and releases, virtualization, hardware provisioning. Ask questions that draw on their experience with - not just knowledge of - these subjects.