SQL & NoSQL Assessment BC-101

Points: 30/45 Time: 58:09

✗ **Incorrect** 0/1 Points

1

In a library database, you have a table named Books that contains information about books, including ISBN, Title, Author, Genre, and Publisher. Some books have multiple authors, and each author is listed as a comma-separated value in the Author column. To achieve better data organization, which normalization form should you aim for?

- (●) First Normal Form (1NF)
- ( ) Second Normal Form (2NF)
- ( ) Third Normal Form (3NF)
- ( ) Fourth Normal Form (4NF)

✓ **Correct** 1/1 Points

2

In a university database, you have a students table and a grades table. You want to find the names of students who have a GPA higher than 3.5. Which SQL query should you use?

- SELECT student_name FROM students WHERE gpa > (SELECT MAX(gpa) FROM students);
- SELECT student_name FROM students WHERE student_id IN (SELECT student_id FROM grades WHERE gpa > 3.5);
- SELECT student_name FROM students WHERE gpa = (SELECT AVG(gpa) FROM students);
- SELECT student_name FROM students WHERE student_id = (SELECT student_id FROM grades WHERE gpa > 3.5);

✓ **Correct** 1/1 Points

3

You have a database with a products table and a categories table. You want to find the names of products that belong to the "Electronics" category. Which SQL query is appropriate?

- SELECT product_name FROM products WHERE category_id = (SELECT category_id FROM categories WHERE category_name = 'Electronics');
- SELECT product_name FROM products WHERE product_id IN (SELECT product_id FROM categories WHERE category_name = 'Electronics');
- SELECT product_name FROM products WHERE category_id IN (SELECT category_id FROM categories WHERE category_name = 'Electronics');
- SELECT product_name FROM categories WHERE category_name = 'Electronics';

✓ **Correct** 1/1 Points

4

You have a table named products with the following columns: product_id, category_id, and price. You want to find the highest and lowest prices for each product category. Which SQL query should you use?

- SELECT category_id, MAX(price), MIN(price) FROM products;

- [x] SELECT category_id, MAX(price), MIN(price) FROM products GROUP BY category_id;
- [ ] SELECT category_id, AVG(price) FROM products GROUP BY category_id;
- [ ] SELECT category_id, COUNT(product_id) FROM products GROUP BY category_id;

✕ **Incorrect** 0/1 Points

5

You have two tables, students and courses, with the following structures:

students table:

- student_id (unique student identifier)
- student_name (name of the student)

courses table:

- course_id (unique course identifier)
- course_name (name of the course)
- student_id (student identifier indicating which student is enrolled in each course)

You want to find all students who are enrolled in the course "Mathematics." Which SQL query should you use?

- [ ] SELECT student_name FROM students INNER JOIN courses ON students.student_id = courses.student_id WHERE course_name = 'Mathematics';
- [x] SELECT student_name FROM students LEFT JOIN courses ON students.student_id = courses.student_id WHERE course_name = 'Mathematics';
- [ ] SELECT student_name FROM students RIGHT JOIN courses ON students.student_id = courses.student_id WHERE course_name = 'Mathematics';

SELECT student_name FROM students FULL JOIN courses ON students.student_id = courses.student_id WHERE course_name = 'Mathematics';WHERE course_name = 'Mathematics';

Incorrect 0/1 Points

6

You have two tables, orders and customers, with the following structures:

orders table:

- order_id (unique order identifier)
- customer_id (customer identifier)
- order_date (date when the order was placed)

customers table:

- customer_id (customer identifier)
- customer_name (name of the customer)
- city (city where the customer resides)

You want to retrieve a list of customers who placed orders on or after a specific date (e.g., '2023-01-01') along with the order dates. Which SQL query should you use?

SELECT customer_name, order_date FROM customers INNER JOIN orders ON customers.customer_id = orders.customer_id WHERE order_date >= '2023-01-01';

SELECT customer_name, order_date FROM customers LEFT JOIN orders ON customers.customer_id = orders.customer_id WHERE order_date >= '2023-01-01';

SELECT customer_name, order_date FROM customers RIGHT JOIN orders ON customers.customer_id = orders.customer_id WHERE order_date >= '2023-01-01';

SELECT customer_name, order_date FROM customers FULL JOIN orders ON customers.customer_id = orders.customer_id WHERE order_date >= '2023-01-01';

✗ **Incorrect** 0/1 Points

7

You are designing a database application for a bank. You need to ensure that all transactions are completed successfully, or none of them are. Which of the following ACID properties is most important for this scenario?

- Atomicity
- Consistency
- Isolation
- Durability

✓ **Correct** 1/1 Points

8

Sanjay is integrating a third-party service. The third-party service fetches the user's recommendation for a week. Sanjay wants to cache this data for a week, as the user's recommendation for a weak is unlikely to change for a weak. Which database is ideal for caching this kind of data.

- Redis (In-Memory) - Key-Value
- MongoDB (In-Memory) - Document Oriented
- Apache Cassandra - Wide Column Database
- Neo 4J - Graph Based Database

✓ **Correct** 1/1 Points

9

You have a table named orders with the following columns: order_id, customer_id, order_date, and order_amount. You want to find the total order amount for each customer. Which SQL query should you use?

- SELECT customer_id, SUM(order_amount) FROM orders;
- SELECT customer_id, SUM(order_amount) FROM orders GROUP BY order_id;
- SELECT customer_id, SUM(order_amount) FROM orders GROUP BY customer_id;
- SELECT customer_id, COUNT(order_id) FROM orders GROUP BY customer_id;

✗ **Incorrect** 0/1 Points

10

You have a view named "CustomerOrders" that shows information about customer orders, including order IDs, customer names, and order dates. You want to sort the view by order date in descending order. Which SQL statement should you use when creating or modifying the view?

- CREATE VIEW CustomerOrders AS SELECT order_id, customer_name, order_date FROM Orders ORDER BY order_date DESC;
- ALTER VIEW CustomerOrders AS SELECT order_id, customer_name, order_date FROM Orders ORDER BY order_date DESC;
- CREATE OR REPLACE VIEW CustomerOrders AS SELECT order_id, customer_name, order_date FROM Orders ORDER BY order_date DESC;
- MODIFY VIEW CustomerOrders AS SELECT order_id, customer_name, order_date FROM Orders ORDER BY order_date DESC;

✗ **Incorrect** 0/1 Points

11

How can you find the employees who were hired in the year 2022?

You have an "employees" table with columns: `employee_id`, `first_name`, `last_name`, `hire_date`.

- [x] `SELECT * FROM employees WHERE YEAR(hire_date) = 2022;`
- [x] `SELECT * FROM employees WHERE hire_date >= '2022-01-01' AND hire_date <= '2022-12-31';`
- [ ] `SELECT * FROM employees WHERE hire_date = '2022-01-01';`
- [ ] `SELECT * FROM employees WHERE hire_date BETWEEN '2022-01-01' AND '2022-12-31';`

✓ **Correct** 1/1 Points

12

The user wants to fetch all the movies before the year 2003 as well as it has to be from a country USA?

- ( ) db.find({$and: [{ year: { $gte: 2003 } }, { countries : { $eq: "USA" } }]})
- ( ) db.find({$and: [{ year: { $gte: 2003 } }, { countries : { $nin: ["USA"] } }]})
- ( ) db.find({$or: [{ year: { $gte: 2003 } }, { countries : { $eq: "USA" } }]})
- (•) .) db.find({$and: [{ year: { $lt: 2003 } }, { countries : { $eq: "USA" } }]})

✓ **Correct** 1/1 Points

13

What is an advantage of using indexes in a database?

- Indexes reduce the storage space required for the database.
- Indexes enforce data integrity constraints.
- Indexes speed up data insertion operations.
- Indexes allow for faster data retrieval for specific queries.

✓ **Correct** 1/1 Points

14

In a distributed database system, which ACID property ensures that even if a transaction spans multiple databases or nodes, it is still treated as a single, indivisible unit of work?

- Atomicity
- Consistency
- Isolation
- Durability

✗ **Incorrect** 0/1 Points

15

In a customer relationship management (CRM) system, you have a Contacts table that contains information about customer contacts. The table includes columns like ContactID, CustomerName, Phone, Email, and Address. Each customer has multiple contacts, and contact information is repeated for each contact of the same customer. To reduce data redundancy, which normalization form should you aim for?

- [x] First Normal Form (1NF)
- [ ] Second Normal Form (2NF)
- [ ] Third Normal Form (3NF)
- [ ] Boyce-Codd Normal Form (BCNF)

✓ **Correct** 1/1 Points

16

What SQL query returns the average grade for each course?

You have a "grades" table with columns: student_id, course, grade.

- [ ] SELECT AVG(grade) FROM grades;
- [x] SELECT course, AVG(grade) FROM grades GROUP BY course;
- [ ] SELECT course FROM grades WHERE AVG(grade) > 90;
- [ ] SELECT course, AVG(grade) FROM grades;

✓ **Correct** 1/1 Points

17

How do you calculate the total quantity sold for each product?

You have a "sales" table with columns: sale_id, product_id, quantity_sold, sale_date.

- [x] SELECT SUM(quantity_sold) FROM sales GROUP BY product_id;
- [ ] SELECT product_id, SUM(quantity_sold) FROM sales;
- [ ] SELECT product_id, SUM(quantity_sold) FROM sales GROUP BY sale_id;

SELECT AVG(quantity_sold) FROM sales GROUP BY product_id;

Incorrect 0/1 Points

18

You have a database for an e-commerce website with a table named Orders. This table contains columns such as OrderID, CustomerName, ProductName, ProductPrice, and OrderDate. The ProductName and ProductPrice columns are repeated for each order, leading to data redundancy. Which normalization form should you aim to achieve to eliminate this redundancy?

- First Normal Form (1NF)
- Second Normal Form (2NF)
- Third Normal Form (3NF)
- Fourth Normal Form (4NF)

Correct 1/1 Points

19

Which normal form deals with partial dependencies in a database table?

- First Normal Form (1NF)
- Second Normal Form (2NF)
- Third Normal Form (3NF)
- Boyce-Codd Normal Form (BCNF)

✓ **Correct** 1/1 Points

20

You have a database with a table named "Employees" containing employee information such as name, ID, salary, and department. You need to create a view that displays only the names and salaries of employees in the "Sales" department. Which SQL statement should you use?

- (●) CREATE VIEW SalesEmployees AS SELECT name, salary FROM Employees WHERE department = 'Sales';
- ( ) CREATE VIEW SalesEmployees AS SELECT * FROM Employees WHERE department = 'Sales';
- ( ) CREATE VIEW SalesEmployees AS SELECT name, salary FROM Employees;
- ( ) CREATE VIEW SalesEmployees AS SELECT name, salary FROM Employees HAVING department = 'Sales';

✓ **Correct** 1/1 Points

21

What is a subquery in SQL?

- ( ) A query that only retrieves a single record from a table.
- ( ) A query that is executed before the main query.
- (●) A query that is nested inside another query.
- ( ) A query that retrieves data from multiple tables.

✗ **Incorrect** 0/1 Points

22

Which data modelling pattern is used to reduce CPU workload for read-intensive data access ?

- ○ Computed Pattern
- ○ Outlier Pattern
- ◉ Pre-allocation Pattern
- ○ Tree Pattern

✓ **Correct** 1/1 Points

23

Consider a database with two tables, orders and customers. Each order has a customer_id indicating the customer who placed the order. You want to find the names of customers who have placed orders. Which SQL query would you use?

- ☑ SELECT customer_name FROM customers WHERE customer_id IN (SELECT customer_id FROM orders);
- ☑ SELECT customer_name FROM customers JOIN orders ON customers.customer_id = orders.customer_id;
- ☐ SELECT customer_name FROM orders WHERE EXISTS (SELECT customer_id FROM customers);
- ☐ SELECT customer_name FROM customers WHERE customer_id = (SELECT customer_id FROM orders);

✓ **Correct** 1/1 Points

24

A movie collection, which stores various details related to the movie

The average rating is what the users are interested in. Which one of the following query can be used to solve this problem?


```
{
  "_id": {
    "$oid": "573a1390f29313caabcd4135"
  },
  "plot": "Three men hammer on an anvil and pass a bottle of beer around.",
  "genres": [
    "Short"
  ],
  "runtime": 1,
  "cast": [
    "Charles Kayser",
    "John Ott"
  ],
  "num_mflix_comments": 1,
  "title": "Blacksmith Scene",
  "fullplot": "A stationary camera looks at a large anvil with a blacksmith behind
either side.",
  "countries": [
    "USA"
  ],
  "year": 1893,
  "imdb": {
    "rating": 6.2,
    "votes": 1189,
    "id": 5
  },
  "type": "movie",
  "tomatoes": {
    "viewer": {
      "rating": 3,
      "numReviews": 184,
      "meter": 32
    }
  }
}
```


- (●) db.aggregate([{ '$addField': { 'averageRating': { '$avg': ['$imdb.rating', 'tomatoes.viewer.rating'] } } }])
- ( ) db.aggregate([{ '$addField': { 'averageRating': { '$first': ['$imdb.rating', 'tomatoes.rating'] } }}])
- ( ) db.aggregate([{ '$addField': { 'averageRating': { '$sum': ['$imdb.rating', 'tomatoes.viewer.rating'] } } }])
- ( ) db.aggregate([{ '$addField': { 'averageRating': { '$sub': ['$imdb.rating', 'tomatoes.rating'] }} }])

n 4

✓ **Correct** 1/1 Points

25

You are managing a database for a library system, and you want to ensure that when a book is checked out, its availability status is updated atomically, and the book remains in a consistent state. Which ACID property addresses this requirement?

- Atomicity
- Consistency
- Isolation
- Durability

✓ **Correct** 1/1 Points

26

What SQL statement retrieves all employees id and salaries?

- SELECT first_name, last_name FROM employees;
- SELECT employee_id, department FROM employees;
- SELECT department, salary FROM employees;
- SELECT employee_id, salary FROM employees;

✓ **Correct** 1/1 Points

27

In a database table, what is a candidate key?

- A key that is used for sorting the data.
- A key that uniquely identifies each record in the table.
- A key that is not used in any index.
- A key that contains only numeric values.

✓ **Correct** 1/1 Points

28

You have a "products" table with columns: product_id, product_name, category, quantity_in_stock.

What SQL query lists the unique product categories?

- SELECT DISTINCT product_name FROM products;
- SELECT DISTINCT category FROM products;
- SELECT DISTINCT quantity_in_stock FROM products;
- SELECT DISTINCT product_id FROM products WHERE category = 'category';

✗ **Incorrect** 0/1 Points

29

You have a "products" table with columns: product_id, product_name, price, stock_quantity.

How would you find products priced between $20 and $50?

- SELECT product_name FROM products WHERE price BETWEEN 20 AND 50;
- SELECT product_name FROM products WHERE price >= 20 AND price <= 50;

- SELECT product_name FROM products WHERE price > 20 AND price < 50;
- SELECT product_name FROM products WHERE price NOT BETWEEN 20 AND 50;

✓ **Correct** 1/1 Points

30

What is the difference between a primary key and a foreign key in a database?

- (●) A primary key uniquely identifies a record in the current table, while a foreign key links to a primary key in another table.
- A primary key is used for sorting data, while a foreign key is used for filtering data.
- A primary key is always an integer value, while a foreign key can be any data type.
- A primary key can have duplicate values, while a foreign key must be unique.

✓ **Correct** 1/1 Points

31

In which of the following cases would the outlier pattern be useful?

- (●) A document with a field that has a huge array of objects, while other documents have small arrays of objects.
- A document with a value for the name field that is empty.
- A document with a value for the quantity field that is negative.
- All of the above.

✗ **Incorrect** 0/1 Points

32

You are a software engineer at a startup that is building a new social networking site. You are tasked with choosing the right database to store the site's data. What factors should you consider when making your decision, and which database would you recommend?

- Document Oriented Database.
- Wide Column Database.
- Graph Database
- Key Value database.

✓ **Correct** 1/1 Points

33

Which of the following statements about primary keys and indexing is true?

- Primary keys are automatically indexed by most database systems.
- Primary keys cannot be indexed.
- Indexing a primary key is optional.
- Primary keys are used only for sorting data, not for searching.

✓ **Correct** 1/1 Points

34

In a home-automation system IOT sensors are continuously sending data of the room temperature to a **MongoDB database.**

As a database-developer which data modelling pattern of **MongoDB** would you use to optimize IOT sensor data?

- (●) Bucket pattern combined with Computed Pattern.
- ( ) Approximation Pattern
- ( ) Pre-allocation Pattern
- ( ) Only Computed Pattern

✓ **Correct** 1/1 Points

35

The developer decided to make the changes made by the **$addFields** aggregation pipeline permanent by using the **$merge** aggregation pipeline stage. This means that every movie document now has a new field called **averageRating**.

Select the query that calculates **average rating of all the movies by countries**?

- (●) db.aggregate([{ '$unwind': { path: '$countries' } }, { '$group': { '_id': '$countries', 'averageRating': { '$avg': '$averageRating' } } }])
- ( ) db.aggregate([{ '$unwind': { path: '$countries' } }, { '$group': { '_id': '$countries', 'averageRating': { '$sum': '$averageRating' } } }])
- ( ) db.aggregate([{ '$unwind': { path: '$countries' } }, { '$group': { '_id': '$countries', 'averageRating': { '$push': '$averageRating' } } }])
- ( ) db.aggregate([{ '$unwind': { path: '$countries' } }, { '$group': { '_id': '$countries', 'averageRating': { '$first': '$averageRating' } } }])

✓ **Correct** 1/1 Points

36

Which of the following statement is TRUE about FULL OUTER JOIN created on two tables Table1 and Table2?

- Retrieves all the unmatched rows of Table1
- Retrieves all the unmatched rows of Table2
- Retrieves both matched and unmatched rows of Table1 and Table2
- Retrieves only matched rows of table1 and Table2

✗ **Incorrect** 0/1 Points

37

Sanjay is a developer at ABC Corp who created an analytics platform that monitors how many times users visit a particular page and click on different elements on that page. The platform updates its records every time a user visits the page or clicks on an element.

Which data modelling pattern Sanjay can use to **"reduce write load on its database"?**

- Approximation Data Pattern
- Extended Reference Pattern
- Tree Data Pattern
- Outlier Pattern

✓ **Correct** 1/1 Points

38

After a database transaction is successfully committed, which ACID property ensures that the changes made during that transaction will persist even in the event of a system crash?

- Atomicity

- Consistency
- Isolation
- Durability

✓ **Correct** 1/1 Points

39

Which one of the following difference between $in and $all operators in MongoDB is true ?

- The $in operator matches documents where the field value is equal to any of the values in the specified array, while the $all operator matches documents where the field value is an array that contains all of the values in the specified array.
- The $in operator is more efficient than the $all operator.
- The $all operator can only be used with array fields, while the $in operator can be used with any field type.
- The $in operator is used to filter documents, while the $all operator is used to aggregate documents.

✓ **Correct** 1/1 Points

40

You are designing a database application for a flight booking system. Multiple users can access the database at the same time to book flights. Which ACID property is most important to ensure that two users cannot book the same seat on the same flight?

- Atomicity
- Consistency

- [x] Isolation
- [ ] Durability

Incorrect 0/1 Points

41

Which join is to be used between two tables A and B when the resultant table needs rows from A and B that matches the condition and rows from A that does not match the condition?

- [ ] Outer Join
- [ ] Cross Join
- [ ] Inner Join
- [x] None of the above

Incorrect 0/1 Points

42

You have a view named "HighSalaryEmployees" that displays the names and salaries of employees earning more than $50,000 per year. You want to delete this view. Which SQL statement should you use?

- [ ] DROP TABLE HighSalaryEmployees;
- [x] DELETE VIEW HighSalaryEmployees;
- [ ] REMOVE VIEW HighSalaryEmployees;
- [ ] DROP VIEW IF EXISTS HighSalaryEmployees;

✓ **Correct** 1/1 Points

43

You have a table named students with the following columns: student_id, student_name, course_id, and score. You want to find the average score for each student in each course. Which SQL query should you use?

- ○ SELECT student_id, AVG(score) FROM students;
- ○ SELECT student_id, AVG(score) FROM students GROUP BY student_id;
- ○ SELECT course_id, AVG(score) FROM students GROUP BY course_id;
- ◉ SELECT student_id, course_id, AVG(score) FROM students GROUP BY student_id, course_id;

✗ **Incorrect** 0/1 Points

44

You are designing a banking application where ensuring that the total balance of all accounts remains constant before and after a transaction is critical. Which ACID property is most relevant for this scenario?

- ○ Atomicity
- ○ Consistency
- ○ Isolation
- ◉ Durability

✓ **Correct** 1/1 Points

45

In a relational database, a superkey must:

- ○ Be unique across all tables in the database.
- ○ Consist of a single attribute.
- ○ Have no duplicate values within a table.
- ◉ Be minimal, meaning it cannot be further reduced and still uniquely identify rows.

Keep the information with you by saving your response.

Save my response