

1. What is the normalized form? Why avoid data redundancy?

Normalized form means arranging data into separate, logically related tables so that each piece of information is stored only once. This organization follows a set of rules called normal forms—1NF, 2NF, 3NF, and beyond—that remove redundancy and enforce integrity constraints through keys and relationships

Avoiding data redundancy is essential because duplication causes inconsistency, wasted storage, and anomalies during insert, update, or delete operations. For instance, if the same customer's name is stored in multiple places, an update in one table but not another creates conflicting data. By eliminating redundancy, normalization ensures accuracy, consistency, and efficient database performance

2. How would you decide types (VARCHAR, DATE, INT etc.)?

- Use INT, SMALLINT, or BIGINT for numeric, countable data such as IDs, quantities, or scores. Smaller integer types are faster and save space when the range of values is limited.
- Use CHAR(n) for fixed-size strings like country codes or status flags
- Use DECIMAL(p,s) or FLOAT for financial and precise numeric values where accuracy
- Use VARCHAR(n) for text whose length can vary (names, descriptions, emails). Define a size reasonably larger than the expected maximum. This saves space while allowing flexibility.
- Use DATE, TIME, or DATETIME for any temporal field. These formats validate input automatically and allow date-based operations
- Use TEXT or CLOB for large pieces of unstructured text (comments, notes, logs).

3. Describe schema changes you might make if tasks need tagging / user assignment.

- For tagging: Create a tags table where each tag has a unique ID and name. Then add a task_tags table that connects tasks to tags by storing pairs of task IDs and tag IDs. This lets each task have many tags, and each tag can be used by many tasks.
- For user assignment: Have a users table with user info like user ID and name. Add a task_assignments table to link tasks with users through their IDs, supporting multiple users per task if needed

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