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Name ____________

Date ____________

SRD2021 - Lecture 2

Score ____________

1. An entity type represents more than one business concept.

Ⓣ True

[✓ Ⓕ False]

2. Normalization reduces data redundancy.

[✓ Ⓣ True]

Ⓕ False

3. Normalization increases the risk of loosing data integrity.

Ⓣ True

[✓ Ⓕ False]

4. A many-to-many relationship can be resolved by using a linking table

[✓ Ⓣ True]

Ⓕ False

5. Is the following definition totally correct?
An entity type is 2NF when all of its non-key attributes are fully dependent on its primary key.

Ⓣ True

[✓ Ⓕ False]

6. About the 1NF (one or more can be selected):

[✓ Ⓐ each cell in the table can have only one value]

Ⓑ each cell in the table can have only one value, except for numerical values

Ⓒ each cell in the table can have only one value, except for character values

Ⓓ It is possible to have more than one value, as long as the values are separated by a semicolon

Ⓔ None of the above

7. If an entity type is in 3NF, then... (one or more can be selected):

- A all attributes are functionally dependent on the primary key
- B all attributes are transitively dependent on the primary key
- C all attributes are not transitively dependent on the primary key
- D Complies with the 1NF, but not necessarily with the 2NF
- E None of the above

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Name ______________

Date ______________

SRD2021- Lecture 3

Score ______________

1. Regarding the DBMS component "security manager"

A Sets-up a database connection

[✓ B It verifies the user granted permissions to execute queries]

C Manages the buffer memory to optimize queries

D None of the above

2. Between DDL and DML

A DML compiler helps to creates tables

B DDL compiler helps to insert data

C MySQL only manages DML, not DDL

[✓ D None of the above]

3. In crow's foot notation:

A An entity type is represented by a rectangle

B The name of entity type should be singular

C The name of the entity type goes in the upper part of the rectangle

[✓ D All of the above]

4. About SQL (more than one option can be selected)

A It is an object oriented programming language

[✓ B It describes the the set of data to be retrieved/modified without specifying how to compute it]

[✓ C Can be embedded in java code]

D SQL means: Structured Quality Language

E All of the above

5. You want to list all the databases existing in the current MySql server, which command would you use?

Ⓐ SELECT DATABASE NAMES FROM MYSQL

Ⓑ CREATE DATABASE

[✓ Ⓒ SHOW DATABASES]

Ⓓ USE DATABASE NAMES

6. About primary key:

Ⓐ Must be composed by one column only

[✓ Ⓑ Can be composed by multiple columns]

Ⓒ Supports not unique values if defined as varchar type

[✓ Ⓓ It is a bad practice to leave tables without a primary key]

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Name ______________

Date ______________

SRD2021 - Lecture 4

Score ______________

1. What is true about the SQL dialect

(A) Refers to the original SQL-86 version

(B) The way SQL coders communicate to each other

[✓ (C)] The SQL implementation provided by each vendor

(D) The SQL property of being embedded in JAVA applications

2. CRUD refers to

(A) Create, Read, Update, Drop

[✓ (B)] Create, Read, Update, Delete

(C) Create, Retrieve, Update, Drop

(D) Collect, Read, Update, Delete

(E) None of the above

3. You want to select the employees that do not belong to any department

[✓ (A)] SELECT * FROM employee WHERE department_id is null;

(B) SELECT * FROM employee WHERE department_id is not null;

(C) SELECT * FROM employee WHERE department_id in (null);

(D) SELECT * FROM employee IF EXISTS department_id;

4. Assume table REGION has 3 rows with region_name= 'Americas', 2 rows with region_name = 'Europe', and 4 rows with other world regions. How many rows updates the following SQL code:

```
UPDATE region SET
region_name = 'America'
WHERE region_name = 'Americas' AND region_name = 'Europe';
```

[✓ (A)] 0

(B) 5

(C) 3

(D) 2

(E) 4

5. About the following SQL code:

```
DELETE FROM region
LIMIT 2
WHERE region_name = 'Europe';
```

Ⓐ Deletes 2 rows corresponding to Europe region

Ⓑ Completes execution but deletes zero regions

Ⓒ Deletes the two first rows regardless of which region they refer to

[✓ Ⓓ] Raises an error

6. If the following reasons are true, for which of them this SQL code raises an error:

```
INSERT INTO department (`DEPARTMENT_ID`,`DEPARTMENT_NAME`,`LOCATION_ID`)
VALUES (4, 'MARKETING2', 100, 1000);
```

Ⓐ You are inserting a DEPARTMENT_ID that already exists and DEPARTMENT_ID is defined as primary key

Ⓑ The number of columns is different from the number of values

Ⓒ You are inserting a value for LOCATION_ID (foreign key) that does not exist in table LOCATION, where LOCATION_ID is defined as NOT NULL

[✓ Ⓓ] All of the previous reasons

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Name ____________

Date ____________

SRD2021 - Lecture 5

Score ____________

1. You want to get the unique first names of the employees that are from Portugal

(A) SELECT UNIQUE first_name FROM employees WHERE country = 'Portugal'

[✓ (B)] SELECT DISTINCT first_name FROM employees WHERE country = 'Portugal'

(C) SELECT first_name FROM employees WHERE country = 'Portugal'

(D) None of the above

2. You want to find the products whose prices are between 200 and 400

(A) SELECT productName FROM products
WHERE Price > 200 AND < 400;

(B) SELECT productName FROM products
WHERE Price BIGGER 200 AND SMALLER 400;

[✓ (C)] SELECT productName FROM products
WHERE Price BETWEEN 200 AND 400;

(D) SELECT productName FROM products
WHERE Price IN 200 AND 400;

3. About the left join, being table A the left table and B the right table:

(A) Return all of the records in table A that do not match any records in the table table B

(B) Returns only the records in table A that match the records in table B.

[✓ (C)] Returns all of the records in table A regardless if the records have a match in table B.

(D) Returns all of the records in table B regardless if the records have a match in table A.

4. Assuming that emp_no is the primary key, and that the job_title is unique. What the following query does?

```
SELECT e.first_name, t.title, e.emp_no
FROM employees AS e, titles AS t
WHERE e.emp_no = t.emp_no
AND t.title = 'Senior Engineer'
```

[✓ Ⓐ Retrieve the first name, title, and employee identifier of the senior engineers]

Ⓑ Retrieve the first name, title, and employee identifier of the employees that are not senior engineers

Ⓒ Retrieve the first name, title, and employee identifier of employees where the employee identifies is equal to the title identifier

Ⓓ None of the above

5. What retrieves the following query?

```
SELECT T1.orderNumber,
       T1.status,
       SUM(T2.quantityOrdered * T2.priceEach) total
FROM orders AS T1
INNER JOIN orderdetails AS T2
   ON T1.orderNumber = T2.orderNumber
GROUP BY  T1.orderNumber;
```

Ⓐ orderNumber, status, quantityOrdered, and priceEach

Ⓑ orderNumber, status, and the order average

[✓ Ⓒ orderNumber, status, and the total of the order]

Ⓓ orderNumber, status, the total of each order detail

6. What is true about the following query:

```
SELECT o.orderNumber, p.productName, p.msrp, o.priceEach
FROM products p JOIN orderdetails o ON p.productcode = o.productcode AND p.msrp >
o.priceEach
WHERE p.productcode = 'S10_1678';
```

Ⓐ The query only retrieves data from table products

[✓ Ⓑ The query uses an inner join]

Ⓒ The query uses a right join

Ⓓ The query joins tables based on the msrp as key column

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Name ____________
Date ____________

SRD2021 - Lecture 6

Score ____________

1. What is true for this code

SELECT concat(p.product_code, ' ', p.product_name)
FROM product AS p;

A Retrieves two columns and presents as two separate columns in the result set: product code and product name

[✓ B] Retrieves two columns (product code and product name) and presents as one single column in the result set

C May retrieve more than two columns if product code is not unique

D All the options are wrong

2. You want to retrieve the average salary by year

A SELECT YEAR, AVG(s.salary)
FROM employees AS e, salaries AS s
WHERE e.emp_no = s.emp_no
GROUP BY e.hire_date

B SELECT e.hire_date, AVG(s.salary)
FROM employees AS e, salaries AS s
WHERE e.emp_no = s.emp_no
GROUP BY e.hire_date

C SELECT YEAR(e.hire_date) AS year, SUM(s.salary)
FROM employees AS e, salaries AS s
WHERE e.emp_no = s.emp_no
GROUP BY YEAR(e.hire_date)

[✓ D] SELECT YEAR(e.hire_date) AS year, AVG(s.salary)
FROM employees AS e, salaries AS s
WHERE e.emp_no = s.emp_no
GROUP BY YEAR(e.hire_date)

3. What is true about a view

A It is a virtual table without physical rows

B The name of the view cannot be the same as the table

C The view does not physically store the data

[✓ D] All the previous are true

E None of the above

4. The trigger can be activated in the following events:

[✓ A INSERT, UPDATE, DELETE]

B SELECT, INSERT, UPDATE, DELETE

C INSERT and UPDATE

D INSERT and DELETE

5. What is true about triggers:

A Triggers do not affect performance

[✓ B They may cause deadlock situations]

C Not appropriate for automatic auditing

D Triggers are easy to debug

6. What is true about the query optimizer?

[✓ A Usually generates multiple query plans.]

B Always generate one single query plan

C The developer can choose which query plan to execute

D All options are wrong

7. Which query is more efficient (assume the id and name are unique and have indexes)?

A SELECT * FROM tools
WHERE name='Screwdriver';

[✓ B SELECT * FROM tools
WHERE id=3;]

C SELECT * FROM tools
WHERE name='Screwdriver' and id=3;

D There is not difference in terms of efficiency among the three queries

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Name __________

Date __________

SRD2021 - Lecture 7

Score __________

1. The following table with purchase orders is created:

```
CREATE TABLE PURCHASE_ORDER
(PONR CHAR(7) NOT NULL PRIMARY KEY, PODATE DATE,
SUPNR CHAR(4) NOT NULL,
FOREIGN KEY (SUPNR) REFERENCES SUPPLIER (SUPNR)
ON DELETE CASCADE ON UPDATE CASCADE);
```

What happens upon deletion of a supplier?

[✓ A All purchase order records tied to that supplier are also deleted.]

B The SUPNR of this supplier is replaced by a NULL value in PURCHASE_ORDER.

C The SUPNR of this supplier is deleted in PURCHASE_ORDER.

D The SUPNR of this supplier is only deleted in SUPPLIER.

2. Which of the following fields have the highest index cardinality?

A first_name

B address

C number_of_children

[✓ D email]

3.

Assuming that there is no index by column ID on table products and the following query takes 3 seconds:

```
SELECT * FROM products WHERE id = 2;
```

A The execution time is normal

[✓ B The query can be considered "slow"]

C We cannot improve the execution time

D Adding an index by id will reduce que execution time at most by 50%

4. Which ACID property correspond to the following affirmation: "ensures that concurrent execution of transactions leaves the database in the same state that would have been obtained if the transactions were executed sequentially"

A Atomicity

B Consistency

[✓ C] Isolation

D Durability

5. SQL vs NoSQL databases. Which statement is true?

A MongoDB is a well-known relational database

[✓ B] NoSQL databases are easier to scale horizontally than relational databases

C Relational databases are easier to scale horizontally than NoSQL

D NoSQL databases are the best choice if we want to ensure data consistency

6. What is true about the CAP theorem?

A Relational databases are usually associated with partition tolerance

B Most of NoSQL databases will hold consistency and availability

C CAP stands for: Critical, Availability, Performance

[✓ D] You can only pick two properties