QUESTION

Third Unique Song Play Date

Hard

10 Points

Given a table of song_plays and a table of users, write a query to extract the earliest date each user played their third unique song and order by date played.

Output Schema:

Column	Type
username	STRING
song_id	INT
created_at	DATETIME

TABLE SCHEMA

```sql
CREATE TABLE users (
id INTEGER PRIMARY KEY,
username VARCHAR(50)
);

INSERT INTO users (id, username) VALUES
(1, 'john_doe'),
(2, 'jane_smith'),
(3, 'bob_wilson');

CREATE TABLE song_plays (
id INTEGER PRIMARY KEY,
played_at DATETIME,
user_id INTEGER,
song_id INTEGER
);

INSERT INTO song_plays (id, played_at, user_id, song_id) VALUES
(1, '2024-01-01 10:00:00', 1, 101),
(2, '2024-01-01 14:00:00', 1, 101),
(3, '2024-01-02 09:00:00', 1, 102),
(4, '2024-01-03 16:00:00', 1, 103),
(5, '2024-01-04 11:00:00', 1, 104),
(6, '2024-01-01 09:00:00', 2, 201),
(7, '2024-01-01 15:00:00', 2, 202),
(8, '2024-01-02 10:00:00', 2, 203),
(9, '2024-01-02 14:00:00', 2, 203),
(10, '2024-01-01 12:00:00', 3, 301),
(11, '2024-01-02 13:00:00', 3, 302);

```

SOLUTION

DAY-1 TABLE SCHEMA

```sql
WITH unique_song_plays AS (
  SELECT
    user_id,
    song_id,
    MIN(played_at) AS first_play
  FROM song_plays
  GROUP BY user_id, song_id
)
,
ordered_rankings AS (
  SELECT
    user_id,
    song_id,
    first_play,
    ROW_NUMBER() OVER (PARTITION BY user_id ORDER BY first_play) AS ranking
  FROM unique_song_plays
)
,
third_unique_song AS (
  SELECT *
  FROM ordered_rankings
  WHERE ranking = 3
)
SELECT
  u.username,
  t.song_id,
  t.first_play AS played_at
FROM third_unique_song t
JOIN users u ON t.user_id = u.id
ORDER BY t.first_play;
```

OUTPUT

▼ Tables

username	song_id	played_at
jane_smith	203	2024-01-02 10:00:00
john_doe	103	2024-01-03 16:00:00

My Thought Process:

To solve this, I first grouped each user's unique song plays and picked the earliest time they played each song. Then, I used the ROW_NUMBER() function to rank the songs by play time for each user. Finally, I selected the entry where the rank was 3 representing the user's third unique song and joined it back with the users table for the final output.

Business Impact:

This type of analysis is valuable for platforms like Spotify, Apple Music, or YouTube Music to identify user engagement patterns. For instance, knowing when a user reaches their third unique song play can be used to trigger personalized features like "Create your first playlist" or "Try Premium free for a week." It marks a point when the user is becoming more active.