Spring 2025

CS 5200 Database Management Systems

SQL Workshop 6: Self Join

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WS6-1: Consecutive Available Seats

- seat_id is an auto-increment primary key column.
- 1 means free while 0 means occupied for free
- Write an SQL query to report all the consecutive available seats in the cinema.
- Return the result table **ordered** by seat_id **in ascending order**.
- The test cases are generated so that more than two seats are consecutively available.
- The query result format is in the following example.

```
+---------+
| seat_id |
+---------+
| 3       |
| 4       |
| 5       |
+---------+
```

```
Cinema table:
+---------+------+
| seat_id | free |
+---------+------+
| 1       | 1    |
| 2       | 0    |
| 3       | 1    |
| 4       | 1    |
| 5       | 1    |
+---------+------+
```

From https://leetcode.com/problems/consecutive-available-seats/

SQL Answer

```
select distinct a.seat_id
 from cinema a, cinema b
where abs(a.seat_id - b.seat_id) = 1
  and a.free = 1 and b.free = 1
order by a.seat_id
;
```

Comments

- How to check two consecutive rows? No way in one table in simple SQL
- Consider copy of them, i.e., self join
- Consecutive? id – id = 1
- Check order
- You can solve the problem using LAG() and LEAD()

WS6-2: Game Play Analysis III

- Write an SQL query to report for each player and date, how many games played **so far** by the player. That is, the total number of games played by the player until that date. Check the example for clarity.
- Return the result table in **any order**.
- The query result format is in the following example

```
+-----------+------------+---------------------+
| player_id | event_date | games_played_so_far |
+-----------+------------+---------------------+
| 1         | 2016-03-01 | 5                   |
| 1         | 2016-05-02 | 11                  |
| 2         | 2017-06-25 | 1                   |
| 3         | 2016-03-02 | 0                   |
| 3         | 2018-07-03 | 5                   |
+-----------+------------+---------------------+
```

```
Activity table:
+-----------+-----------+------------+--------------+
| player_id | device_id | event_date | games_played |
+-----------+-----------+------------+--------------+
| 1         | 2         | 2016-03-01 | 5            |
| 1         | 2         | 2016-05-02 | 6            |
| 2         | 3         | 2017-06-25 | 1            |
| 3         | 1         | 2016-03-02 | 0            |
| 3         | 4         | 2018-07-03 | 5            |
+-----------+-----------+------------+--------------+
```

From https://leetcode.com/problems/game-play-analysis-iii/

SQL Answer

```
SELECT a1.player_id,
    a1.event_date,
    SUM(a2.games_played) AS games_played_so_far
FROM activity a1, activity a2
WHERE a1.player_id = a2.player_id
  AND a1.event_date >=a2.event_date
GROUP BY a1.player_id, a1.event_date
;
```

Comments

- How to accumulate “games_played”?
- Need (player_id, event_date) + all info
- i.e., self join
  - One is for base
  - Another history
- Then, check with a1.event_date >= a2.event_date
- Then, grouping

WS6-3: Homework

- Write an SQL query to find the total grade for each gender until each day.
- Return the result table ordered by gender and day in **ascending order**.
- The query result format is in the following example.

```
+--------+------------+-------+
| gender | day        | total |
+--------+------------+-------+
| F      | 2019-12-30 | 17    |
| F      | 2019-12-31 | 40    |
| F      | 2020-01-01 | 57    |
| F      | 2020-01-07 | 80    |
| M      | 2019-12-18 | 2     |
| M      | 2019-12-25 | 13    |
| M      | 2019-12-30 | 26    |
| M      | 2019-12-31 | 29    |
| M      | 2020-01-07 | 36    |
+--------+------------+-------+
```

Grades

```
+--------------+--------+------------+--------+
| student_name | gender | day        | grade  |
+--------------+--------+------------+--------+
| Aron         | F      | 2020-01-01 | 17     |
| Alice        | F      | 2020-01-07 | 23     |
| Bajrang      | M      | 2020-01-07 | 7      |
| Khali        | M      | 2019-12-25 | 11     |
| Slaman       | M      | 2019-12-30 | 13     |
| Joe          | M      | 2019-12-31 | 3      |
| Jose         | M      | 2019-12-18 | 2      |
| Priya        | F      | 2019-12-31 | 23     |
| Priyanka     | F      | 2019-12-30 | 17     |
+--------------+--------+------------+--------+
```