

1. Database Management System (DBMS) - MCQs
2. 1. Introduction to DBMS
3. DBMS stands for:
 - a) Database Management Software
 - b) Database Maintenance System
 - c) Database Management System
 - d) Database Monitoring System
4. Which of the following is NOT a type of database?
 - a) Relational Database
 - b) Hierarchical Database
 - c) Spreadsheet Database
 - d) Network Database
5. A **primary goal** of DBMS is:
 - a) Data redundancy
 - b) Data inconsistency
 - c) Data sharing and integrity
 - d) Data complexity
6. The **ACID properties** ensure:
 - a) Data accuracy and consistency
 - b) Data deletion and modification
 - c) Faster query execution
 - d) None of the above
7. Which of the following is a **disadvantage of DBMS**?
 - a) Data security
 - b) Reduced redundancy
 - c) High initial cost
 - d) Efficient data access
8. **2. Database Architecture & Models**
9. The three-level architecture of DBMS consists of:
 - a) Physical, Logical, and External Levels
 - b) Relational, Hierarchical, and Network Levels
 - c) Storage, Processing, and Retrieval Levels
 - d) None of the above
10. In which **database model** data is stored in the form of tables?
 - a) Hierarchical Model
 - b) Network Model
 - c) Relational Model
 - d) Object-Oriented Model
11. Which model represents **data in the form of a tree**?
 - a) Hierarchical Model
 - b) Network Model
 - c) Relational Model
 - d) Object-Oriented Model
12. The **foreign key** in a table refers to:
 - a) A primary key in the same table
 - b) A primary key in another table
 - c) A redundant key
 - d) A key that does not exist
13. In a **one-to-many relationship**, a row in Table A can be linked to:
 - a) Only one row in Table B

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 - a) Only one row in Table B

- b) Many rows in Table B
- c) No rows in Table B
- d) None of the above

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16. 3. SQL Basics

17. SQL stands for:

- a) Structured Query Language
- b) Sequential Query Language
- c) Structured Question Language
- d) None of the above

18. The **command used to retrieve data** from a table is:

- a) SELECT
- b) INSERT
- c) DELETE
- d) CREATE

19. Which of the following is a **DML command**?

- a) DELETE
- b) SELECT
- c) UPDATE
- d) All of the above

20. The **DELETE command** in SQL:

- a) Removes a table from the database
- b) Removes rows from a table
- c) Modifies table structure
- d) None of the above

21. The **wildcard character** used for pattern matching in SQL is:

- a) % and _
- b) @ and #
- c) & and *
- d) \$ and ?

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24. 4. SQL Joins & Functions

25. Which SQL join returns all rows from both tables even if they don't match?

- a) INNER JOIN
- b) LEFT JOIN
- c) RIGHT JOIN
- d) FULL JOIN

26. The SQL function used to count the number of rows is:

- a) COUNT()
- b) SUM()
- c) AVG()
- d) MAX()

27. The **GROUP BY** clause is used with:

- a) Aggregate functions
- b) SELECT statements
- c) ORDER BY
- d) None of the above

28. Which function **returns the highest value** in a column?
- a) MIN()
 - b) AVG()
 - c) MAX()
 - d) SUM()
29. The **HAVING clause** is used to:
- a) Filter data based on aggregate functions
 - b) Sort data
 - c) Delete rows
 - d) Modify data
30. **5. Normalization**
31. **Normalization** is used to:
- a) Reduce redundancy
 - b) Increase redundancy
 - c) Remove foreign keys
 - d) None of the above
32. The **First Normal Form (1NF)** ensures:
- a) No duplicate rows
 - b) No multi-valued attributes
 - c) No functional dependency
 - d) No transitive dependency
33. The **Second Normal Form (2NF)** removes:
- a) Partial dependency
 - b) Transitive dependency
 - c) Multi-valued dependency
 - d) All of the above
34. The **Third Normal Form (3NF)** eliminates:
- a) Functional dependency
 - b) Transitive dependency
 - c) Primary keys
 - d) Partial dependency
35. A table is in **BCNF (Boyce-Codd Normal Form)** if:
- a) It is in 2NF
 - b) It is in 3NF and has only one candidate key
 - c) It is in 3NF and all determinants are candidate keys
 - d) It has no NULL values

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37. 6. Functional Dependencies & Keys

38. A **functional dependency** exists when:
- a) One attribute uniquely determines another attribute
 - b) Two attributes are unrelated
 - c) All attributes are primary keys
 - d) None of the above
39. If $A \rightarrow B$ and $B \rightarrow C$, then $A \rightarrow C$ is an example of:
- a) Partial Dependency
 - b) Transitive Dependency
 - c) Reflexive Dependency
 - d) None of the above
40. **Super Key** is:
- a) A single unique attribute in a table

- b) A set of attributes that uniquely identifies a row
 - c) A foreign key in another table
 - d) None of the above
41. **Candidate Key** is:
- a) A subset of Super Key
 - b) A key that can be a Primary Key
 - c) A key without redundancy
 - d) All of the above
42. A table with **only one candidate key** is in:
- a) 1NF
 - b) 2NF
 - c) 3NF
 - d) BCNF
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45. **7. SQL Constraints & Indexing**
46. A NOT NULL constraint ensures:
- a) A column has unique values
 - b) A column cannot have NULL values
 - c) A column has foreign key values
 - d) A column is indexed
47. The **UNIQUE constraint** allows:
- a) Duplicate values in a column
 - b) At most one NULL value
 - c) Multiple NULL values
 - d) Only numbers
48. The **CHECK constraint** ensures:
- a) Foreign key references
 - b) That a column follows a specific condition
 - c) That all values are unique
 - d) That a column has no NULLs
49. An **INDEX in SQL** improves:
- a) Insertion speed
 - b) Query performance
 - c) Data deletion speed
 - d) Storage usage
50. The **default index** created in SQL is:
- a) Clustered Index
 - b) Non-Clustered Index
 - c) Composite Index
 - d) None of the above
- 51.
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53. **8. SQL Joins & Nested Queries**
54. The **INNER JOIN** returns:
- a) Only matching rows from both tables
 - b) All rows from the left table

- c) All rows from the right table
- d) All rows from both tables
- 55. The **LEFT JOIN** returns:
 - a) All rows from the left table and matching rows from the right table
 - b) All rows from the right table and matching rows from the left table
 - c) Only matching rows from both tables
 - d) None of the above
- 56. The **RIGHT JOIN** returns:
 - a) All rows from the left table and matching rows from the right table
 - b) All rows from the right table and matching rows from the left table
 - c) Only matching rows from both tables
 - d) None of the above
- 57. The **FULL OUTER JOIN** returns:
 - a) Only matching rows from both tables
 - b) All rows from both tables, including unmatched rows
 - c) Only rows with NULL values
 - d) None of the above
- 58. A **nested query** is also known as:
 - a) Inner Query
 - b) Outer Query
 - c) Parallel Query
 - d) Indexed Query

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61. 9. Transactions & Concurrency Control

- 62. A **transaction** in SQL follows:
 - a) CAP theorem
 - b) ACID properties
 - c) CRUD operations
 - d) None of the above
- 63. Which of the following is NOT an ACID property?
 - a) Atomicity
 - b) Consistency
 - c) Durability
 - d) Security
- 64. **Dirty Read** occurs when:
 - a) A transaction reads uncommitted data
 - b) A transaction modifies data twice
 - c) A transaction updates multiple rows
 - d) None of the above
- 65. **Lost Update Problem** occurs when:
 - a) Two transactions update the same row simultaneously
 - b) A transaction commits too early
 - c) Data is lost due to rollback
 - d) None of the above
- 66. **Two-Phase Locking (2PL)** ensures:
 - a) Deadlocks are prevented
 - b) Transactions execute faster
 - c) Transactions follow strict serialization
 - d) None of the above

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69. 10. Normalization Anomalies

70. **Insertion Anomaly** occurs when:

- a) We cannot insert data without redundant data
- b) We cannot insert data due to a NULL constraint
- c) Data is inserted but not retrieved
- d) None of the above

71. **Deletion Anomaly** occurs when:

- a) A row is deleted and causes unintended data loss
- b) A row is deleted without removing references
- c) A table is deleted from the database
- d) None of the above

72. **Update Anomaly** occurs when:

- a) Updating one row causes multiple changes
- b) A foreign key is updated incorrectly
- c) Data is updated without proper indexing
- d) None of the above

73. **Denormalization** means:

- a) Reducing redundancy in a database
- b) Adding redundancy for performance improvement
- c) Removing indexing
- d) None of the above

74. **A table that is in BCNF is also in:**

- a) 1NF b) 2NF c) 3NF d) All of the above

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77. 11. Advanced SQL & NoSQL

78. **NoSQL databases are best suited for:**

- a) Structured data
- b) Unstructured and semi-structured data
- c) OLTP systems
- d) None of the above

79. **Which of the following is NOT a type of NoSQL database?**

- a) Key-Value Store
- b) Document Store
- c) Relational Store
- d) Column-Family Store

80. **MongoDB stores data in:**

- a) Tables
- b) JSON-like Documents
- c) Key-Value Pairs
- d) Arrays

81. **A primary advantage of NoSQL is:**

- a) High consistency
- b) High availability and scalability
- c) Slow processing
- d) Fixed schemas

82. **Which SQL clause is NOT valid in MongoDB?**

- a) SELECT

- b) WHERE
- c) ORDER BY
- d) GROUP BY

83. Normalization – MCQs

- 84. 1. What is the main purpose of Normalization in DBMS?
- 85. (a) To reduce data redundancy and improve data integrity
(b) To increase the size of the database
(c) To improve query execution time
(d) To add more tables
- 86. 2. Which of the following is the first step in Normalization?
- 87. (a) Removing partial dependency
(b) Removing transitive dependency
(c) Ensuring atomicity of attributes
(d) Splitting tables into smaller ones
- 88. 3. A relation is in First Normal Form (1NF) if:
- 89. (a) It has no duplicate rows
(b) It has a primary key
(c) It contains only atomic values (no repeating groups)
(d) It follows referential integrity
- 90. 4. What is the main requirement for a table to be in Second Normal Form (2NF)?
- 91. (a) It must be in 1NF and have a primary key
(b) It must be in 1NF and have no partial dependency
(c) It must be in 1NF and have no transitive dependency
(d) It must have only one attribute
- 92. 5. Which normal form removes transitive dependency?
- 93. (a) 1NF
(b) 2NF
(c) 3NF
(d) BCNF
- 94. 6. In which normal form is every determinant a candidate key?
- 95. (a) 1NF
(b) 2NF
(c) BCNF
(d) 4NF
- 96. 7. A table is in Boyce–Codd Normal Form (BCNF) if:
- 97. (a) It is in 3NF and every non-trivial functional dependency has a super key
(b) It has no redundant data
(c) It follows referential integrity constraints
(d) It has a composite key
- 98. 8. What problem does BCNF solve that 3NF does not?
- 99. (a) Partial dependency
(b) Anomalies caused by functional dependencies
(c) Multi-valued dependency
(d) Decomposition of relations
- 100. 9. If a relation is in 4NF, it means:

- 101.(a) It is also in 3NF and BCNF
(b) It does not have multi-valued dependencies
(c) It is completely normalized
(d) All of the above
102. 10. Which type of dependency is removed in 4NF?
- 103.(a) Functional dependency
(b) Multi-valued dependency
(c) Transitive dependency
(d) Partial dependency
104. 11. A table which satisfies 5NF removes which type of dependency?
- 105.(a) Multi-valued dependency
(b) Join dependency
(c) Transitive dependency
(d) Functional dependency
106. 12. If a table contains only atomic values and has a primary key, then it is in:
- 107.(a) 1NF
(b) 2NF
(c) 3NF
(d) BCNF
108. 13. Which of the following is NOT an anomaly in database normalization?
- 109.(a) Insertion Anomaly
(b) Update Anomaly
(c) Selection Anomaly
(d) Deletion Anomaly
110. 14. Which of the following is an example of an update anomaly?
- 111.(a) A student record is deleted, and it causes the deletion of all subjects they took
(b) Changing an employee's department name requires updating multiple rows
(c) Unable to insert data into a table due to NULL values in primary key
(d) A table contains a NULL value in a non-nullable column
112. 15. If a relation has no partial dependencies but still has transitive dependencies, it is in:
- 113.(a) 1NF
(b) 2NF
(c) 3NF
(d) BCNF
114. 16. Which is the highest level of Normalization?
- 115.(a) 3NF
(b) 4NF
(c) 5NF
(d) 6NF
116. 17. What is an example of transitive dependency?
- 117.(a) If $A \rightarrow B$ and $B \rightarrow C$, then $A \rightarrow C$
(b) If $A \rightarrow B$ and $B \rightarrow A$, then $A \rightarrow C$
(c) If $A \rightarrow B$ and $C \rightarrow B$, then $A \rightarrow C$
(d) If $A \rightarrow B$ and $B \rightarrow C$, then $C \rightarrow A$

118. 18. Which normal form is also known as Project-Join Normal Form?
119. (a) 3NF
(b) BCNF
(c) 4NF
(d) 5NF
120. 19. What happens if a table is not normalized?
121. (a) Data redundancy increases
(b) Update, insert, and delete anomalies occur
(c) The database size increases unnecessarily
(d) All of the above
122. 20. Which of the following is true about Normalization?
123. (a) It improves database consistency
(b) It reduces data redundancy
(c) It organizes data efficiently
(d) All of the above

124. MCQs on ER Model

125. What does **ER** stand for in ER Model?
- a) Entity Relationship
b) Extended Relational
c) Entity Repository
d) Essential Relations
126. An **entity** in an ER model represents:
- a) A table
b) A real-world object
c) A column in a table
d) A relationship between attributes
127. Which of the following is an example of a weak entity?
- a) Student
b) Employee
c) Dependent
d) Product
128. A weak entity always requires:
- a) A primary key
b) A foreign key
c) A strong entity
d) Both b and c
129. In ER modeling, an **attribute** is:
- a) A characteristic of an entity
b) A relationship between entities
c) A type of entity
d) A data type
130. Which of the following is a **multi-valued attribute**?
- a) Employee ID
b) Phone numbers

- c) Name
- d) Date of birth
- 131. An attribute that uniquely identifies an entity is called:
 - a) Candidate Key
 - b) Primary Key
 - c) Super Key
 - d) Unique Attribute
- 132. In an ER diagram, **diamonds** are used to represent:
 - a) Attributes
 - b) Entities
 - c) Relationships
 - d) Keys
- 133. What is the **degree** of a relationship?
 - a) Number of entities involved in the relationship
 - b) Number of attributes in an entity
 - c) Number of tables in a database
 - d) Number of keys in an entity
- 134. A **one-to-many relationship** exists when:
 - a) One entity is related to only one entity
 - b) One entity is related to many entities
 - c) Many entities are related to one entity
 - d) Both b and c
- 135. A **many-to-many relationship** requires:
 - a) A foreign key
 - b) A junction table
 - c) A primary key
 - d) A self-relationship
- 136. A **composite attribute** consists of:
 - a) Multiple tables
 - b) Multiple sub-attributes
 - c) A foreign key
 - d) A single value
- 137. If an entity has no key attribute, it is called a:
 - a) Primary entity
 - b) Weak entity
 - c) Strong entity
 - d) Foreign entity
- 138. The relationship between **Patient** and **Doctor** is an example of:
 - a) One-to-One
 - b) One-to-Many
 - c) Many-to-Many
 - d) Self-Relationship
- 139. A **primary key** in ER modeling is:
 - a) An attribute that uniquely identifies an entity
 - b) A duplicate attribute
 - c) A derived attribute
 - d) A foreign key
- 140. A **recursive relationship** is when:
 - a) An entity is related to itself
 - b) A relationship has multiple entities

- c) A weak entity depends on a strong entity
 - d) None of the above
141. A **generalization** in an ER diagram is used to:
- a) Combine multiple entities into a higher-level entity
 - b) Split an entity into multiple lower-level entities
 - c) Create a primary key
 - d) Define relationships
142. What is a **derived attribute**?
- a) An attribute stored in the database
 - b) An attribute derived from other attributes
 - c) A foreign key
 - d) A primary key
143. What is an **identifying relationship**?
- a) A relationship that identifies a weak entity
 - b) A primary key relationship
 - c) A self-relationship
 - d) A recursive relationship
144. The **symbol** for a weak entity in an ER diagram is:
- a) Rectangle
 - b) Double rectangle
 - c) Diamond
 - d) Ellipse

145. MCQs on SQL Commands

146. Which of the following is a **DDL command**?
- a) INSERT
 - b) UPDATE
 - c) CREATE
 - d) DELETE
147. Which SQL statement is used to **remove all records** from a table without deleting the table itself?
- a) DROP
 - b) DELETE
 - c) TRUNCATE
 - d) REMOVE
148. The **WHERE** clause is used in which SQL commands?
- a) SELECT
 - b) UPDATE
 - c) DELETE
 - d) All of the above
149. What is the correct syntax to **create a database** in SQL?
- a) MAKE DATABASE db_name;
 - b) CREATE DATABASE db_name;
 - c) NEW DATABASE db_name;
 - d) ADD DATABASE db_name;
150. Which of the following is a **DML command**?
- a) SELECT
 - b) INSERT

- c) UPDATE
 - d) All of the above
151. The **DROP TABLE** statement is used to:
- a) Remove all rows from a table
 - b) Delete a table and its structure
 - c) Remove specific rows from a table
 - d) Reset a table
152. The **HAVING** clause is used with which SQL statement?
- a) WHERE
 - b) GROUP BY
 - c) ORDER BY
 - d) SELECT *
153. What will the following SQL statement do?
154. SELECT * FROM employees WHERE salary BETWEEN 30000 AND 50000;
155. a) Select all employees earning **exactly** 30000 or 50000
- b) Select all employees earning **more than** 50000
 - c) Select all employees earning **between** 30000 and 50000
 - d) None of the above
156. Which SQL function is used to return the number of records in a table?
- a) COUNT()
 - b) SUM()
 - c) AVG()
 - d) TOTAL()
157. What is the purpose of **ORDER BY** in SQL?
- a) To sort query results
 - b) To filter query results
 - c) To update query results
 - d) To group query results
158. What will this SQL command do?
159. sql
160. CopyEdit
161. SELECT DISTINCT department FROM employees;
162. a) Select all departments
- b) Select only unique department names
 - c) Delete duplicate departments
 - d) Count the number of employees in each department
163. Which SQL statement is used to modify existing records?
- a) CHANGE
 - b) ALTER
 - c) UPDATE
 - d) MODIFY
164. The **GROUP BY** clause is used with:
- a) Aggregate functions
 - b) WHERE clause
 - c) HAVING clause
 - d) Both a and c
165. Which of the following SQL commands is used to **add a new column** to an existing table?
- a) ALTER TABLE
 - b) ADD COLUMN

- c) MODIFY TABLE
 - d) CREATE COLUMN
166. In SQL, what is a **foreign key**?
- a) A primary key from another table
 - b) A unique column in a table
 - c) A key used to delete tables
 - d) A backup key
167. Which of the following **joins** will return **all records** from both tables, even if there is no match?
- a) INNER JOIN
 - b) LEFT JOIN
 - c) RIGHT JOIN
 - d) FULL OUTER JOIN
168. What is the correct syntax for **deleting a table** in SQL?
- a) REMOVE TABLE table_name;
 - b) DELETE TABLE table_name;
 - c) DROP TABLE table_name;
 - d) ERASE TABLE table_name;
169. In SQL, which function is used to **find the highest value** in a column?
- a) MIN()
 - b) MAX()
 - c) SUM()
 - d) COUNT()
170. What does the **LIKE** operator do in SQL?
- a) Compares two tables
 - b) Filters records using patterns
 - c) Deletes matching records
 - d) Joins two tables
171. If you want to **fetch only 5 rows** from a table in MySQL, which clause will you use?
- a) LIMIT 5
 - b) TOP 5
 - c) FETCH FIRST 5
 - d) ROWS 5

172. 20 MCQs on Transaction & Concurrency Control

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175. **A transaction in DBMS is a:**

- a) Set of one or more SQL statements
- b) A command used to delete a table
- c) A special type of primary key
- d) A table constraint

176. **Which property of a transaction ensures that only valid data is written to the database?**

- a) Atomicity

- b) Consistency
 - c) Durability
 - d) Isolation
177. **Which of the following is NOT a property of transactions in DBMS (ACID properties)?**
- a) Atomicity
 - b) Compatibility
 - c) Isolation
 - d) Durability
178. **Which SQL command is used to permanently save all changes made by a transaction?**
- a) SAVE
 - b) ROLLBACK
 - c) COMMIT
 - d) UPDATE
179. **What is the main purpose of the ROLLBACK command in SQL?**
- a) To permanently store changes
 - b) To undo changes made by a transaction
 - c) To delete a database
 - d) To update a record
180. **What is a dirty read in DBMS?**
- a) Reading an incomplete transaction
 - b) Reading a committed transaction
 - c) Reading old data
 - d) Reading updated data that is not committed
181. **Which of the following prevents the "dirty read" problem?**
- a) Read Uncommitted
 - b) Read Committed
 - c) Write Uncommitted
 - d) Phantom Read
182. **Which of the following isolation levels allows a transaction to read uncommitted changes made by another transaction?**
- a) Read Uncommitted
 - b) Read Committed
 - c) Repeatable Read
 - d) Serializable
183. **Which of the following is the highest level of isolation in a database transaction?**
- a) Read Uncommitted
 - b) Read Committed
 - c) Serializable
 - d) Repeatable Read
184. **What is the purpose of the SAVEPOINT command in SQL?**
- a) To create a backup of a table
 - b) To define a point where a transaction can be rolled back to
 - c) To permanently save all changes
 - d) To lock a table for transactions
185. **Which of the following concurrency problems occurs when one transaction reads a value while another transaction is modifying it?**
- a) Dirty Read

- b) Lost Update
 - c) Phantom Read
 - d) Serializability
186. **Which of the following is NOT a concurrency problem in DBMS?**
- a) Dirty Read
 - b) Lost Update
 - c) Atomic Read
 - d) Non-Repeatable Read
187. **Which schedule ensures that a set of transactions will give the same result as if executed one after another?**
- a) Serial Schedule
 - b) Conflict Serializable Schedule
 - c) View Serializable Schedule
 - d) All of the above
188. **Which of the following ensures that a schedule is conflict-serializable?**
- a) Precedence Graph
 - b) Commit Command
 - c) Savepoint Command
 - d) Rollback Command
189. **Two transactions are said to be conflicting if:**
- a) They operate on the same data item
 - b) At least one operation is a write
 - c) Both a and b
 - d) None of the above
190. **Which of the following is a deadlock prevention technique?**
- a) Two-Phase Locking
 - b) Wait-Die Scheme
 - c) Strict Two-Phase Locking
 - d) Timestamp Ordering
191. **Two-Phase Locking (2PL) protocol ensures:**
- a) Serializability
 - b) Durability
 - c) Atomicity
 - d) Consistency
192. **What is the main purpose of time-stamp ordering in concurrency control?**
- a) To prevent dirty reads
 - b) To ensure transactions execute in a predefined order
 - c) To prevent transaction failure
 - d) To improve query performance
193. **What happens when two transactions are in a deadlock situation?**
- a) Both transactions continue to execute
 - b) One transaction is forced to rollback
 - c) Both transactions are committed
 - d) None of the above
194. **Which of the following statements is true about transaction logs?**
- a) They store only committed transactions
 - b) They help in transaction recovery
 - c) They store only uncommitted transactions
 - d) They are deleted after every transaction

195. 20 MCQs on Indexing & Keys

196.

197. Which of the following best describes indexing in a database?

- a) A method to duplicate data
- b) A way to improve the speed of data retrieval
- c) A method to reduce storage space
- d) A process for encrypting data

198. Which type of index is automatically created when a primary key is defined?

- a) Unique Index
- b) Clustered Index
- c) Non-Clustered Index
- d) Composite Index

199. A primary key in a table must always be:

- a) Unique and nullable
- b) Unique and not null
- c) Only unique
- d) Only not null

200. What is the main difference between a clustered and non-clustered index?

- a) A clustered index sorts data physically, while a non-clustered index does not
- b) A non-clustered index sorts data physically, while a clustered index does not
- c) Both are the same
- d) Non-clustered indexes cannot be used with primary keys

201. How many clustered indexes can a table have?

- a) One
- b) Two
- c) Multiple
- d) None

202. Which key is used to establish a relationship between two tables?

- a) Primary Key
- b) Foreign Key
- c) Composite Key
- d) Candidate Key

203. What happens when a foreign key is deleted from the referenced table?

- a) It is automatically deleted from all referencing tables
- b) It remains unchanged
- c) It causes an error unless CASCADE is used
- d) It converts into a primary key

204. A composite key is:

- a) A single column used as a primary key
- b) A combination of multiple columns used as a primary key
- c) A foreign key that references multiple tables
- d) A key that contains only numeric values

205. Which type of index stores data in a tree-like structure?

- a) Hash Index
- b) B-Tree Index
- c) Bitmap Index
- d) Full-Text Index

206. **What is the main purpose of indexing in databases?**
- a) To increase query performance
 - b) To consume more memory
 - c) To prevent data corruption
 - d) To enforce data integrity
207. **Which SQL command is used to create an index?**
- a) CREATE INDEX
 - b) MAKE INDEX
 - c) BUILD INDEX
 - d) ADD INDEX
208. **Which of the following is NOT a type of key in DBMS?**
- a) Super Key
 - b) Foreign Key
 - c) Artificial Key
 - d) Secondary Key
209. **A candidate key is:**
- a) A key that uniquely identifies a record and can be a primary key
 - b) A secondary key used for backup
 - c) A foreign key reference
 - d) A key used to encrypt data
210. **A foreign key in a database ensures:**
- a) Referential integrity
 - b) Data redundancy
 - c) Data encryption
 - d) Increased storage space
211. **Which of the following is an advantage of using an index?**
- a) Faster searches
 - b) Increased storage requirements
 - c) Slower insert and update operations
 - d) Higher CPU usage
212. **Which SQL statement is used to remove an index?**
- a) DROP INDEX
 - b) DELETE INDEX
 - c) REMOVE INDEX
 - d) ALTER INDEX
213. **A unique key in a table ensures:**
- a) That all values in the column are distinct
 - b) That duplicate values are allowed
 - c) That NULL values cannot be inserted
 - d) That it can be used as a foreign key
214. **Which type of index is best suited for columns with high cardinality (many unique values)?**
- a) Bitmap Index
 - b) Hash Index
 - c) B-Tree Index
 - d) Full-Text Index
215. **What happens if an index is created on a column with many duplicate values?**
- a) It improves performance
 - b) It slows down queries

- c) It has no effect
 - d) It automatically converts into a primary key
216. **If a table does not have an index, how is data searched?**

- a) Using a sequential scan
- b) Using a clustered index
- c) Using a hash function
- d) Using a materialized view

217. 20 MCQs on NoSQL & MongoDB

218. _____

219. **What does NoSQL stand for?**

- a) No Structured Query Language
- b) Not Only SQL
- c) Non-Standard Query Language
- d) No Sequential Queries

220. **Which of the following is NOT a feature of NoSQL databases?**

- a) Schema-free data modeling
- b) Horizontal scaling
- c) High ACID compliance
- d) Support for unstructured data

221. **Which of the following is NOT a type of NoSQL database?**

- a) Key-Value Store
- b) Relational Store
- c) Column-Family Store
- d) Document Store

222. **Which NoSQL database type is best for handling hierarchical data?**

- a) Key-Value Store
- b) Graph Database
- c) Column-Family Store
- d) Relational Database

223. **What is the main difference between NoSQL and SQL databases?**

- a) NoSQL databases do not support transactions
- b) SQL databases use structured schema, while NoSQL databases are schema-less
- c) NoSQL databases cannot store large data
- d) SQL databases are always faster than NoSQL

224. **Which of the following is a document-based NoSQL database?**

- a) MongoDB
- b) Cassandra
- c) Redis
- d) HBase

225. **Which of the following statements about MongoDB is TRUE?**

- a) It stores data in tables and rows
- b) It is a relational database
- c) It stores data in JSON-like format
- d) It does not support indexing

226. **In MongoDB, a database is made up of:**

- a) Tables
- b) Collections
- c) Rows
- d) Columns

227. Which of the following is a valid data type in MongoDB?
- a) String
 - b) Boolean
 - c) Date
 - d) All of the above
228. What is the command to show all databases in MongoDB?
- a) SHOW DATABASES
 - b) DISPLAY DATABASES
 - c) db.list()
 - d) show dbs
229. Which command is used to insert data into a MongoDB collection?
- a) INSERT INTO
 - b) ADD DOCUMENT
 - c) db.collection.insertOne()
 - d) CREATE ENTRY
230. What is the default query language in MongoDB?
- a) SQL
 - b) JSON
 - c) BSON
 - d) XML
231. Which of the following is TRUE about MongoDB indexes?
- a) They speed up query performance
 - b) They increase storage requirements
 - c) They can be created on any field
 - d) All of the above
232. Which MongoDB command retrieves all documents from a collection?
- a) db.collection.find()
 - b) db.collection.getAll()
 - c) db.collection.retrieve()
 - d) db.collection.select()
233. Which of the following is NOT a NoSQL database?
- a) MySQL
 - b) CouchDB
 - c) DynamoDB
 - d) Neo4j
234. Which component in MongoDB acts as the database server?
- a) mongod
 - b) mongo
 - c) sqlserver
 - d) postgres
235. Which function is used to delete a document in MongoDB?
- a) db.collection.remove()
 - b) db.collection.drop()
 - c) db.collection.deleteOne()
 - d) db.collection.truncate()
236. What does the term "sharding" mean in MongoDB?
- a) Encrypting data for security
 - b) Splitting data across multiple servers for scalability
 - c) Creating duplicate indexes
 - d) Combining multiple documents into one

237. Which command is used to update a document in MongoDB?
- a) db.collection.modify()
 - b) db.collection.updateOne()
 - c) db.collection.change()
 - d) db.collection.alter()
238. Which query will retrieve all documents where "age" is greater than 25?
- a) db.collection.find({age: {\$gt: 25}})
 - b) db.collection.find({age > 25})
 - c) db.collection.select({age > 25})
 - d) db.collection.query({age: > 25})

239. 20 MCQs on Selecting the Right Database

240. _____
241. What is the primary factor in choosing between SQL and NoSQL databases?
- a) Database popularity
 - b) Type of data and scalability needs
 - c) Programming language compatibility
 - d) Cost of database software
242. Which of the following is a strength of relational (SQL) databases?
- a) Schema flexibility
 - b) ACID compliance
 - c) High-speed unstructured data processing
 - d) Horizontal scalability
243. What type of data is best suited for NoSQL databases?
- a) Structured data with predefined schema
 - b) Large volumes of unstructured or semi-structured data
 - c) Data requiring complex joins
 - d) Financial transaction records
244. Which factor is crucial for database selection when handling real-time analytics?
- a) Query optimization
 - b) Data security
 - c) Low-latency performance
 - d) Relational integrity
245. Which database type is best for applications requiring strong consistency?
- a) NoSQL
 - b) RDBMS
 - c) Graph databases
 - d) Key-Value Stores
246. Which of the following use cases is best suited for a NoSQL database?
- a) Banking transactions
 - b) Content management systems
 - c) Airline reservation system
 - d) Payroll processing
247. What is a major drawback of NoSQL databases compared to relational databases?
- a) They do not support ACID properties
 - b) They cannot store large datasets

- c) They require predefined schemas
 - d) They do not support indexing
248. **Which NoSQL database type is best suited for recommendation systems?**
- a) Key-Value Store
 - b) Graph Database
 - c) Column Store
 - d) Document Store
249. **For an application requiring high-speed transactions and strict data integrity, which database should be used?**
- a) MongoDB
 - b) MySQL
 - c) Cassandra
 - d) CouchDB
250. **If a business needs to store time-series data efficiently, which database should they choose?**
- a) PostgreSQL
 - b) InfluxDB
 - c) SQLite
 - d) Redis
251. **What is the main advantage of using a document-based NoSQL database like MongoDB?**
- a) Supports complex joins
 - b) Flexible schema for evolving data models
 - c) Strong ACID compliance
 - d) Requires less storage space
252. **Which of the following databases is best for distributed data storage with high availability?**
- a) MySQL
 - b) Cassandra
 - c) SQLite
 - d) PostgreSQL
253. **What is the biggest advantage of graph databases like Neo4j?**
- a) They provide ACID compliance
 - b) They are best for social networks and recommendation systems
 - c) They use SQL-based queries
 - d) They store data in tabular format
254. **When selecting a database for an e-commerce website with frequent transactions, which factor is most important?**
- a) Scalability
 - b) Strong consistency
 - c) Schema flexibility
 - d) Key-value storage
255. **Which NoSQL database type is best for storing logs and events?**
- a) Key-Value Store
 - b) Graph Database
 - c) Document Store
 - d) Column-Family Store
256. **Which database is most suitable for a mobile app with offline storage?**
- a) Oracle
 - b) SQLite

- c) Cassandra
 - d) DynamoDB
257. **If a company needs a fast in-memory database for caching, which option is best?**
- a) PostgreSQL
 - b) MongoDB
 - c) Redis
 - d) SQLite
258. **Which database selection factor is most critical for IoT applications?**
- a) High data consistency
 - b) Fast read and write operations
 - c) Complex query processing
 - d) Support for complex joins
259. **Why would a company choose an RDBMS over a NoSQL database?**
- a) They need schema flexibility
 - b) They require high consistency and structured relationships
 - c) They want to avoid indexing overhead
 - d) They prioritize horizontal scalability over consistency
260. **Which of the following best describes a hybrid database approach?**
- a) Using a single database type for all applications
 - b) Combining both SQL and NoSQL databases for different workloads
 - c) Using only NoSQL databases
 - d) Only using in-memory databases
261. **20 MCQs on NoSQL & MongoDB**
262. **What does NoSQL stand for?**
- a) No Structured Query Language
 - b) Not Only SQL
 - c) Non-Optimized SQL
 - d) Network Oriented SQL
263. **Which of the following is a type of NoSQL database?**
- a) Relational
 - b) Graph
 - c) Procedural
 - d) Hierarchical
264. **Which of the following is NOT a characteristic of NoSQL databases?**
- a) Schema flexibility
 - b) Horizontal scalability
 - c) Strong ACID compliance
 - d) High availability
265. **Which NoSQL database type is best for handling social media relationships?**
- a) Key-Value Store
 - b) Graph Database
 - c) Column Store
 - d) Document Store
266. **Which database type is best suited for managing large-scale distributed data?**
- a) RDBMS
 - b) NoSQL
 - c) File System
 - d) Excel Sheet

267. **What is the default storage format in MongoDB?**
- a) JSON
 - b) BSON
 - c) XML
 - d) CSV
268. **Which command is used to insert a document in MongoDB?**
- a) INSERT INTO
 - b) ADD DATA
 - c) db.collection.insertOne()
 - d) db.collection.push()
269. **In MongoDB, what is a collection equivalent to in SQL?**
- a) Row
 - b) Column
 - c) Table
 - d) Index
270. **Which of the following is NOT a valid NoSQL database type?**
- a) Key-Value Store
 - b) Document Store
 - c) Column-Family Store
 - d) Relational Table
271. **What is the purpose of dynamic schema in MongoDB?**
- a) Allows schema modification without downtime
 - b) Prevents schema changes
 - c) Requires a fixed data structure
 - d) Enforces strict data validation
272. **Which NoSQL database is best suited for session management?**
- a) MongoDB
 - b) Redis
 - c) Neo4j
 - d) PostgreSQL
273. **What is the function of MongoDB's "_id" field?**
- a) Identifies a collection
 - b) Acts as the primary key
 - c) Stores JSON documents
 - d) Represents a schema
274. **Which command is used to display all databases in MongoDB?**
- a) show dbs
 - b) list databases
 - c) show collections
 - d) db.list()
275. **Which NoSQL database is best suited for real-time analytics?**
- a) Cassandra
 - b) MongoDB
 - c) Neo4j
 - d) MySQL
276. **Which feature allows MongoDB to replicate data across multiple servers?**
- a) Partitioning
 - b) Sharding
 - c) Indexing
 - d) Transactions

277. Which of the following is NOT an advantage of NoSQL databases?
- a) High scalability
 - b) Flexible schema
 - c) Complex joins
 - d) Fast read/write operations
278. Which NoSQL database is best suited for hierarchical data representation?
- a) Document Store
 - b) Graph Database
 - c) Column Store
 - d) Key-Value Store
279. What is the primary advantage of using MongoDB over RDBMS?
- a) Schema enforcement
 - b) ACID compliance
 - c) Horizontal scalability
 - d) Complex query execution
280. Which command is used to delete a collection in MongoDB?
- a) db.collection.remove()
 - b) db.collection.drop()
 - c) DELETE TABLE collection_name
 - d) db.delete()
281. Which of the following databases is a popular NoSQL option?
- a) PostgreSQL
 - b) MongoDB
 - c) Oracle
 - d) MySQL
282. 20 MCQs on Selecting the Right Database (RDBMS vs NoSQL)
- 283.
284. Which factor is most important when selecting between RDBMS and NoSQL?
- a) Budget
 - b) Type of data and scalability needs
 - c) The number of developers in a team
 - d) The popularity of the database
285. Which type of database is best suited for applications requiring strong ACID compliance?
- a) NoSQL
 - b) RDBMS
 - c) Document Store
 - d) Key-Value Store
286. Which of the following databases is an example of an RDBMS?
- a) MongoDB
 - b) Cassandra
 - c) MySQL
 - d) Redis
287. Which NoSQL database type is most suitable for high-speed caching?
- a) Document Store
 - b) Column Store
 - c) Graph Database
 - d) Key-Value Store
288. For real-time analytics on large datasets, which type of database is preferable?

- a) NoSQL
 - b) RDBMS
 - c) Excel Sheets
 - d) XML Databases
289. **Which database is best suited for an application with complex relationships between data?**
- a) Key-Value Store
 - b) Graph Database
 - c) Column Store
 - d) Document Store
290. **Which of the following is NOT a valid reason to choose a NoSQL database over RDBMS?**
- a) Need for horizontal scalability
 - b) High-frequency schema modifications
 - c) Requirement for complex transactions
 - d) Handling unstructured or semi-structured data
291. **Which database should be selected for a banking system?**
- a) NoSQL
 - b) Graph Database
 - c) RDBMS
 - d) Key-Value Store
292. **Which NoSQL database type is optimized for search engines and text-based queries?**
- a) Document Store
 - b) Column Store
 - c) Key-Value Store
 - d) Search Engine Databases (like Elasticsearch)
293. **What is a major drawback of using RDBMS in big data applications?**
- a) Limited support for transactions
 - b) Difficulty in handling structured data
 - c) Poor scalability for large-scale distributed systems
 - d) High latency in simple queries
294. **Which factor is NOT considered while selecting a database?**
- a) Data consistency
 - b) Scalability needs
 - c) The color of the database's UI
 - d) The type of application
295. **Which database type is best for IoT (Internet of Things) applications with real-time data processing?**
- a) RDBMS
 - b) Key-Value Store
 - c) Graph Database
 - d) Document Store
296. **Which of the following is an example of a Graph Database?**
- a) MongoDB
 - b) Neo4j
 - c) MySQL
 - d) PostgreSQL
297. **For a content management system with varying document structures, which database is best?**

- a) RDBMS
 - b) Document Store
 - c) Column Store
 - d) Key-Value Store
298. Which of the following is NOT a NoSQL database?
- a) Oracle
 - b) MongoDB
 - c) Cassandra
 - d) Redis
299. Which NoSQL database type is best suited for recommendation systems?
- a) Column Store
 - b) Key-Value Store
 - c) Graph Database
 - d) Document Store
300. Which of the following is a reason to select RDBMS over NoSQL?
- a) Need for strong consistency
 - b) Handling unstructured data
 - c) High-speed caching requirements
 - d) Horizontal scalability
301. Which database is best for a distributed environment where availability is prioritized over consistency?
- a) NoSQL
 - b) RDBMS
 - c) PostgreSQL
 - d) Oracle
302. Which type of database is used for logging and event tracking?
- a) Graph Database
 - b) Document Store
 - c) Column Store
 - d) Key-Value Store
303. For applications where data integrity and structured data are top priorities, which database is best?
- a) NoSQL
 - b) RDBMS
 - c) Document Store
 - d) Key-Value Store

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