

Contestant Number: \_\_\_\_\_

Time: \_\_\_\_\_

Rank: \_\_\_\_\_



# SQL Database Fundamentals

## (345)

## REGIONAL 2025

**Multiple Choice:**

50 @ 2 points each

\_\_\_\_\_ (100 points)

**Test Time: 60 minutes**

**GENERAL GUIDELINES:**

*Failure to adhere to any of the following rules will result in disqualification:*

1. Member must hand in this test booklet and all printouts if any. Failure to do so will result in disqualification.
2. No equipment, supplies, or materials other than those specified for this event are allowed in the testing area. No previous BPA tests and/or sample tests (handwritten, photocopied, or keyed) are allowed in the testing area.
3. Electronic devices will be monitored according to ACT standards.

### Multiple Choice Questions

**Directions:** Identify the letter of the choice that *best* completes the statement or answers the question.

1. What does the acronym SQL stand for?
  - A. Standard Query Logic
  - B. Scripted Queries Log
  - C. Server Quality Language
  - D. Structured Query Language
2. What is a collection of related data consisting of columns and rows know as?
  - A. Database
  - B. Table
  - C. Array
  - D. Constraint
3. Which SQL clause would be used to restrict the data returned from a query?
  - A. GROUP BY
  - B. WHERE
  - C. ORDER BY
  - D. LIMIT
4. Which data type changes the amount of space used based on the content of the data stored?
  - A. CHAR
  - B. FLOAT
  - C. VARCHAR
  - D. TIMESTAMP
5. What does the acronym ACID stand for when referring to a database transaction?
  - A. Atomicity, Consistency, Isolation, Durability
  - B. Access, Control, Integration, Dependability
  - C. Algorithm, Control, Isolation, Destination
  - D. Active, Cache, Implementation, Destination
6. In a relational database, what is a primary key?
  - A. A field with an identifier of ID
  - B. The first field in a table
  - C. A key that connects table a with table b
  - D. A unique identifier for a record in a table

7. What is database normalization?
  - A. The process of adding data redundancy
  - B. The process of removing data redundancy
  - C. Merging data
  - D. Adding indexes to improve performance
8. What SQL Statement would be used to remove all the contents of a table without modifying the database structure?
  - A. DROP
  - B. DELETE
  - C. TRUNCATE
  - D. REMOVE
9. To add data to an SQL table, which SQL statement would be used?
  - A. ADD
  - B. INSERT
  - C. UPDATE
  - D. MODIFY
10. To find the total number of rows in a table, which SQL statement would be used?
  - A. SUM()
  - B. MAX()
  - C. COUNT()
  - D. TOTAL()
11. What is a database view?
  - A. A virtual table derived from one or more underlying tables
  - B. A physical storage location for database files
  - C. A mechanism for restricting access to certain database objects
  - D. A tool for optimizing database queries
12. Which SQL Statement is used to remove a table from a database
  - A. DROP
  - B. TRUNCATE
  - C. DELETE
  - D. REMOVE
13. What is the purpose of an SQL PRIMARY Key constraint?
  - A. To allow columns to contain NULL values
  - B. Combines multiple columns into a single identifier
  - C. Ensures a column contains unique values
  - D. Builds a default value into a column

14. What is the purpose of an SQL ORDER BY clause?
- A. Filter rows based on a condition
  - B. Join two tables
  - C. Sort the results based on specific columns
  - D. Group rows with the same values in specific columns
15. What is the purpose of an WHERE clause in a SELECT statement?
- A. Filter rows based on a condition
  - B. Join two tables
  - C. Sort the results based on specific columns
  - D. Group rows with the same values in specific columns
16. Which SQL clause is used to combine rows from two or more tables based on a related column?
- A. GROUP BY
  - B. ORDER BY
  - C. UNION
  - D. JOIN
17. What is the purpose of the SQL LIKE operator?
- A. Compares equality of values
  - B. Compares for a specified pattern in a column
  - C. Compares data in a range
  - D. Retrieves the max values in a column
18. What is the purpose of the SQL UNION operator?
- A. Filters rows based on a condition
  - B. Joins two tables based on a related condition
  - C. Groups rows based on a specified condition
  - D. Combines the result sets of two or more SELECT statements
19. In SQL, what is the purpose of the HAVING clause?
- A. Filters rows before using a GROUP BY statement
  - B. Is equivalent to a WHERE clause
  - C. Combines multiple tables into one
  - D. Filters grouped rows after aggregation
20. Which keyword is used to display a unique group of values
- A. UNIQUE
  - B. UNION
  - C. DISTINCT
  - D. LIMIT

21. What SQL operator would be used to check if a value is in a specified range?
- A. BETWEEN
  - B. IN
  - C. CONTAINS
  - D. WITHIN
22. What SQL clause returns a maximum amount of row?
- A. RESTRICT
  - B. MAXROWS
  - C. LIMIT
  - D. DISPLAY
23. Which of the following is an example of a relational database management system (RDBMS)?
- A. MongoDB
  - B. MySQL
  - C. Redis
  - D. Cassandra
24. Which of the following is NOT a type of database model?
- A. Hierarchical
  - B. Relational
  - C. Non-Relational
  - D. Static
25. What is indexing in a database?
- A. Organizing data in alphabetical order
  - B. A data structure that improves the speed of data retrieval operations on a database table
  - C. Encrypting data for security purposes
  - D. Deleting outdated data entries
26. What does the term "replication" refer to in the context of databases?
- A. The process of optimizing database queries
  - B. The process of duplicating data across multiple servers
  - C. The process of encrypting data for security purposes
  - D. The process of organizing data into hierarchical structures
27. What is the purpose of a database transaction?
- A. To retrieve data from the database
  - B. To modify data in the database in a consistent and reliable manner
  - C. To optimize database performance
  - D. To generate reports from the database

28. Which of the following best describes the primary function of OLTP systems?
- A. Analyzing historical data trends
  - B. Executing and managing real-time transactions
  - C. Generating complex analytical reports
  - D. Storing large volumes of data for archival purposes
29. What does OLTP stand for in the context of databases?
- A. Online Transaction Processing
  - B. On-Location Transfer Protocol
  - C. Operational Long-Term Planning
  - D. Offline Transaction Protocol
30. What is the primary goal of OLTP database design?
- A. Normalizing data to minimize redundancy
  - B. Optimizing complex analytical queries
  - C. Supporting ad-hoc reporting requirements
  - D. Storing historical data for trend analysis
31. Which of the following is NOT a style of backup?
- A. Incremental Backup
  - B. Hot Backup
  - C. Differential Backup
  - D. Referential Backup
32. What does the acronym "DDL" stand for in the context of databases?
- A. Data Definition Language
  - B. Data Deletion Language
  - C. Data Distribution Language
  - D. Data Declaration Language
33. Which of the following statements is an example of a DDL statement?
- A. `SELECT * FROM employees`
  - B. `INSERT INTO customers (name, email) VALUES ('John Doe', 'john@example.com')`
  - C. `CREATE TABLE products (id INT, name VARCHAR(50), price DECIMAL(10,2))`
  - D. `UPDATE orders SET status = 'Shipped' WHERE id = 1001`
34. What is the key constraint for the first normalization form?
- A. Each table cell must contain a single value
  - B. All non-key attributes are fully dependent on the primary key
  - C. There is no duplicate data with a column across multiple rows
  - D. The primary key must be unique

35. Is it true or false that the following table meets first Normal Form?

Full_Name	Physical_Address	Movies_Rented	Salutation
Janet Jones	First Street Plot	Tarzan	Ms.
Janet Jones	First Street Plot	Clash of the Titans	Ms.
Robert Phil	3 <sup>rd</sup> Street	Somewhere in Time	Mr.
Robert Phil	3 <sup>rd</sup> Street	Poor Things	Mr.
Robert Phil	5 <sup>th</sup> Avenue	Clash of the Titans	Mr.

- A. True
- B. False

36. In database terminology what is ACID?

- A. It is an acronym defining the process of normalizing a database
- B. It is a technique for backing up only critical data during a transaction
- C. It is the process of scrubbing duplicate data from a relational database
- D. It is intended to guarantee data validity despite errors, power failures, and other mishaps

37. What is a database transaction?

- A. A unit of work performed within a database management system
- B. A mechanism for enforcing access control policies
- C. A physical storage location for database files
- D. A tool for generating reports from database queries

38. What is a rollback operation in the context of database transactions?

- A. A mechanism for committing the changes made by a transaction
- B. A mechanism for isolating transactions from one another
- C. A mechanism for undoing the changes made by a transaction
- D. A mechanism for ensuring that transactions are processed as a single unit of work

39. What is the primary benefit of using higher isolation levels such as REPEATABLE READ and SERIALIZABLE?

- A. Improved concurrency and performance
- B. Reduced risk of data inconsistency
- C. Decreased resource utilization
- D. Enhanced data availability

40. Which of the following is NOT considered an anomaly of concurrency control of a database transaction?

- A. Dirty Read
- B. False Read
- C. Non-Repeatable Read
- D. Lost Update

41. What is the primary purpose of database locking in a multi-user database system?
- A. To enforce referential integrity constraints
  - B. To optimize database performance
  - C. To ensure data consistency and integrity
  - D. To control access privileges of users
42. Which type of database lock prevents other transactions from reading or writing to a data item while it is held?
- A. Shared lock
  - B. Exclusive lock
  - C. Intent lock
  - D. Update lock
43. In a deadlock situation, what is the typical outcome?
- A. Both transactions involved in the deadlock are rolled back
  - B. One transaction involved in the deadlock is rolled back, while the other continues
  - C. The database system automatically resolves the deadlock without rolling back any transactions
  - D. The transactions involved in the deadlock are suspended until manual intervention
44. What is a stored procedure in the context of a database?
- A. A graphical representation of database tables and relationships
  - B. A set of SQL statements stored in the database and executed as a single unit
  - C. A physical storage location for database files
  - D. A mechanism for enforcing referential integrity constraints
45. What is a primary advantage of using stored procedures?
- A. Improved database security
  - B. Simplified application development and maintenance
  - C. Enhanced database performance
  - D. Increased data redundancy
46. Who developed the relational database model?
- A. Alan Turing
  - B. Ada Lovelace
  - C. Charles Bachman
  - D. Edgar F. Codd
47. Which of the following is a common type of NoSQL database?
- A. Relational database
  - B. Key-value store
  - C. SQL database
  - D. Transactional database

48. Which of the following is NOT a recognized type of database key?
- A. Composite Key
  - B. Natural Key
  - C. Surrogate Key
  - D. Master Key
49. In a database a “Tuple” is also known as what?
- A. A Table
  - B. A Row
  - C. A Column
  - D. A Data Cell
50. What is a table join in the context of relational databases?
- A. A method for normalizing database tables to reduce redundancy
  - B. A technique for combining rows from two or more tables based on a related column
  - C. A process for encrypting sensitive data stored in database tables
  - D. A mechanism for granting access privileges to specific database tables