Database Design, Security, and Maintenance Quiz

1. What is the first step in the Database Design Life Cycle?

   A. Physical Design

   B. Requirements Analysis

   C. Database Implementation

   D. Testing

   Answer: B

2. In which design stage do we create an ER Diagram?

   A. Physical Design

   B. Logical Design

   C. Conceptual Design

   D. Maintenance

   Answer: C

3. In an ER Model, what does an “Entity” represent?

   A. A specific calculation

   B. A real-world object like a Student or a Product

   C. A type of database software

   D. A password

   Answer: B

4. What is an "Attribute" in an ER Model?

   A. A link between two tables

   B. A property or characteristic of an entity (e.g., Student Name)

   C. The database administrator

   D. A backup file

   Answer: B

5. When mapping an ER Model to a Relational Model, what do Entities become?

   A. Columns

   B. Keys

   C. Tables

   D. Folders

   Answer: C

6. In a Relational Schema, what do Attributes become?

   A. Rows

   B. Columns

   C. Indexes

   D. Schemas

   Answer: B

7. Which type of entity depends on another entity for its existence?

   A. Strong Entity

   B. Weak Entity

   C. Null Entity

   D. Global Entity

   Answer: B

8. How do we handle a Many-to-Many relationship when converting to tables?

   A. We delete one entity.

   B. We create a new "junction" or "link" table.

   C. We use only one column.

   D. We ignore the relationship.

   Answer: B

9. What is the main goal of the Physical Design stage?

   A. Deciding what data to collect.

   B. Choosing how data is stored on the actual disk/hardware.

   C. Interviewing users.

   D. Drawing a flowchart.

   Answer: B

10. What is an Index used for in a database?

    A. To encrypt data.

    B. To speed up data retrieval (searching).

    C. To delete old records.

    D. To create new users.

    Answer: B

11. Which process is used to minimize data redundancy?

    A. Encryption

    B. Indexing

    C. Normalization

    D. Backup

    Answer: C

12. What is "Testing" in the design life cycle?

    A. Creating the database.

    B. Checking the database for errors and performance issues.

    C. Writing the user manual.

    D. Selling the software.

    Answer: B

13. In an ER Diagram, a relationship is usually represented by which shape?

    A. Rectangle

    B. Oval

    C. Diamond

    D. Square

    Answer: C

14. What do we call the process of keeping the database running smoothly after it is launched?

    A. Implementation

    B. Analysis

    C. Maintenance

    D. Conceptualization

    Answer: C

15. Mapping a Foreign Key is essential to maintain:

    A. Storage space

    B. Relationships between tables

    C. High prices

    D. Computer speed

    Answer: B

16. What does DCL stand for?

    A. Data Control Language

    B. Data Calculation Logic

    C. Digital Control List

    D. Database Command Language

    Answer: A

17. Which command is used to give a user permission to access the database?

    A. REVOKE

    B. ALLOW

    C. GRANT

    D. OPEN

    Answer: C

18. Which command is used to take away a user's permissions?

    A. DENY

    B. REVOKE

    C. CLOSE

    D. REMOVE

    Answer: B

19. What is "Authentication"?

    A. Deciding what a user can do.

    B. Verifying who the user is (e.g., using a password).

    C. Backing up the data.

    D. Speeding up the query.

    Answer: B

20. What is "Authorization"?

    A. Checking the user's password.

    B. Determining the permissions/privileges a user has.

    C. Deleting a user account.

    D. Encrypting the disk.

    Answer: B

21. Which security attack involves inserting malicious code into a database query via user input?

    A. Full Backup

    B. Indexing

    C. SQL Injection

    D. Normalization

    [Image showing an SQL Injection attack example]

    Answer: C

22. What is a simple way to prevent SQL Injection?

    A. Using "Parameterized Queries" or "Prepared Statements."

    B. Deleting the database every day.

    C. Using a shorter password.

    D. Turning off the internet.

    Answer: A

23. What is "Data Encryption"?

    A. Deleting data to save space.

    B. Converting data into a secret code to prevent unauthorized reading.

    C. Making a copy of the data.

    D. Organizing data into tables.

    Answer: B

24. "Encryption at-rest" refers to protecting data that is:

    A. Being sent over the internet.

    B. Stored on a physical disk or drive.

    C. Currently being typed by a user.

    D. Already deleted.

    Answer: B

25. "Encryption in-transit" refers to protecting data that is:

    A. Sitting on a hard drive.

    B. Moving across a network or the internet.

    C. Printed on paper.

    D. Not important.

    Answer: B

26. What is a "Full Backup"?

    A. A backup of only new files.

    B. A complete copy of the entire database.

    C. A backup of the user's password only.

    D. A backup of the last 10 minutes.

    Answer: B

27. Which backup type only copies data that has changed since the LAST full backup?

    A. Incremental Backup

    B. Differential Backup

    C. Transaction Log Backup

    D. Partial Backup

    [Image comparing full, differential, and incremental backups]

    Answer: B

28. Which backup type only copies data that has changed since the VERY LAST backup (of any type)?

    A. Full Backup

    B. Incremental Backup

    C. Master Backup

    D. Static Backup

    Answer: B

29. What is "Database Recovery"?

    A. Writing new data.

    B. Restoring the database to a healthy state after a failure.

    C. Deleting the backup files.

    D. Changing the Primary Key.

    Answer: B

30. What is the goal of "Performance Tuning"?

    A. To make the database look pretty.

    B. To optimize the database so it runs faster.

    C. To increase the number of errors.

    D. To uninstall the software.

    Answer: B

31. What is "Index Rebuilding"?

    A. Creating a new table.

    B. Repairing or reorganizing an index to improve search speed.

    C. Changing the name of the database.

    D. Deleting the primary key.

    Answer: B

32. What is a "Disaster Recovery Plan"?

    A. A plan to hire new employees.

    B. A set of procedures to restore the database after a major failure (like a fire or flood).

    C. A way to design an ER diagram.

    D. A method for typing SQL queries.

    Answer: B

33. A "Transaction Log Backup" is useful for:

    A. Point-in-time recovery of specific changes.

    B. Making the monitor brighter.

    C. Changing the table structure.

    D. Designing the logical model.

    Answer: A

34. Why do we perform "Regular Archiving"?

    A. To make the database larger.

    B. To move old, rarely used data to a separate storage to keep the main database fast.

    C. To delete data forever.

    D. To prevent users from logging in.

    Answer: B

35. What is "Data Loss"?

    A. Adding too much data.

    B. When data is accidentally destroyed or deleted.

    C. When data is encrypted.

    D. When a query runs too fast.

    Answer: B

36. Database Maintenance should be done:

    A. Only once when the database is built.

    B. Regularly (daily, weekly, or monthly).

    C. Only when the database crashes.

    D. Never.

    Answer: B

37. Which role is primarily responsible for backup, recovery, and security?

    A. Web Designer

    B. Database Administrator (DBA)

    C. Data Entry Clerk

    D. Sales Manager

    Answer: B

38. "Data Integrity" means the data is:

    A. Secret

    B. Fast

    C. Accurate and Consistent

    D. Large

    Answer: C

39. In DCL, what is a "Role"?

    A. A type of hardware.

    B. A collection of permissions that can be assigned to a group of users.

    C. A row in a table.

    D. A specific SQL command.

    Answer: B

40. The "Logical Design" stage focuses on:

    A. Buying the server.

    B. Creating the Relational Schema (Tables and Keys) without worrying about hardware.

    C. Backing up the log files.

    D. Interviewing the manager.

    Answer: B