Fetch Data Analytics Manager Assessment -- Open-Ended Qs
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At what percent has Fetch grown year over year?

Assumptions:
- Growth will be measured in terms of user growth year-over-year (YOY). Alternatively, sales growth could also be a measure, but for simplicity I will focus on user growth
- I assume the Created Date column in the Users table represents the date when the user account was created
  - Users with NULL or incomplete Created Date entries will be excluded from the calculation, as they do not provide relevant data for growth tracking
- Growth will be calculated as the percentage change in the number of users from one year to the next. This is done by comparing the number of users created in each year.
- The formula for YOY growth percentage:

$$YOY\ growth\% = ((Current\ year\ users - Previous\ years\ users)/Previous\ years\ users) * 100$$

```sql
-- This query calculates Fetch's YOY user growth
WITH yearly_user_counts AS (
    -- Calculate the number of users created each year
    SELECT
        STRFTIME('%Y', CREATED_DATE) AS year,  -- Extracting the year from CREATED_DATE
        COUNT(*) AS user_count  -- Counting the number of users created in each year
    FROM users
    WHERE CREATED_DATE IS NOT NULL  -- Exclude users with no account creation date
    GROUP BY year
    ORDER BY year
),
yoy_growth AS (
    -- Calculate YOY growth percentage
    SELECT
        year,
        user_count,
        LAG(user_count) OVER (ORDER BY year) AS previous_year_count,  -- Get user count for
previous year
        CASE
            WHEN LAG(user_count) OVER (ORDER BY year) IS NULL THEN NULL  -- No growth 1st year
            ELSE
                ((user_count - LAG(user_count) OVER (ORDER BY year)) * 100.0) / LAG(user_count)
OVER (ORDER BY year)  -- YOY Growth formula
        END AS yoy_growth_percentage
    FROM yearly_user_counts
)
```

```
-- Final output: Year, new user count, and YOY growth percentage
SELECT
    year,
    user_count,
    yoy_growth_percentage
FROM yoy_growth
ORDER BY year;
```

Here is the output from the query, which shows the year, number of users, and user growth from the previous year.

Year	New User Accounts	YOY Growth %
2014	30	N/A
2015	51	70%
2016	70	37.25%
2017	644	820%
2018	2168	236.65%
2019	7093	227.17%
2020	16883	138.02%
2021	19159	13.48%
2022	26807	39.92%
2023	15464	-42.31%
2024	11631	-24.79%

2023 and 2024 could be causes for concern -- the number of new accounts declined in 2024 from 2023 and in 2023 from 2022. Obviously, we don't want to see a stop to Fetch's growth and this could indicate challenges that Fetch is facing in attracting new users. There are several factors which may contribute to the decline in new accounts, including:

- Plateauing
  - By the end of 2022, Fetch may have already captured a large portion of its target market, leading to a natural slowdown in the creation of new accounts. Having grown quickly for eight years, it becomes tougher to attract new audiences unless you can expand your appeal

- It would be worth looking into Fetch's marketing spend and user acquisition strategy. A decrease in the marketing budget or fewer campaigns might correlate with a drop in new account creation
- Increased Competition
  - New competitors might have entered the market or existing competitors might have offered new incentives to utilize their programs. If there are better features or rewards available, then potential Fetch users may look to an alternate platform
  - It would be worth looking into market share and competitor launches
- Product Fatigue
  - If Fetch doesn't improve their offerings, current users may tire of the platform and not recommend the platform to their friends
  - It would be worth looking to see if there's been an increase in inactive accounts or even a decrease in receipt scans
- Service Issues
  - If Fetch experienced technical issues or made unpopular changes to their service, then it could lead to a decline in interest
  - It would be worth looking into customer feedback/reviews

Which is the leading brand in the Dips & Salsa category?

Assumptions:
- Total sales as the key metric
  - Total sales (FINAL_SALE) will be the metric I use to determine the leading brand in this category
- Null Sales exclusion
  - Transactions with FINAL_SALE as NULL are excluded to ensure I only work with valid sales data

```sql
-- This query identifies the leading brand in Dips & Salsa based on total sales
SELECT
    p.BRAND,  -- Selecting brand from products table
    SUM(t.FINAL_SALE) AS total_sales  -- Summing up total sales for each brand in this
subcategory
FROM transactions t
JOIN products p ON t.BARCODE = p.BARCODE  -- Joining transactions and products on BARCODE
WHERE
    p.CATEGORY_1 = 'Snacks'  -- Filtering to Snacks category_1
    AND p.CATEGORY_2 = 'Dips & Salsa'  -- Filtering for Dips & Salsa category_2
    AND t.FINAL_SALE IS NOT NULL  -- Ensuring that only transactions with valid sale amounts
are included
GROUP BY p.BRAND  -- Grouping results by brand to aggregate total sales
ORDER BY total_sales DESC  -- Sorting the brands by total sales in descending order
LIMIT 1;  -- Returning only the leading brand
```

The leading brand in the Dips & Salsa category is Tostitos with total sales of 260.99!