DB Assignment 2

Abdullah Alshamrani

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In this section, all SQL queries with their output is attached is images, each query with its output, attached with an explanation of the query.

Problem 1: Average Price of Foods at Each Restaurant

```
SELECT r.name AS "Restaurant",
       FORMAT(AVG(f.price), 2) AS "Average Price"
FROM   restaurants r
JOIN   serves s ON r.restID = s.restID
JOIN   foods f ON s.foodID = f.foodID
GROUP  BY r.name
ORDER  BY "Average Price";
```

Screenshot of Query Result:

Restaurant	Average Price
La Trattoria	13.50
Sushi Haven	12.00
Taco Town	9.50
Bistro Paris	13.50
Thai Delight	12.00
Indian Spice	13.50

Explanation:
This query retrieves the average price of foods served at each restaurant. It joins the `restaurants`, `serves`, and `foods` tables to gather food prices for each restaurant and then calculates the average using `AVG()`.
The `FORMAT()` function formats the result to two decimal places.

Problem 2: Maximum Food Price at Each Restaurant

```sql
SELECT r.name AS "Restaurant",
       max(f.price) AS "Max Price"
FROM   restaurants r
JOIN   serves s ON r.restID = s.restID
JOIN   foods f ON s.foodID = f.foodID
GROUP  BY r.name
ORDER  BY "Max Price" DESC;
```

Screenshot of Query Result:

	Restaurant	Max Price
	La Trattoria	15.00
	Sushi Haven	14.00
	Taco Town	11.00
	Bistro Paris	18.00
	Thai Delight	13.00
	Indian Spice	15.00

Explanation:
This query finds the maximum price of food items at each restaurant by joining the `restaurants`, `serves`, and `foods` tables. It uses the `MAX()` function to find the highest price for each restaurant and sorts the result in descending order.

Problem 3: Count of Different Food Types Served at Each Restaurant

```sql
SELECT r.name AS "Restaurant",
       count(DISTINCT f.type) AS "Food Types"
FROM   restaurants r
JOIN   serves s ON r.restID = s.restID
JOIN   foods f ON s.foodID = f.foodID
GROUP  BY r.name
ORDER  BY "Food Types" DESC;
```

Screenshot of Query Result:

	Restaurant	Food Types
	Bistro Paris	1
	Indian Spice	1
	La Trattoria	1
	Sushi Haven	2
	Taco Town	1
	Thai Delight	1

Explanation:
This query counts how many different types of food are served at each restaurant. It uses the `COUNT(DISTINCT)` function on the `type` column from the `foods` table, grouping the results by restaurant name.
Output is sorted in descending order based on the count of distinct food types.

Problem 4: Average Price of Foods Served by Each Che

```
SELECT c.name AS "Chef",
       FORMAT(AVG(f.price), 2) AS "Average Price"
FROM   chefs c
JOIN   works w ON c.chefID = w.chefID
JOIN   serves s ON w.restID = s.restID
JOIN   foods f ON s.foodID = f.foodID
GROUP  BY c.name
ORDER  BY "Average Price";
```

Screenshot of Query Result:

	Chef	Average Price
	John Doe	11.50
	Jane Smith	12.75
	Alice Johnson	11.50
	Robert Brown	12.75
	Emily Davis	12.75
	Michael Wilson	12.75

Explanation:
This query joins the `chefs`, `works`, `serves`, and `foods` tables to find which foods are served at the restaurants where each chef works.
The `AVG()` function is used to calculate the average price, and the result is grouped by the chef's name and sorted by the average price in descending order.

Problem 5: Restaurant with the Highest Average Food Price

```sql
SELECT r.name AS "Restaurant",
       FORMAT(AVG(f.price), 2) AS "Average Price"
FROM   restaurants r
JOIN   serves s ON r.restID = s.restID
JOIN   foods f ON s.foodID = f.foodID
GROUP  BY r.name
ORDER  BY AVG(f.price) DESC
LIMIT 1;
```

Screenshot of Query Result:

Restaurant	Average Price
La Trattoria	13.50

Explanation:
This query identifies the restaurant with the highest average food price by joining the `restaurants`, `serves`, and `foods` tables.
It calculates the average price for each restaurant and sorts the results in descending order.
The `LIMIT 1` clause ensures that only the restaurant with the highest average price is displayed.

Extra Credit - Problem: Chef with the Highest Average Food Price at Restaurants Where They Work

```sql
SELECT c.name AS "Chef",
       FORMAT(AVG(f.price), 2) AS "Average Price",
       GROUP_CONCAT(DISTINCT r.name ORDER BY r.name) AS "Restaurants"
FROM   chefs c
JOIN   works w ON c.chefID = w.chefID
JOIN   restaurants r ON w.restID = r.restID
JOIN   serves s ON r.restID = s.restID
JOIN   foods f ON s.foodID = f.foodID
GROUP  BY c.name
ORDER  BY AVG(f.price) DESC;
```

Screenshot of Query Result:

Chef	Average Price	Restaurants
Emily Davis	12.75	Indian Spice,Thai Delight
Jane Smith	12.75	La Trattoria,Sushi Haven
Michael Wilson	12.75	Indian Spice,Thai Delight
Robert Brown	12.75	Bistro Paris,Sushi Haven
Alice Johnson	11.50	Bistro Paris,Taco Town
John Doe	11.50	La Trattoria,Taco Town

Explanation:
This query aggregates restaurant names using `GROUP_CONCAT()` and calculates the average price using `AVG()`.
The result is grouped by the chef's name and sorted in descending order of average food price. The `GROUP_CONCAT()` function lists all the restaurants where the chef works in a single field.