1️⃣ MySQL – Basics & Fundamentals (10 Questions)

1. What is MySQL and where is it typically used?
2. Difference between SQL and MySQL.
3. Explain different MySQL storage engines.
4. Difference between InnoDB and MyISAM.
5. What are primary keys and foreign keys?
6. What are indexes and why are they needed?
7. Difference between DELETE, TRUNCATE, and DROP.
8. What is normalization?
9. What are ACID properties?
10. What is a transaction in MySQL?

2️⃣ MySQL – Algorithm Solving & Query Logic (10 Questions)

These are **coding-round SQL questions** commonly asked.

1. Find the second highest salary from an employee table.
2. Retrieve duplicate records from a table.
3. Delete duplicate records keeping one.
4. Find employees with salary greater than department average.
5. Fetch top N records using SQL.
6. Write a query to find customers who never placed an order.
7. Find continuous date records (streak problem).
8. Pivot rows into columns.
9. Calculate running total using SQL.
10. Optimize a slow query (conceptual approach).

3️⃣ MySQL – Intermediate (Frequently Asked Interview Questions) (10 Questions)

1. How does indexing work internally in MySQL?
2. What is a clustered vs non-clustered index?
3. Explain composite indexes.
4. What is query execution plan?
5. How does MySQL handle locks?

6. Difference between row-level and table-level locking.
7. What is isolation level?
8. Explain phantom reads.
9. What is a deadlock and how do you handle it?
10. What is EXPLAIN keyword used for?

4️⃣ MySQL – Advanced (Architecture & Performance) (10 Questions)

1. How does InnoDB store data internally?
2. What is B-Tree index and why is it used?
3. How do you handle large datasets in MySQL?
4. What is read/write splitting?
5. How does replication work?
6. What is MySQL sharding?
7. How do you ensure high availability?
8. How do you optimize joins?
9. How do you handle schema changes in production?
10. How do you monitor MySQL performance?

5️⃣ MongoDB – Basics & Fundamentals (10 Questions)

1. What is MongoDB and how is it different from MySQL?
2. What is a document in MongoDB?
3. What is a collection?
4. Difference between BSON and JSON.
5. What is _id field?
6. How does MongoDB handle schema?
7. What are indexes in MongoDB?
8. What is replication in MongoDB?
9. What is sharding?
10. What are use cases for MongoDB?

6️⃣ MongoDB – Algorithm Solving & Query Logic (10 Questions)

These test **NoSQL query thinking**.

1. Find duplicate documents based on a field.
2. Find top N records in MongoDB.
3. Aggregate total sales per customer.
4. Find documents created in last 7 days.
5. Group records by category.
6. Update nested fields.
7. Pagination using skip and limit.
8. Find records with array size > N.
9. Join two collections using $lookup.
10. Delete documents older than X days.

7️⃣ MongoDB – Intermediate (Frequently Asked Interview Questions) (10 Questions)

1. What is aggregation pipeline?
2. Explain $match, $group, $project.
3. How does indexing work in MongoDB?
4. What is covered query?
5. Difference between embedded and referenced documents.
6. What is write concern?
7. What is read preference?
8. How does MongoDB handle concurrency?
9. What is TTL index?
10. What is ObjectId structure?

8️⃣ MongoDB – Advanced (Architecture & Performance) (10 Questions)

1. How does MongoDB store data internally?
2. What is WiredTiger storage engine?
3. How does sharding work in MongoDB?
4. How do you choose a shard key?
5. What happens during rebalancing?
6. How does MongoDB ensure high availability?

7. What are multi-document transactions?
8. How do you handle schema evolution?
9. How do you optimize aggregation queries?
10. How do you monitor MongoDB performance?

9️⃣ Design Patterns – MySQL & MongoDB (10 Questions)

1. When do you choose SQL vs NoSQL?
2. Database per service pattern.
3. CQRS with MySQL and MongoDB.
4. Event sourcing with MongoDB.
5. Read-heavy vs write-heavy design.
6. Polyglot persistence pattern.
7. Cache-aside pattern.
8. Soft delete vs hard delete.
9. Data versioning strategies.
10. Migration strategies between databases.

🔟 Capstone Project – Database Interview Questions

A. Architecture & Design (10 Questions)

1. Why did you choose MySQL or MongoDB for your project?
2. How did you design schema?
3. How did you handle scalability?
4. How did you manage indexing strategy?
5. How did you ensure data consistency?
6. How did you handle migrations?
7. How did you handle backups?
8. How did you secure the database?
9. How did you handle performance bottlenecks?
10. What would you redesign today?

B. Implementation & Production (10 Questions)

1. How did you handle large tables/collections?
2. How did you optimize slow queries?
3. How did you handle transactions?
4. How did you handle concurrent updates?
5. How did you handle data cleanup?
6. How did you manage schema changes?
7. How did you handle failover?
8. How did you manage database connections?
9. How did you handle pagination at scale?
10. Explain a critical production issue you fixed.