SQL and NoSQL
Interview Questions

Your essential guide to acing SQL and NoSQL job interviews

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Dedicated to

My beloved mom Kalyani Narayanan
and
my sister

Ishwarya, my brother-in-law Sridhar
and
my niece Durga

My aunt Vijayalakshmi and my uncle Jayaram
and mami Rathna

About the Authors

Vishwanathan Narayanan has overall 20 years of experience in Software development and Management.

He has worked on various technologies like Java, Python, R, React, Angular, and Machine learning.

He has worked in different roles in organizations ranging from developer all the way to architect and designing solutions to complex problems.

He has worked in various roles and was one of the pioneers in using NoSQL right from proof of concept to deployment in production along with maintenance and tuning.

Selecting the right set of tools to be used for a particular use case is his expertise area.

Adapting NOSQL to areas where it fits in is his expertise.

About the Reviewer

Nadir Doctor is a database and data warehousing architect, and a DBA, who has worked in various industries with multiple OLTP and OLAP technologies. He has also worked on primary data platforms, including Snowflake, Databricks, CockroachDB, DataStax, Cassandra, ScyllaDB, Redis, MS SQL Server, Oracle, Db2 Cloud, AWS, Azure, and GCP. His major focus is health-check scripting for security, high availability, performance optimization, cost reduction, and operational excellence. He has presented at several technical conference events, is active in user group participation, and can be reached on LinkedIn.

Thank you to the author and the staff at BPB. I'm grateful for the immense support of my loving wife, children, and family during the technical review of this book. I hope that you all find the content enjoyable, inspiring, and useful.

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Preface

The last few years have seen a dynamic shift in paradigm from the traditional relational database system to the new world of Big data and NoSQL.

The advent of various NoSQL categories and their specialization in solving different types of problems has given rise to limitless opportunities in the world of software development.

When NoSQL was introduced there was resistance to adoption by many organizations but by seeing the benefit it gives, many have moved to NoSQL due to many advantages in terms of distribution and cost it provides.

In this book, we cover a variety of NoSQL as well as Relational databases and their corresponding interview questions.

The focus of the book is to help in last-minute revision for candidates appearing in interviews.

We strongly believe this book will help people from different experience groups as we have covered a wide variety of questions ranging from basics all the way to performing complex tuning.

1. **Chapter one: Relational Database interview questions**

   This chapter lays the foundation for the book. In this chapter we have covered the basics of relational databases as well have pointed out corresponding similarities and differences in various well-renowned databases like Oracle, Postgres, MySQL, and so on. This chapter will help people grasp the relational database questions and the corresponding queries which are generally asked in any interview question

2. **Chapter two: NoSQL interview questions**

   In this chapter, we have a holistic view of NoSQL and its subcategories.We see the different types of NoSQL, the working

principle, differences as compared to relational databases, and the architectural paradigm shift. This chapter will surely serve as a backbone as many interview questions will be related to this topic.

3. **Chapter three: MongoDB interview questions**

   This chapter covers MongoDB which is one the most adopted NoSQL. This chapter will not only help normal database individuals but also developers belonging to Full stack development as MongoDB is used there. We will get an overview of MongoDB, its working principle, architecture, sharding mechanism as well as queries used with it.

4. **Chapter four: Cassandra interview questions**

   This chapter deals with Cassandra, a wide column database which is especially used in reporting based applications.We will learn the use of partioning key and clustering key and see how data is divided. We will also have a look at query mechanism and how data is distributed and various levels of accuracy can be attained with Cassandra.

5. **Chapter five: Redis interview questions**

   In this chapter, we look at Redis which is an adopted NoSQL in secaniors involving cache. We will have a look on the working nature of Redis, how can it be distributed, its architecture and different mechanism of performing queries on it.

   Application areas of Redis is also discussed in this chapter.

6. **Chapter six: HBase interview questions**

   In this chapter we will have a look at HBase which forms the important components in the Big data/Hadoop world. We will look how it is integrated with Hadoop and how can we perorm query on it. Also various helper tools which are used by adminstartors to monitor HBase are also covered.

7. **Chapter seven: Elasticsearch interview questions**

   Most organizations have adopted Elasticsearch for performing various activities including searching as well as log maintenance. In this chapter, we will have a look at Elasticsearch as well as supporting ecosystems including Kibana and Logstash.

   Use cases like log storage is also covered.

8. **Chapter eight: Neo4j interview questions**

   In this chapter, we will have a look at graph-based NoSQL with the name Neo4j which is the market leader in this space. Starting from basic working to overall development of nodes, edges and relationships along with application in real-world scenarios like social media is covered.

Code Bundle and Coloured Images

Please follow the link to download the
Code Bundle and the *Coloured Images* of the book:

https://rebrand.ly/6hhy5nr

The code bundle for the book is also hosted on GitHub at **https://github.com/bpbpublications/SQL-and-NoSQL-Interview-Questions**. In case there's an update to the code, it will be updated on the existing GitHub repository.

We have code bundles from our rich catalogue of books and videos available at **https://github.com/bpbpublications**. Check them out!

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Table of Contents

Chapter 1
Relational Database

Introduction

Before deep diving into the world of NoSQL, understanding relational databases plays a very important role in identifying when to use what and why. It is very vital in transactional systems and will continue to be so in the near future.

Hence, understanding the basics and functioning of relational database management system is very important.

This chapter will introduce you to various interview questions related to Database system, SQL, Oracle, and MySQL.

Structure

In this chapter, we will discuss the following topics:

- Basic questions on the Database system
- Structured Query language (SQL) questions

- Oracle interview questions
- MYSQL interview questions

Objectives

In this chapter, we will learn the basics of relational database systems and SQL which is a very important query language.

We will also explore Oracle and MySQL; the two most used databases.

Basic questions on a Database system

Question 1: What is the meaning of a database system?

Answer: A database system consists of systems and tools which help in persisting data. Persistence implies the ability of data to live beyond the scope of its creation. Data should be available even after the restart of the system. In very simple terms, a database is a collection of logically related data. A database system helps in the persistence of the data.

Question 2: What type of operations can we do with the database?

Answer: Within the database, we can perform operations live, create, insert, update, select, and delete. The create, update and delete operation is used to create modify or remove data from the database. The select operation is basically used to get the data from the database. In software terminologies, this is known as CRUD operations.

Question 3: What do you think are the differences between a traditional file system and a database?

Answer: In a traditional file system, data is stored in the form of files. It has the following disadvantages:

- Searching for data is time consuming and tedious effort. Because for getting any data, the entire file system needs to be scanned. The problem will

aggregate if the amount of data is more which is the general case in the case of real-world systems.

- Concurrency control is absent in the case of the file system. It is quite possible that inconsistency of data or cause due to lack of concurrency control. The same data cannot be updated by two different people at the same time.
- Data isolation is very difficult to achieve with the file system.
- Integrity checks are also very difficult to achieve with respect to file systems. Alto problems due to corrupt files are very difficult to handle in the case of the file system.

Question 4: What is a relational database?

Answer: A relational database is a sub-type of the database in which data is organized in the form of tables. Data is arranged in the form of rows and columns.

Rows are also known as tuples, and Columns are also known as attributes.

Question 5: Differentiate between RDBMS and DBMS.

Answer: The following table will help you understand the difference between RDBMS and DBMS:

Criteria	DBMS	RDBMS
Storage	File format	Table format
Relationship between data	Does not exist directly	Exist directly
Redundancy / Duplication of data	Exist	Does not exist because RDMS supports normalization
User support	Single user	Multiple users
Record identification	May be or May not be present	Generally present in the form of the primary key
Amount of data stored	Less	More
Distributed support	Not present	Present