SQL Advent Calendar 2024 - IVth quarter

Day 19 of SQL Advent Calendar

Today's Question:

Scientists are studying the diets of polar bears. Write a query to find the maximum amount of food (in kilograms) consumed by each polar bear in a single meal December 2024. Include the bear_name and biggest_meal_kg, and sort the results in descending order of largest meal consumed.

Table name: polar_bears

bear_id	bear_name	age
1	Snowball	10
2	Frosty	7
3	Iceberg	15

Table name: meal_log

log_id	bear_id	food_type	food_weight_kg	date
1	1	Seal	30	2024-12-01
2	2	Fish	15	2024-12-02
3	1	Fish	10	2024-12-03
4	3	Seal	25	2024-12-04
5	2	Seal	20	2024-12-05
6	3	Fish	18	2024-12-06

Question level of difficulty: Medium 

Code:

```sql
SELECT
    bears.bear_name,
    MAX(meals.food_weight_kg) AS biggest_meal_kg
FROM polar_bears bears
INNER JOIN meal_log meals
ON bears.bear_id = meals.bear_id
WHERE strftime('%m', meals.date) = '12'
    AND strftime('%Y', meals.date) = '2024'
GROUP BY bears.bear_name
ORDER BY biggest_meal_kg DESC;
```

Output:

BEAR_NAME	BIGGEST_MEAL_KG
Snowball	30
Iceberg	25
Frosty	20

Day 20 of SQL Advent Calendar

Today's Question:
We are looking for cheap gifts at the market. Which vendors are selling items priced below $10? List the unique (i.e. remove duplicates) vendor names.

Table name: vendors

vendor_id	vendor_name	market_location
1	Cozy Crafts	Downtown Square
2	Sweet Treats	Central Park
3	Winter Warmers	Downtown Square

Table name: item_prices

item_id	vendor_id	item_name	price_usd
1	1	Knitted Scarf	25
2	2	Hot Chocolate	5
3	2	Gingerbread Cookie	3.5
4	3	Wool Hat	18
5	3	Santa Pin	2

Question level of difficulty: Easy 

Code:

```sql
SELECT
    DISTINCT(vd.vendor_name)
FROM vendors vd
INNER JOIN item_prices ip
ON vd.vendor_id = ip.vendor_id
WHERE ip.price_usd < 10;
```

Output:

VENDOR_NAME
Sweet Treats
Winter Warmers

Day 21 of SQL Advent Calendar

Today's Question:
Santa needs to optimize his sleigh for Christmas deliveries. Write a query to calculate the total weight of gifts for each recipient type (good or naughty) and determine what percentage of the total weight is allocated to each type. Include the recipient_type, total_weight, and weight_percentage in the result.

Table name: gifts

gift_id	gift_name	recipient_type	weight_kg
1	Toy Train	good	2.5
2	Lumps of Coal	naughty	1.5
3	Teddy Bear	good	1.2
4	Chocolate Bar	good	0.3
5	Board Game	naughty	1.8

Question level of difficulty: Hard 

Code:

```sql
SELECT
    recipient_type,
    SUM(weight_kg) AS total_weight,
    ROUND(SUM(weight_kg)/(SELECT SUM(weight_kg) FROM gifts)* 100, 2) AS weight_percent
FROM gifts
GROUP BY recipient_type;
```

Output:

RECIPIENT_TYPE	TOTAL_WEIGHT	WEIGHT_PERCENT
good	4	54.79
naughty	3.3	45.21

Day 22 of SQL Advent Calendar

Today's Question:
We are hosting a gift party and need to ensure every guest receives a gift. Using the guests and guest_gifts tables, write a query to identify the guest(s) who have not been assigned a gift (i.e. they are not listed in the guest_gifts table).

Table name: guests

guest_id	guest_name
1	Cindy Lou
2	The Grinch
3	Max the Dog
4	Mayor May Who

Table name: guest_gifts

gift_id	guest_id	gift_name
1	1	Toy Train
2	1	Plush Bear
3	2	Bag of Coal
4	2	Sleigh Bell
5	3	Dog Treats

Question level of difficulty: Medium 

Code:

```sql
SELECT
    g.guest_name
FROM guests g
LEFT JOIN guest_gifts gg
ON g.guest_id = gg.guest_id
WHERE gg.gift_name IS NULL;
```

Output:

GUEST_NAME
Mayor May Who

Day 23 of SQL Advent Calendar

Today's Question:
The Grinch tracked his weight every day in December to analyze how it changed daily. Write a query to return the weight change (in pounds) for each day, calculated as the difference from the previous day's weight.

Table name: grinch_weight_log

log_id	day_of_month	weight
1	1	250
2	2	248
3	3	249
4	4	247
5	5	246
6	6	248

Question level of difficulty: Medium 

Code:

```sql
SELECT
    weight - LAG(weight) OVER(ORDER BY day_of_month) AS weight_differences
FROM grinch_weight_log;
```

Output:

WEIGHT_DIFFERENCES
-2
1
-2
-1
2

Day 24 of SQL Advent Calendar

Today's Question:

Santa is tracking how many presents he delivers each night leading up to Christmas. He wants a running total to see how many gifts have been delivered so far on any given night. Using the deliveries table, calculate the cumulative sum of gifts delivered, ordered by the delivery date.

Table name: deliveries

delivery_date	gifts_delivered
2024-12-20	120
2024-12-21	150
2024-12-22	200
2024-12-23	300
2024-12-24	500

Question level of difficulty: Hard 

Code:

```sql
SELECT
        delivery_date,
        SUM(gifts_delivered) OVER (ORDER BY delivery_date ASC) AS cumulative_sum
FROM deliveries;
```

Output:

DELIVERY_DATE	CUMULATIVE_SUM
2024-12-20	120
2024-12-21	270
2024-12-22	470
2024-12-23	770
2024-12-24	1270