MySQL Interview Questions

Basic Level Questions

Q: What is MySQL?

A: An open-source relational database management system.

Q: What are the different data types in MySQL?

A: INT, VARCHAR, DATE, FLOAT, TEXT, etc.

Q: What is the difference between CHAR and VARCHAR?

A: CHAR is fixed-length, VARCHAR is variable-length.

Q: What is a primary key?

A: A unique identifier for each record in a table.

Q: What is a foreign key?

A: A key used to link two tables together.

Q: What is the difference between WHERE and HAVING clauses?

A: WHERE filters rows before grouping, HAVING filters after.

Q: What is the default port for MySQL?

A: Port 3306.

Q: How do you create a database in MySQL?

A: Using `CREATE DATABASE db_name;`.

Q: What is the difference between DELETE, TRUNCATE, and DROP?

A: DELETE removes rows, TRUNCATE resets table, DROP deletes table.

Q: What are indexes in MySQL and why are they used?

A: Indexes speed up searches on columns.

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Intermediate Level Questions

Q: How do INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL JOIN work?

A: JOINs combine rows from two or more tables based on a condition.

Q: What is normalization? Explain different normal forms.

A: Organizing data to reduce redundancy (1NF, 2NF, 3NF).

Q: What is denormalization?

A: Combining tables to reduce joins, improve performance.

Q: What is the difference between UNION and UNION ALL?

A: UNION removes duplicates, UNION ALL includes all records.

Q: How can you improve the performance of a MySQL query?

A: Use indexes, limit results, optimize joins.

Q: What is the difference between IN and EXISTS?

A: IN checks values, EXISTS checks for existence of rows.

Q: What is a stored procedure?

A: A saved SQL code that can be reused.

Q: How do you implement transactions in MySQL?

A: Use `START TRANSACTION`, `COMMIT`, `ROLLBACK`.

Q: What is ACID property in databases?

A: Atomicity, Consistency, Isolation, Durability.

Q: What is the difference between MyISAM and InnoDB storage engines?

A: InnoDB supports transactions, MyISAM doesn't.

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Advanced Level Questions

Q: How do you perform indexing on large datasets?

A: Use composite and covering indexes on queried columns.

Q: Explain query execution plan and how to analyze it using EXPLAIN.

A: `EXPLAIN` shows how MySQL runs a query step-by-step.

Q: What are triggers in MySQL? How do you create them?

A: SQL code that runs automatically on insert/update/delete.

Q: What are views in MySQL and when would you use them?

A: Virtual tables to simplify complex queries.

Q: What are user-defined functions (UDFs)?

A: Custom functions created by users.

Q: How can you handle deadlocks in MySQL?

A: Ensure consistent locking order and use small transactions.

Q: How do you secure a MySQL database?

A: Use strong passwords, user privileges, firewall, SSL.

Q: What are common causes of slow queries in MySQL?

A: Missing indexes, large datasets, poor query design.

Q: How do you backup and restore MySQL databases?

A: `mysqldump` for backup, `mysql` command for restore.

Q: What are common replication types in MySQL (e.g., master-slave, master-master)?

A: Master-slave (one-way), master-master (two-way sync).

MySQL Interview Questions

Practical Query Challenges

Q: Write a query to get the top 5 highest salaries from an employee table.

A: SELECT salary FROM employees ORDER BY salary DESC LIMIT 5;

Q: Write a query to find duplicate records in a table.

A: SELECT col, COUNT(*) FROM table GROUP BY col HAVING COUNT(*) > 1;

Q: Write a query to update data in one table based on data in another table.

A: UPDATE t1 JOIN t2 ON t1.id=t2.id SET t1.col=t2.col;

Q: Write a query to calculate total sales per month from a sales table.

A: SELECT MONTH(date), SUM(amount) FROM sales GROUP BY MONTH(date);

Q: Write a subquery and a correlated subquery.

A: Subquery: SELECT name FROM emp WHERE salary > (SELECT AVG(salary) FROM emp);