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PLACEMENT REFRESHER PROGRAM

Session 11 - SQL 5

Problem Solving & Case Study

By
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Agenda

- Problem Solving
- Case Study

MCQ / MSQ

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Which of the following commands is used to delete all rows and free up space from a table?

1) Truncate
2) Drop
3) Delete
4) Alter

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1) Truncate
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4) Alter

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Which of the following commands are a part of Data Control Language?

1) Revoke
2) Grant
3) Update
4) Alter
5) All of the above

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Which of the following commands are a part of Data Control Language?

1) Revoke
2) Grant
3) Update
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5) All of the above

Question

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What does the following code snippet do?

```
DELETE FROM STUDENTS
WHERE AGE = 16;
ROLLBACK;
```

Question

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What does the following code snippet do?

DELETE FROM STUDENTS
WHERE AGE = 16;
ROLLBACK;

Performs an undo operation on the delete operation.

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Which SQL constraint do we use to set some value to a field whose value has not been added explicitly?

1) NULL
2) Not NULL
3) Default
4) Unique
5) Check

MCQ / MSQ

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1) NULL
2) Not NULL
3) Default
4) Unique
5) Check

MCQ / MSQ

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Which of the following allows you to uniquely identify a tuple?

1) Attribute
2) Key
3) Schema
4) Domain

MCQ / MSQ

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2) Key
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MCQ / MSQ

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How many operations are considered to be the most basic SQL operations?

1) 4
2) 3
3) 2
4) 1

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How many operations are considered to be the most basic SQL operations?

1) 4
2) 3
3) 2
4) 1

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Which of the following are valid logical operators in SQL?

1) SOME
2) ALL
3) AND
4) OR
5) FEW

MCQ / MSQ

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Which of the following are valid logical operators in SQL?

1) SOME
2) ALL
3) AND
4) OR
5) FEW

MCQ / MSQ

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Which of the following operators is used to compare a value to a list of literal values that have been specified?

1) IN
2) BETWEEN
3) ANY
4) ALL

MCQ / MSQ

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Which of the following operators is used to compare a value to a list of literal values that have been specified?

1) IN
2) BETWEEN
3) ANY
4) ALL

MCQ / MSQ

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Select the correct foreign key constraint?

1) Referential Integrity
2) Entity Integrity
3) Domain Integrity
4) All of the above
5) None of the above

MCQ / MSQ

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Select the correct foreign key constraint?

1) Referential Integrity
2) Entity Integrity
3) Domain Integrity
4) All of the above
5) None of the above

Query based Questions

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Calculate the average salary from the "Salary" column in the "Employees" table.

Query based Questions

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Calculate the average salary from the "Salary" column in the "Employees" table.

```
SELECT AVG(salary) FROM Employees;
```

Query based Questions

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Write a query to find employees whose salary is above the average salary in the "Employees" table.

Query based Questions

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Write a query to find employees whose salary is above the average salary in the "Employees" table.

```
SELECT * FROM Employees WHERE salary > (SELECT AVG(salary) FROM Employees);
```

Query based Questions

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Select products from the "Inventory" table where the quantity is less than 10 and the price is greater than 20.

Query based Questions

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Select products from the "Inventory" table where the quantity is less than 10 and the price is greater than 20.

```
SELECT * FROM Inventory WHERE quantity < 10 AND price > 20;
```

Query based Questions

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Retrieve orders from the last month from the "Orders" table.

Query based Questions

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Retrieve orders from the last month from the "Orders" table.

```
SELECT * FROM Orders WHERE order_date >= DATE_SUB(NOW(), INTERVAL 1 MONTH);
```

Query based Questions

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Retrieve records from the "Orders" table, replacing NULL values in the "ShipDate" column with the current date.

Query based Questions

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Retrieve records from the "Orders" table, replacing NULL values in the "ShipDate" column with the current date.

```
SELECT order_id, IFNULL(ship_date, CURRENT_DATE) as ship_date
FROM Orders;
```

Query based Questions

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Write a query using a correlated subquery to find the second-highest salary in the "Employees" table.

Query based Questions

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Write a query using a correlated subquery to find the second-highest salary in the "Employees" table.

```
SELECT MAX(salary) FROM Employees WHERE salary < (SELECT MAX(salary) FROM Employees);
```

Case Study : Connecting MySQL with Python

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Install the necessary software library:

pip install mysql-connector-python

Case Study : Connecting MySQL with Python

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```
import mysql.connector as mysql

myconn = mysql.connect(host='127.0.0.1',
                       database='students',
                       user='root',
                       password='password')

c = myconn.cursor()

c.execute("Select * from student_info")
rs = c.fetchall()
```

Case Study : E-commerce Sales Analysis

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Background:

Imagine you are working for an e-commerce company that sells products online. The company has a relational database with several tables to store information about customers, orders, products, and payments. Your task is to analyze the sales data and provide insights to support business decisions.

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Database Schema:

Customers Table:
customer_id (Primary Key)
customer_name
email
registration_date

Products Table:
product_id (Primary Key)
product_name
category
price

Payments Table:
payment_id (Primary Key)
order_id (Foreign Key)
payment_date
payment_amount

Orders Table:
order_id (Primary Key)
customer_id (Foreign Key)
order_date
total_amount

Order_Items Table:
order_item_id (Primary Key)
order_id (Foreign Key)
product_id (Foreign Key)
quantity
item_amount

Case Study : E-commerce Sales Analysis

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Case Study Tasks:

- **Sales Overview:** Write a query to retrieve the total number of orders and the overall revenue generated by the company.

- **Top-Selling Products:** Identify the top 5 best-selling products based on the quantity sold. Provide the product names and the total quantity sold for each.

- **Customer Loyalty:** Determine the number of customers who have made more than one purchase. Display their names and the count of orders they have placed.

- **Monthly Revenue Trends:** Analyze the monthly revenue trends over the last year. Provide a monthly breakdown of total revenue.

Case Study : E-commerce Sales Analysis

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Case Study Tasks:

- **Average Order Value:** Calculate the average order value for each customer. Display the customer names and their corresponding average order values.

- **Late Payments:** Identify orders where payments were made more than 30 days after the order date. Display the order details and the delay in payment.

- **Product Categories Analysis:** Determine the total revenue generated by each product category. Display the categories and their corresponding total revenue.

- **Customer Churn Analysis:** Identify customers who have not made any purchases in the last six months. Display their names and the date of their last purchase.

Case Study : E-commerce Sales Analysis

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Expected Deliverables:

- SQL queries for each of the tasks listed above.
- Clear and concise results that can be used to derive actionable insights.
- Any assumptions made during the analysis.

THANK YOU