

Problem 1892: Page Recommendations II

Problem Information

Difficulty: Hard

Acceptance Rate: 45.34%

Paid Only: Yes

Tags: Database

Problem Description

Table: `Friendship`

+-----+-----+ | Column Name | Type | +-----+-----+ | user1_id | int | | user2_id | int | +-----+-----+ (user1_id, user2_id) is the primary key (combination of columns with unique values) for this table. Each row of this table indicates that the users user1_id and user2_id are friends.

Table: `Likes`

+-----+-----+ | Column Name | Type | +-----+-----+ | user_id | int | | page_id | int | +-----+-----+ (user_id, page_id) is the primary key (combination of columns with unique values) for this table. Each row of this table indicates that user_id likes page_id.

You are implementing a page recommendation system for a social media website. Your system will **recommend** a page to `user_id` if the page is **liked** by **at least one** friend of `user_id` and is **not liked** by `user_id`.

Write a solution to find all the possible **page recommendations** for every user. Each recommendation should appear as a row in the result table with these columns:

* `user_id`: The ID of the user that your system is making the recommendation to. * `page_id`: The ID of the page that will be recommended to `user_id`. * `friends_likes`: The number of the friends of `user_id` that like `page_id`.

Return the result table in **any order**.

The result format is in the following example.

****Example 1:****

****Input:**** Friendship table: +-----+-----+ | user1_id | user2_id | +-----+-----+ | 1 | 2 || 1 | 3 || 1 | 4 || 2 | 3 || 2 | 4 || 2 | 5 || 6 | 1 | +-----+-----+ Likes table:
+-----+-----+ | user_id | page_id | +-----+-----+ | 1 | 88 | | 2 | 23 | | 3 | 24 | | 4 | 56 | | 5 | 11 || 6 | 33 || 2 | 77 || 3 | 77 || 6 | 88 | +-----+-----+ ****Output:****
+-----+-----+ | user_id | page_id | friends_likes |
+-----+-----+ | 1 | 77 | 2 || 1 | 23 | 1 || 1 | 24 | 1 || 1 | 56 | 1 || 1 | 33 | 1 || 2 | 24 | 1 || 2 | 56 | 1 || 2 | 11 | 1 || 2 | 88 | 1 || 3 | 88 | 1 || 3 | 23 | 1 || 4 | 88 | 1 || 4 | 77 | 1 || 4 | 23 | 1 || 5 | 77 | 1 || 5 | 23 | 1 | +-----+-----+ ****Explanation:**** Take user 1 as an example: - User 1 is friends with users 2, 3, 4, and 6. - Recommended pages are 23 (user 2 liked it), 24 (user 3 liked it), 56 (user 3 liked it), 33 (user 6 liked it), and 77 (user 2 and user 3 liked it). - Note that page 88 is not recommended because user 1 already liked it. Another example is user 6: - User 6 is friends with user 1. - User 1 only liked page 88, but user 6 already liked it. Hence, user 6 has no recommendations. You can recommend pages for users 2, 3, 4, and 5 using a similar process.

Code Snippets

MySQL:

```
# Write your MySQL query statement below
```

MS SQL Server:

```
/* Write your T-SQL query statement below */
```

PostgreSQL:

```
-- Write your PostgreSQL query statement below
```