Problem 3570: Find Books with No Available Copies

Problem Information

Difficulty: Easy
Acceptance Rate: 0.00%
Paid Only: No

Problem Description

Table:

library_books

+------------------+---------+ | Column Name | Type | +------------------+---------+ | book_id | int | | title | varchar | | author | varchar | | genre | varchar | | publication_year | int | | total_copies | int | +------------------+---------+ book_id is the unique identifier for this table. Each row contains information about a book in the library, including the total number of copies owned by the library.

Table:

borrowing_records

+---------------+---------+ | Column Name | Type | +---------------+---------+ | record_id | int | | book_id | int | | borrower_name | varchar | | borrow_date | date | | return_date | date | +---------------+---------+ record_id is the unique identifier for this table. Each row represents a borrowing transaction and return_date is NULL if the book is currently borrowed and hasn't been returned yet.

Write a solution to find

all books

that are

currently borrowed (not returned)

and have

zero copies available

in the library.

A book is considered

currently borrowed

if there exists a

borrowing record with a

NULL

return_date

Return

the result table ordered by current borrowers in

descending

order, then by book title in

ascending

order.

The result format is in the following example.

Example:

Input:

library_books table:

+---------+-----------------------+-----------------+----------+-----------------+--------------+ | book_id | title | author | genre | publication_year | total_copies | +---------+-----------------------+-----------------+----------+-----------------+--------------+ | 1 | The Great Gatsby | F. Scott | Fiction | 1925 | 3 | | 2 | To Kill a Mockingbird | Harper Lee | Fiction | 1960 | 3 | | 3 | 1984 | George Orwell | Dystopian| 1949 | 1 | | 4 | Pride and Prejudice | Jane Austen | Romance | 1813 | 2 | | 5 | The Catcher in the Rye | J.D. Salinger | Fiction | 1951 | 1 | | 6 | Brave New World | Aldous Huxley | Dystopian| 1932 | 4 | +---------+-----------------------+-----------------+----------+-----------------+--------------+

borrowing_records table:

+-----------+---------+---------------+-------------+-------------+ | record_id | book_id | borrower_name | borrow_date | return_date | +-----------+---------+---------------+-------------+-------------+ | 1 | 1 | Alice Smith | 2024-01-15 | NULL | | 2 | 1 | Bob Johnson | 2024-01-20 | NULL | | 3 | 2 | Carol White | 2024-01-10 | 2024-01-25 | | 4 | 3 | David Brown | 2024-02-01 | NULL | | 5 | 4 | Emma Wilson | 2024-01-05 | NULL | | 6 | 5 | Frank Davis | 2024-01-18 | 2024-02-10 | | 7 | 1 | Grace Miller | 2024-02-05 | NULL | | 8 | 6 | Henry Taylor | 2024-01-12 | NULL | | 9 | 2 | Ivan Clark | 2024-02-12 | NULL | | 10 | 2 | Jane Adams | 2024-02-15 | NULL | +-----------+---------+---------------+-------------+-------------+

Output:

+---------+-----------------+--------------+----------+-----------------+-------------------+ | book_id | title | author | genre | publication_year | current_borrowers | +---------+-----------------+--------------+----------+-----------------+-------------------+ | 1 | The Great Gatsby | F. Scott | Fiction | 1925 | 3 | | 3 | 1984 | George Orwell | Dystopian | 1949 | 1 | +---------+-----------------+--------------+----------+-----------------+-------------------+

Explanation:

The Great Gatsby (book_id = 1):

Total copies: 3

Currently borrowed by Alice Smith, Bob Johnson, and Grace Miller (3 borrowers)

Available copies: 3 - 3 = 0

Included because available_copies = 0

1984 (book_id = 3):

Total copies: 1

Currently borrowed by David Brown (1 borrower)

Available copies: 1 - 1 = 0

Included because available_copies = 0

Books not included:

To Kill a Mockingbird (book_id = 2): Total copies = 3, current borrowers = 2, available = 1

Pride and Prejudice (book_id = 4): Total copies = 2, current borrowers = 1, available = 1

The Catcher in the Rye (book_id = 5): Total copies = 1, current borrowers = 0, available = 1

Brave New World (book_id = 6): Total copies = 4, current borrowers = 1, available = 3

Result ordering:

The Great Gatsby appears first with 3 current borrowers

1984 appears second with 1 current borrower

Output table is ordered by current_borrowers in descending order, then by book_title in ascending order.

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
```

Oracle:

```
/* Write your PL/SQL query statement below */
```

Pandas:

```
import pandas as pd

def find_books_with_no_available_copies(library_books: pd.DataFrame,
borrowing_records: pd.DataFrame) -> pd.DataFrame:
```

Solutions

MySQL Solution:

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