60 MySQL Interview Questions and Answers Every Developer Should Know

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[MySQL](#) is the most popular open-source relational database management system (RDBMS), typically used with [PHP](#). It is fast, reliable, and easy to run on the web and the server. MySQL is the world's most popular open-source [database software](#) and a preferred choice for critical business applications by giants like Yahoo, Suzuki, and NASA. Naturally, there are a lot of career opportunities for MySQL experts. This article is a Q/A guide on how to answer MySQL interview questions.

MySQL uses standard [SQL programming](#) for the creation, modification, and extraction of data from a relational database. The data is stored in tables consisting of rows and columns. Users can interact directly with MySQL or use it to implement applications that need relational database capability. MySQL jobs range from MySQL Developer, [MySQL Database Administrator](#), MySQL Database Engineer, and more.

Here are some of the most frequently asked MySQL interview questions and how to answer them.

Basic MySQL Interview Questions

1. What is MySQL?

MySQL is a relational database management system based on SQL (Structured Query Language). It is an open source software owned by Oracle and can run on various platforms. Most websites or web applications are developed using MySQL.

2. In which language has MySQL been written?

MySQL is written in [C and C++](#). Its SQL parser is written in yacc.

3. What are the advantages of using MySQL?

MySQL is a fast, stable, and reliable solution that provides advantages like:

- Data Security – most secure and reliable [database management](#) system

- Flexibility – runs on all operating systems; features 24X7 support and enterprise indemnification

- High Performance – powerful, designed to meet highly demanding applications while maintaining optimum speed and high performance

- On-demand Scalability – offers on-demand scalability and complete customization

- Enterprise-level SQL Features – the enterprise edition includes advanced features and management tools, and technical support for enterprise

- Full-text Indexing and Searching – has support for full-text indexing and searching

- Query Caching – unique memory caches help enhance the speed of MySQL greatly

- Replication – one MySQL server can be duplicated on another, resulting in numerous benefits

4. What is a database?

A database is a structured repository of data stored electronically in a computer system and organized in a way that data can be quickly searched and information rapidly retrieved. A database is generally controlled by a database management system.

5. What does 'MySQL' stand for?

'My' in MySQL represents the first name of its co-founder, Michael Widenius' daughter, My Widenius. SQL is an abbreviation for the term "Structured Query Language". SQL is also used in databases like Oracle and Microsoft SQL Server.

6. How to check MySQL version?

The command 'MySQL-v' can be used to check MySQL version on Linux

7. What does a MySQL database contain?

A MySQL database contains one or many tables, with each table containing several records or rows. Within these rows, data is contained in various columns or fields.

8. List the ways to interact with MySQL.

There are 3 main ways users can interact with MySQL:

- Using a command line
- Through a web interface
- Using a [programming language](#)

9. What are the different tables in MySQL?

They are:

- MyISAM
- HeapMerge
- INNO DB
- ISAM

10. What are MySQL Database Queries?

A query is a request for data or information from a database. Users can query a database for specific information, and the resultant record/records are returned by MySQL.

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11. What are some common MySQL commands?

Some common MySQL commands are:

- CREATE – To create Table

- INSERT – To insert data

- JOIN – To join tables

- DELETE – To delete a row from a table

- ALTER – To alter database or table

- BACKUP – to back up a table

- DROP – To delete a database or table

- CREATE INDEX – to add indexing to a column in a table

- GRANT – To change user privileges

- TRUNCATE – Empty a table

- EXIT – to exit

12. How to create a database in MySQL?

The CREATE DATABASE command can be used to create a new database.

13. How to create table using MySQL?

The following query can be used to create a table:

CREATE TABLE 'history' (

'author' VARCHAR(128),

'title' VARCHAR(128),

'type' VARCHAR(16),

'year' CHAR(4))

ENGINE = InnoDB;

A table "history" gets created in the selected database.

14. How to insert data in MySQL?

The INSERT INTO statement is used to insert new records in a table in MySQL.

The two main syntaxes are:

INSERT INTO table_name (column 1, column 2, column 3,…columnN)

VALUES (value 1, value 2, value 3,...valueN)

15. How do you remove a column form a database?

The DROP command is used to remove a column from a database.

Alter table 'history' drop column title;

16. How to create an index?

There are different types of indexes in MySQL, like a regular INDEX, a PRIMARY KEY, or a FULLTEXT index. Indexes are created on a column basis. Indexing helps to quickly search for results, either by ordering the data on disk or by telling the SQL engine which location to find your data in.

Syntax:

ALTER TABLE history ADD INDEX(author(10));

17. How do you delete data from MySQL table?

We use the DELETE statement to remove records from a table.

The syntax is as follows:

DELETE FROM table_name WHERE column_name

18. How can you view a database in MySQL?

The SHOW DATABASES command allows the user to view all databases on the MySQL server host.

mysql> SHOW DATABASES;

19. How to import database in MySQL?

There are two ways to import database or move data from one place to another:

- Command Line Tool
- MySQL Workbench

20. What are numeric data types in MySQL?

There are numeric data types for integer, fixed-point, floating-point, and bit values in MySQL. Except for BIT, the other numeric data types can be signed or unsigned.

Examples:

INT - Standard Integer

TINYINT - Very Small Integer

SMALLINT - Small Integer

MEDIUMINT - Medium-sized Integer

BIGINT - Large Integer

DECIMAL - Fixed-point number

FLOAT - Single-precision floating-point number

DOUBLE - Double-precision floating-point number

BIT - Bit-field

21. What are string data types in MySQL?

The string [data types in MySQL](#) are:

- CHAR

- VARCHAR

- BINARY

- VARBINARY

- TINYBLOB

- BLOB

- MEDIUMBLOB

- LONGBLOB

- TINYTEXT

- TEXT

- MEDIUMTEXT

- LONGTEXT

- ENUM

- SET

- NULL

22. What are temporal data types in MySQL?

MySQL provides temporal data types for date and time, as well as a combination of date and time. These are:

DATE - A date value in CCYY-MM-DD Format

TIME - A Time value in hh : mm :ss format

DATETIME - Date and time value in CCYY-MM-DD hh : mm :ss format

TIMESTAMP - A timestamp value in CCYY-MM-DD hh : mm :ss format

YEAR - A year value in CCYY or YY format

23. What is BLOB?

BLOB is an acronym for a binary large object. It is a string data type used to hold a variable amount of data.

24. How do you add users in MySQL?

The CREATE command, along with necessary credentials, can be used to add users.

CREATE USER 'testuser' IDENTIFIED BY 'sample password';

Intermediate MySQL Interview Questions

25. What are views in MySQL?

A view is a set of rows returned when a particular query is executed in MySQL. It is also known as a virtual table, which does not store any data of its own but displays data stored in other tables.

26. How to create and execute views?

The CREATE VIEW command is used to create a view in MySQL.

The syntax is:

CREATE VIEW [databasename.] view_name [(column_list)] AS select-statement;

27. What are MySQL triggers?

A task that is executed automatically in response to a predefined database event is known as a trigger. Each trigger is associated with a table and is activated by commands like INSERT, DELETE, or UPDATE.

28. How many triggers are possible in MySQL?

There are 6 different types of triggers in MySQL:

- Before Insert
- After Insert
- Before Update
- After Update
- Before Delete

- After Delete

29. What is MySQL server?

The server 'mysqld' is the MySQL server, which performs all manipulation of databases and tables.

30. What are the clients and utilities in MySQL?

There are several MSQL programs available to help users communicate with the server. Some important ones for administrative tasks are:

.mysql – this interactive program helps to send [SQL statements](#) to the server and view the results. One can even use MySQL to use batch scripts.

.mysqladmin – this administrative program helps perform tasks like shutting down the server, checking configuration, monitoring status if it is not functioning properly.

.mysqldump – for backing up databases or copying them to another server

.mysqlcheck and myisamchk – these programs help perform table checking, analysis, and optimization, plus repairs for damaged tables.

31. What types of relationships are used in MySQL?

Three types of relationships are used in MySQL:

- One-to-one – items with one-to-one relation can be included as columns in the same table
- One-to-many – or many-to-one relationships are seen when one row in a table is related to multiple rows in another table
- Many-to-many – many rows in a table are linked to many rows in another table

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Advanced MySQL Interview Questions

32. Explain the logical architecture of MySQL

The top layer comprises the services required by most network-based client/server tools like connection handling, security, authentication, etc.

The 2nd layer comprises code for query parsing, optimization, analysis, caching, and all built-in functions.

The 3rd layer comprises storage engines where storage and retrieval of data stored in MySQL is performed.

33. What is Scaling?

Scaling capacity in MySQL is the ability to handle the load in terms of:

- Data quantity
- Number of users
- User activity
- Size of related datasets

34. What is Sharding?

The process of breaking up large tables into smaller chunks or shards spread across many servers is called sharding. It makes querying, maintenance, and other tasks faster.

35. What are Transaction Storage Engines?

The InnoDB storage engine enables users to use the transaction facility of MySQL.

We hope this list of MySQL interview questions will be helpful for you. Register with Simplilearn today to get access to top-rated courses on database training and full stack web development.

36. How does MySQL differ from PostgreSQL?

MySQL and PostgreSQL are both popular relational database management systems (RDBMS) but have differences in features, performance, and syntax. MySQL is known for its speed and ease of use, while PostgreSQL is praised for its advanced features, including support for complex data types, transactions, and advanced indexing.

37. Can you explain the difference between MyISAM and InnoDB storage engines?

MyISAM is a storage engine in MySQL known for its simplicity and speed, but lacks support for transactions and foreign keys. InnoDB, on the other hand, is a more robust storage engine that supports transactions, foreign keys, and row-level locking, making it suitable for mission-critical applications.

38. What is a primary key in MySQL?

A primary key in MySQL is a unique identifier for each row in a table. It ensures that each record can be uniquely identified and provides a way to enforce entity integrity. A primary key can consist of one or more columns, and its values cannot be null.

39. Explain the concept of a foreign key.

A foreign key in MySQL establishes a relationship between two tables by linking a column or group of columns in one table to the primary key column(s) in another table. It enforces referential integrity, ensuring that values in the foreign key column(s) match values in the referenced primary key column(s) of the related table.

40. Describe the difference between DELETE and TRUNCATE commands.

The DELETE command is used to remove rows from a table based on specified criteria, allowing for selective deletion. TRUNCATE, on the other hand, removes all rows from a table, resetting auto-increment values, and is faster than DELETE as it does not generate transaction logs.

41. What does the JOIN statement do in MySQL? Explain the different types of joins.

The JOIN statement in MySQL is used to retrieve data from multiple tables based on a related column between them. Different types of joins include INNER JOIN (returns rows when there is a match in both tables), LEFT JOIN (returns all rows from the left table and matching rows from the right table), RIGHT JOIN (returns all rows from the right table and matching rows from the left table), and FULL JOIN (returns all rows when there is a match in either table).

42. How can you optimize a MySQL query?

MySQL query optimization involves various techniques such as indexing, using appropriate data types, minimizing the number of queries, optimizing table structure, avoiding unnecessary calculations, and utilizing query caching.

43. Explain the concept of normalization in database design.

Normalization is the process of organizing data in a database to reduce redundancy and dependency. It involves breaking down tables into smaller, related tables and defining relationships between them to ensure data integrity and minimize anomalies.

44. Describe denormalization and when you might use it.

Denormalization is the process of intentionally introducing redundancy into a database design to improve performance by reducing the number of joins required to retrieve data. It is often used in read-heavy applications where query performance is critical, at the expense of some data redundancy and update complexity.

45. What are transactions in MySQL and how do you manage them?

Transactions in MySQL are sequences of SQL operations that are executed as a single unit of work, either all succeed or all fail. They are managed using the BEGIN, COMMIT, and ROLLBACK statements to start, commit, and roll back transactions, respectively.

46. How would you implement ACID properties in MySQL?

ACID (Atomicity, Consistency, Isolation, Durability) properties can be implemented in MySQL by using transactions to ensure that database operations are atomic, consistent, isolated, and durable.

47. What is the significance of HAVING clause in MySQL?

The HAVING clause in MySQL is used to filter rows returned by a GROUP BY clause based on specified conditions. It is similar to the WHERE clause but is applied after grouping and aggregation functions.

48. Explain the difference between CHAR and VARCHAR data types.

CHAR and VARCHAR are both string data types in MySQL. CHAR stores fixed-length strings, while VARCHAR stores variable-length strings. CHAR is padded with spaces to its defined length, while VARCHAR only stores the actual length of the string.

49. How do you perform a full-text search in MySQL?

Full-text search in MySQL is performed using the MATCH() AGAINST() syntax, where MATCH() specifies the columns to search and AGAINST() specifies the search query. It is applicable only on columns indexed as FULLTEXT.

50. Explain the LIKE clause in MySQL.

The LIKE clause in MySQL is used to search for patterns in strings. It allows the use of wildcard characters such as '%' (matches zero or more characters) and '_' (matches any single character) to perform flexible pattern matching.

51. Describe the use of GROUP BY and ORDER BY in MySQL.

GROUP BY in MySQL is used to group rows that have the same values into summary rows, typically in conjunction with aggregate functions like SUM or COUNT. ORDER BY is used to sort

52. How do you update a value in a MySQL table?

To update a value in a MySQL table, you can use the UPDATE statement followed by the SET clause to specify the column(s) to be updated and their new values, along with optional WHERE clause to filter which rows to update.

53. Explain the use of LIMIT in MySQL.

The LIMIT clause in MySQL is used to constrain the number of rows returned by a query. It is often used in conjunction with the SELECT statement to retrieve a limited number of rows, such as the first 10 rows, or to implement pagination.

54. Explain the difference between INNER JOIN and OUTER JOIN.

INNER JOIN returns only the rows that have matching values in both tables based on the join condition specified, while OUTER JOIN returns all rows from one or both tables, with unmatched rows filled with NULL values where the join condition is not met.

55. Explain the BETWEEN operator in MySQL.

The BETWEEN operator in MySQL is used to select values within a specified range. It includes both the start and end values in the range. For example, column BETWEEN value1 AND value2 selects rows where the column value is between value1 and value2.

56. What is the significance of the AUTO_INCREMENT attribute?

The AUTO_INCREMENT attribute in MySQL is used with numeric primary key columns to automatically generate a unique value for each new row inserted into the table. It simplifies the process of creating primary key values, ensuring uniqueness and sequentiality.

57. Describe how MySQL uses locking to manage concurrency.

MySQL uses locking mechanisms to manage concurrency and ensure data consistency in multi-user environments. It employs various types of locks, including table locks, row locks, and explicit locks, to control access to data and prevent conflicts between concurrent transactions.

58. How would you change a column's data type in an existing MySQL table?

To change a column's data type in an existing MySQL table, you can use the ALTER TABLE statement followed by the MODIFY COLUMN clause, specifying the column name and the new data type.

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59. What are the common types of errors in MySQL and how do you troubleshoot them?

Common types of errors in MySQL include syntax errors, database connection errors, and data integrity violations. Troubleshooting involves reviewing error messages, checking log files, validating SQL syntax, verifying database connections, and ensuring data consistency.

60. How can you prevent SQL injection in MySQL?

To prevent SQL injection in MySQL, use prepared statements with parameterized queries or use parameterized stored procedures. Additionally, sanitize user input by validating and escaping input data before incorporating it into SQL queries.

Conclusion

In conclusion, MySQL stands as a cornerstone in the realm of relational database management systems, offering a robust, scalable, and efficient solution for managing data in various applications. Its popularity stems from its speed, reliability, and ease of integration with web technologies like PHP, making it a preferred choice for businesses ranging from startups to industry giants like Yahoo, Suzuki, and NASA. The widespread adoption of MySQL translates into abundant career opportunities for professionals skilled in its usage, ranging from developers to administrators and engineers.