

Fundamentals of Data and Information

1. **Scenario:** A company uses a software application to manage customer orders, track inventory, and generate sales reports. This software interacts with a central repository where all the data is stored and managed.
Question: Which component of the database system does the central repository belong to?
 - a) DBMS
 - b) Database Application
 - c) Database
 - d) None of the above
2. **Scenario:** A bank's database system allows employees to query customer balances, update transaction records, and produce monthly statements using a software application. The software relies on an underlying system that manages how data is stored, retrieved, and updated.
Question: What is the role of the system that manages data storage and retrieval in this scenario?
 - a) DBMS
 - b) Database Application
 - c) Database
 - d) None of the above
3. **Scenario:** A student database application allows users to enter student details, such as name, ID number, and courses. The data is then stored in a database and managed by a DBMS.
Question: What is the role of the database in this scenario?
 - a) It stores the data
 - b) It processes queries
 - c) It facilitates user interaction
 - d) It maintains security
4. **Scenario:** An employee in an organization needs to access a report generated by the database. The application used to query and report the data is a web-based interface, while the actual database stores the information.
Question: What concept does the web-based interface represent?
 - a) DBMS
 - b) Database
 - c) Database Application
 - d) None of the above
5. **Scenario:** A database system in a retail store allows the staff to view available stock, check prices, and update quantities based on transactions.
Question: In this case, what would be the primary function of the DBMS?
 - a) Storing product information
 - b) Providing a user interface for staff

- c) Managing how data is stored and accessed
 - d) Updating stock levels
6. **Scenario:** A database administrator needs to give permissions to a user to access and modify specific data in a table.
Question: Which subset of SQL would be used to assign user privileges?
- a) DML
 - b) DQL
 - c) DDL
 - d) DCL
7. **Scenario:** A manager needs to retrieve all the records of employees who have worked more than 10 years at the company.
Question: Which subset of SQL would the manager use to fetch this data?
- a) DML
 - b) DQL
 - c) DDL
 - d) DCL
8. **Scenario:** A company's system allows employees to view the most recent order placed by any customer. The system fetches the data without modification.
Question: Which step of the Data Management Lifecycle does this scenario represent?
- a) Create
 - b) Input
 - c) Read
 - d) Update
9. **Scenario:** A database stores information about products in an inventory system. The data about a specific product is updated when its price changes.
Question: Which step of the Data Management Lifecycle is involved in this scenario?
- a) Create
 - b) Input
 - c) Update
 - d) Organize
10. **Scenario:** An employee is asked to delete an outdated customer record from the database because the customer no longer exists in the system.
Question: Which step of the Data Management Lifecycle is being performed?
- a) Delete
 - b) Update
 - c) Create
 - d) Organize
11. **Scenario:** A financial system calculates the total revenue of a store by summing all sales transactions recorded in the database.
Question: Which type of data processing is described here?

- a) T1
- b) T2
- c) T3
- d) T4

12. **Scenario:** An online store needs to update the quantity of a product after a customer makes a purchase.

Question: Which type of data processing is being performed in this case?

- a) T1
- b) T2
- c) T3
- d) T4

13. **Scenario:** A database system retrieves all employees in the marketing department and lists them alphabetically for a report.

Question: Which type of data processing is this?

- a) T1
- b) T2
- c) T3
- d) T4

14. **Scenario:** A university database uses foreign keys to link student records to their corresponding courses, enabling the retrieval of a student's enrolled courses.

Question: Which type of data processing is represented by this scenario?

- a) T1
- b) T2
- c) T3
- d) T4

15. **Scenario:** A user generates a list of all products priced over \$50 and sorts them in descending order based on price.

Question: Which type of data processing is this?

- a) T1
- b) T2
- c) T3
- d) T4

Technical Users

16. **Scenario:** A ____ notices that a legacy database is experiencing performance issues due to redundant data, such as customer information being stored in multiple tables. The ____ works with a database designer to propose a solution for normalizing the database to eliminate the redundancy.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

17. **Scenario:** A ____ creates a stored procedure that calculates the total price of items in a shopping cart, including taxes and discounts.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

18. **Scenario:** The ____ needs to execute a query to generate a customer activity report based on data extracted from the sales database.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

19. **Scenario:** A ____ is tasked with improving query performance by adding an index on the OrderDate column to speed up queries that retrieve data based on order dates.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

20. **Scenario:** A ____ reviews the existing database design for an inventory management system and identifies inefficiencies, such as unnecessary dependencies between products and suppliers. The ____ suggests restructuring the schema to improve performance and scalability.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect

- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

21. **Scenario:** A ____ consults with the finance department to understand their monthly revenue reporting needs. Based on these discussions, the ____ creates a specification document outlining the required data relationships and system capabilities for a new financial reporting database.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

22. **Scenario:** The ____ receives an alert indicating that a scheduled backup has failed. They investigate the issue, identify the problem, and notify the database administrator.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

23. **Scenario:** The ____ must decide how to physically store customer data on disk, whether in row-based or columnar storage, depending on the type of queries anticipated.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

24. **Scenario:** A ____ regularly checks data integrity and monitors whether scheduled jobs, such as ETL processes, are being executed on time.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

25. **Scenario:** The ____ writes a series of unit tests to check the reliability of database functions, ensuring they return the correct results even during system failures.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

26. **Scenario:** A report is generated daily showing the current stock levels of all products in a warehouse. The report is based on pre-written SQL queries that the ____ executes.

Question: Which role is responsible for this task?

- a) Database Designer
- b) Database Operator
- c) Data Engineer
- d) Systems Analyst
- e) Database Administrator

27. **Scenario:** The ____ performs routine checks to ensure the database is running smoothly, investigating any potential performance issues or failures.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

28. **Scenario:** A ____ builds an API to fetch user profiles from the database and integrate them with a mobile application.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

29. **Scenario:** A ____ is reviewing the design of a new inventory management system and notices that some attributes (e.g., product names) are being repeated in multiple tables. The ____ decides to inform the database designer to refactor the schema to reduce redundancy.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

30. **Scenario:** A ____ optimizes a slow query by adding appropriate indexes and refactoring the query to minimize the use of subqueries.

Question: Which role is responsible for this task?

- a) Database Operator
- b) Database Designer / Architect
- c) Database Developer
- d) Systems Analyst
- e) Database Administrator

Data & Information

31. **Scenario:** In a medical database system, raw data such as patient vitals, age, and medical history are entered. The application processes this data to generate patient reports that doctors use for diagnosis and treatment.

Question: What role is the database application playing here?

- a) Transforming data into information
- b) Storing raw data
- c) Generating raw data
- d) Querying the database

32. **Scenario:** A retail database system processes sales transaction data and provides managers with weekly reports on product performance, identifying which products are selling the most and which are underperforming.

Question: Which process is this an example of?

- a) Data Transformation
- b) Query Execution
- c) Database Storage
- d) Application Integration

33. **Scenario:** A government database application aggregates demographic data, such as age, gender, and income, to generate reports that help in planning community services like healthcare and education.

Question: What function is being performed by the database application in this scenario?

- a) Data Processing
- b) Data Transformation
- c) Data Input
- d) Data Collection

34. **Scenario:** In a small business system, all functionalities including user interaction, data processing, and storage are handled by a single application. There is no separate data layer or client-server model.

Question: Which type of database architecture is being described?

- a) 3-Tier Architecture
- b) Client-Server Architecture
- c) Single Monolithic Application
- d) Distributed Database

35. **Scenario:** In a large-scale web application, the user interacts with the front-end interface, while the logic and processing take place on the server. The server queries the database to retrieve and process data.
Question: What database architecture is being used here?
- a) 3-Tier Architecture
 - b) Single Monolithic Application
 - c) Client-Server Architecture
 - d) Distributed Database
36. **Scenario:** An e-commerce platform like Amazon uses a system where the user interface is separate from the application logic, and both interact with the database through API calls.
Question: Which database architecture is being utilized?
- a) 3-Tier Architecture
 - b) Single Monolithic Application
 - c) Client-Server Architecture
 - d) Peer-to-Peer Architecture
37. **Scenario:** A customer portal allows users to view their account balance, transaction history, and credit score. The information is updated in real-time to provide users with accurate and current data.
Question: Which characteristic of quality information is demonstrated in this scenario?
- a) Accuracy
 - b) Timeliness
 - c) Relevance
 - d) Security
38. **Scenario:** A company generates a summary of monthly sales, but instead of printing all transaction logs, it only shows aggregated totals.
Question: Which characteristic of quality information is being exemplified here?
- a) Accuracy
 - b) Economy
 - c) Simplicity
 - d) Flexibility
39. **Scenario:** A healthcare database provides physicians with patient information that has been verified by authorized medical professionals. The data is collected from reliable sources, ensuring that it is accurate.
Question: Which characteristic of quality information is this an example of?
- a) Verifiability
 - b) Reliability
 - c) Flexibility
 - d) Timeliness
40. **Scenario:** A company provides an internal dashboard for employees to view key performance indicators (KPIs), but the data is not updated until the end of each

month.

Question: Which characteristic of quality information is lacking in this scenario?

- a) Accuracy
- b) Relevance
- c) Timeliness
- d) Flexibility

41. **Scenario:** An organization's marketing department uses data from customer surveys to create targeted advertisements. The information they use must address their specific needs and help in campaign decision-making.

Question: Which characteristic of quality information is being highlighted?

- a) Relevance
- b) Reliability
- c) Flexibility
- d) Timeliness

42. **Scenario:** A financial report is generated by an accounting system showing the complete list of transactions for the year, with no missing entries or errors.

Question: Which characteristic of quality information is being demonstrated here?

- a) Accuracy
- b) Completeness
- c) Simplicity
- d) Reliability

43. **Scenario:** A company ensures that sensitive customer data, such as personal identification and financial information, is encrypted and can only be accessed by authorized users.

Question: Which characteristic of quality information is exemplified in this scenario?

- a) Verifiability
- b) Security
- c) Timeliness
- d) Economy

44. **Scenario:** A business dashboard displays key metrics such as sales figures and customer engagement in a simple, easy-to-understand format, making it accessible to both executives and team members.

Question: Which characteristic of quality information is emphasized here?

- a) Simplicity
- b) Relevance
- c) Flexibility
- d) Accuracy

45. **Scenario:** A university system generates real-time student grades that are easily accessible by both students and faculty members when needed.

Question: Which characteristic of quality information is highlighted?

- a) Accessibility
- b) Timeliness

- c) Accuracy
- d) Flexibility

46. **Scenario:** An organization's internal database is regularly updated with new product information and pricing, ensuring that customers always receive the most accurate and up-to-date information when they make purchases.

Question: Which characteristic of quality information is demonstrated in this scenario?

- a) Accuracy
- b) Timeliness
- c) Completeness
- d) Relevance