Apple

You are a Data Analyst on the Apple Music Personalization Team....

Question 1: How many unique users have streamed an artist on or after the date it was recommended to them?

```sql
WITH merge AS (
  SELECT
    us.user_id,
    us.artist_id,
    us.stream_date,
    ar.recommendation_date
  FROM user_streams us
  INNER JOIN artist_recommendations ar
    ON us.user_id = ar.user_id
    AND us.artist_id = ar.artist_id
  WHERE us.stream_date >= ar.recommendation_date
)
SELECT COUNT(DISTINCT user_id)
FROM merge;
```

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Question 2: What is the average number of times a recommended artist is streamed by users in May 2024? Similar to the previous question, only include streams on or after the date the artist was recommended to them.

```sql
WITH merge AS (
  SELECT
    us.user_id,
    us.artist_id,
    us.stream_date,
    ar.recommendation_date
  FROM user_streams us
  INNER JOIN artist_recommendations ar
    ON us.user_id = ar.user_id
    AND us.artist_id = ar.artist_id
  WHERE us.stream_date >= ar.recommendation_date
    AND us.stream_date BETWEEN DATE '2024-05-01' AND DATE '2024-05-31'
),
calculate AS (
  SELECT
    artist_id,
    COUNT(*) AS stream_count
  FROM merge
  GROUP BY artist_id
)
SELECT ROUND(SUM(stream_count) * 1.0 / COUNT(*), 2)
FROM calculate;
```

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Question 3: Across users who listened to at least one recommended artist, what is the average number of distinct recommended artists they listened to? As in the previous question, only include streams that occurred on or after the date the artist was recommended to the user.

```sql
WITH merge AS (
  SELECT
    us.user_id,
    us.artist_id,
    us.stream_date,
    ar.recommendation_date
  FROM user_streams us
  INNER JOIN artist_recommendations ar
    ON us.user_id = ar.user_id
    AND us.artist_id = ar.artist_id
  WHERE us.stream_date >= ar.recommendation_date
),
calculate AS (
  SELECT
    user_id,
    COUNT(DISTINCT artist_id) AS distinct_recommended_artists_
count
  FROM merge
  GROUP BY user_id
)
SELECT
  ROUND(SUM(distinct_recommended_artists_count) * 1.0 / COUNT
(*), 2) AS average_distinct_recommended_artists
FROM calculate
WHERE distinct_recommended_artists_count > 0;
```