

E03 – SQL Review (Part 2)

Business Intelligence

Exercise

Winter Term 2025/2026

Agenda

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 - Introduction
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Introduction

- The main goal of the “SQL Review” exercise is to refresh your knowledge SQL and make an gentle introduction into a practical world of SQL.
- Despite this set of exercises is dedicated to only refresh existing SQL knowledge, they also could be very useful for the ones who works with the SQL for the first time.



Notes on software

See the materials from the previous exercise **E02**

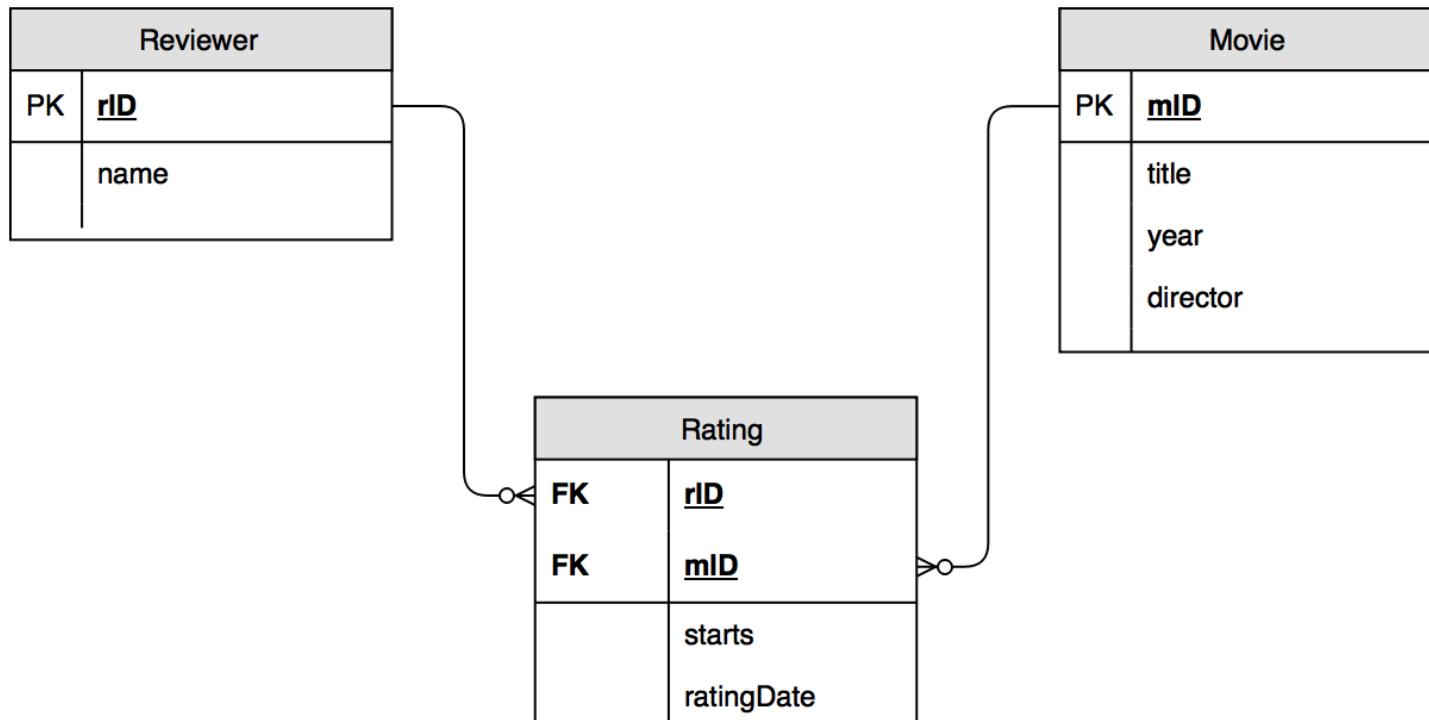


Exercise



Description - Movie Rating Database

- Assume that you have started a new **movie-rating website**, and you have been collecting data on reviewers' ratings for various movies. There are not much data for a moment, but you can still try out interesting queries in order to get insights about most popular movies, directors, etc..



Database Description (I/III) – Table “Movie”

- Table name:
 - **Movie**
- Columns:
 - **m_id, title, release_year, director**
- Description:
 - **There is a movie with ID number m_id, a title, a release year, and a director.**
- Table Data
 - **select * from movie;**

| | 123 m_id ↕ | ABC title ↕ | 123 release_year ↕ | ABC director ↕ |
|---|------------|-------------------------|--------------------|------------------|
| 1 | 101 | Gone with the Wind | 1,939 | Victor Fleming |
| 2 | 102 | Star Wars | 1,977 | George Lucas |
| 3 | 103 | The Sound of Music | 1,965 | Robert Wise |
| 4 | 104 | E.T. | 1,982 | Steven Spielberg |
| 5 | 105 | Titanic | 1,997 | James Cameron |
| 6 | 106 | Snow White | 1,937 | [NULL] |
| 7 | 107 | Avatar | 2,009 | James Cameron |
| 8 | 108 | Raiders of the Lost Ark | 1,981 | Steven Spielberg |



Database Description (II/III) – Table “Reviewer”

- Table name:
 - **Reviewer**
- Columns:
 - **r_id, name**
- Description:
 - **The reviewer with ID number r_id has a certain name.**
- Table Data
 - **select * from reviewer;**

| | r_id | reviewer_name |
|---|------|------------------|
| 1 | 201 | Sarah Martinez |
| 2 | 202 | Daniel Lewis |
| 3 | 203 | Brittany Harris |
| 4 | 204 | Mike Anderson |
| 5 | 205 | Chris Jackson |
| 6 | 206 | Elizabeth Thomas |
| 7 | 207 | James Cameron |
| 8 | 208 | Ashley White |



Database Description (III/III) – Table “Rating”

- Table name:
 - **Rating**
- Columns:
 - **r_id, m_id, stars, rating_date**
- Description:
 - **The reviewer rID gave the movie mID a number of stars rating (1-5) on a certain rating date.**
- Table Data
 - **select * from rating;**

| ! | 123r_id ↴ | 123m_id ↴ | 123stars ↴ | ⌚rating_date ↴ |
|----|-----------|-----------|------------|----------------|
| 1 | 201 | 101 | 2 | 2011-01-22 |
| 2 | 201 | 101 | 4 | 2011-01-27 |
| 3 | 202 | 106 | 4 | [NULL] |
| 4 | 203 | 103 | 2 | 2011-01-20 |
| 5 | 203 | 108 | 4 | 2011-01-12 |
| 6 | 203 | 108 | 2 | 2011-01-30 |
| 7 | 204 | 101 | 3 | 2011-01-09 |
| 8 | 205 | 103 | 3 | 2011-01-27 |
| 9 | 205 | 104 | 2 | 2011-01-22 |
| 10 | 205 | 108 | 4 | [NULL] |
| 11 | 206 | 107 | 3 | 2011-01-15 |
| 12 | 206 | 106 | 5 | 2011-01-19 |
| 13 | 207 | 107 | 5 | 2011-01-20 |
| 14 | 208 | 104 | 3 | 2011-01-02 |



Tasks

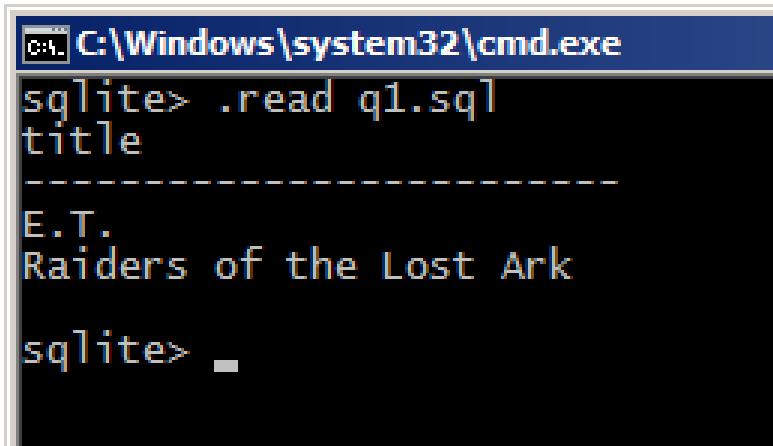


Task 01

Task:

Find the titles of all movies directed by Steven Spielberg.

Expected output:



A screenshot of a Windows Command Prompt window titled "cmd.exe" with the path "C:\Windows\system32". The window shows the SQLite command ".read q1.sql" followed by the output of a query. The output includes the title "E.T." and "Raiders of the Lost Ark". The SQLite prompt "sqlite>" appears at the bottom.

```
C:\Windows\system32\cmd.exe
sqlite> .read q1.sql
title
-----
E.T.
Raiders of the Lost Ark
sqlite>
```

Note: In order to see the correct solution of the first task write (or copy/paste) following command into SQLite's command prompt (or see “q1.sql” file)

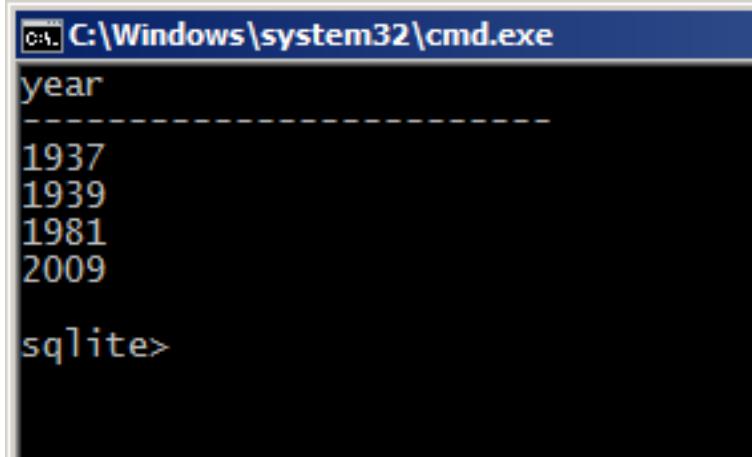
```
.read q1.sql
```

Task 02

Task:

Find all years that have a movie that received a rating of 4 or 5, and sort them in increasing order.

Expected output:



A screenshot of a Windows Command Prompt window titled "C:\Windows\system32\cmd.exe". The window displays the following text:
year

1937
1939
1981
2009
sqlite>

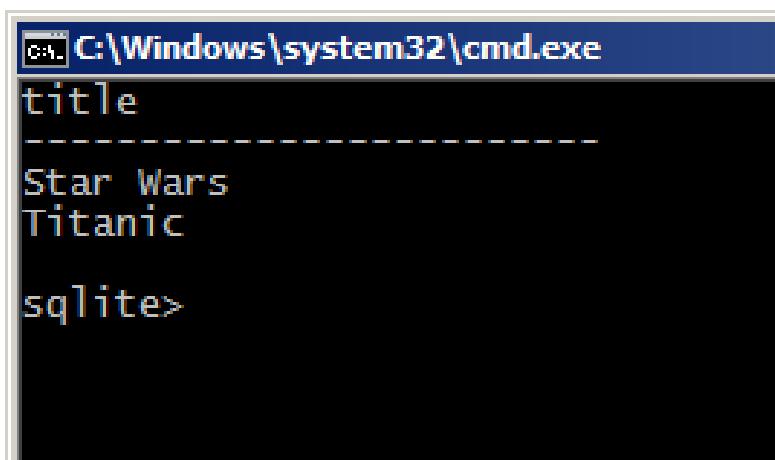


Task 03

Task:

Find the titles of all movies that have no ratings.

Expected output:



A screenshot of a Windows Command Prompt window titled "cmd C:\Windows\system32\cmd.exe". The command "title" was run, followed by a dash-dash separator, and then the movie titles "Star Wars" and "Titanic" were listed. The prompt "sqlite>" appears at the bottom, indicating the command-line interface being used.

```
cmd C:\Windows\system32\cmd.exe
title
-----
Star Wars
Titanic
sqlite>
```

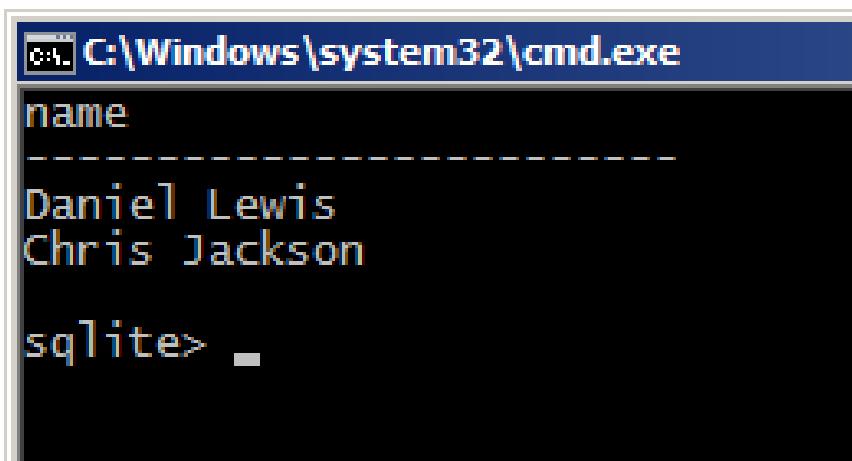


Task 04

Task:

Some reviewers didn't provide a date with their rating. Find the names of all reviewers who have ratings with a NULL value for the date.

Expected output:



A screenshot of a Windows Command Prompt window titled "C:\Windows\system32\cmd.exe". The window displays the following text:
name

Daniel Lewis
Chris Jackson
sqlite> ■



Task 05

Task:

Write a query to return the ratings data in a more readable format: reviewer name, movie title, stars, and ratingDate. Also, sort the data, first by reviewer name, then by movie title, and lastly by number of stars.

Expected output:



| name | title | stars | ratingDate |
|------------------|-------------------------|-------|------------|
| Ashley White | E.T. | 3 | 2011-01-02 |
| Brittany Harris | Raiders of the Lost Ark | 2 | 2011-01-30 |
| Brittany Harris | Raiders of the Lost Ark | 4 | 2011-01-12 |
| Brittany Harris | The Sound of Music | 2 | 2011-01-20 |
| Chris Jackson | E.T. | 2 | 2011-01-22 |
| Chris Jackson | Raiders of the Lost Ark | 4 | NULL |
| Chris Jackson | The Sound of Music | 3 | 2011-01-27 |
| Daniel Lewis | Snow White | 4 | NULL |
| Elizabeth Thomas | Avatar | 3 | 2011-01-15 |
| Elizabeth Thomas | Snow White | 5 | 2011-01-19 |
| James Cameron | Avatar | 5 | 2011-01-20 |
| Mike Anderson | Gone with the Wind | 3 | 2011-01-09 |
| Sarah Martinez | Gone with the Wind | 2 | 2011-01-22 |
| Sarah Martinez | Gone with the Wind | 4 | 2011-01-27 |

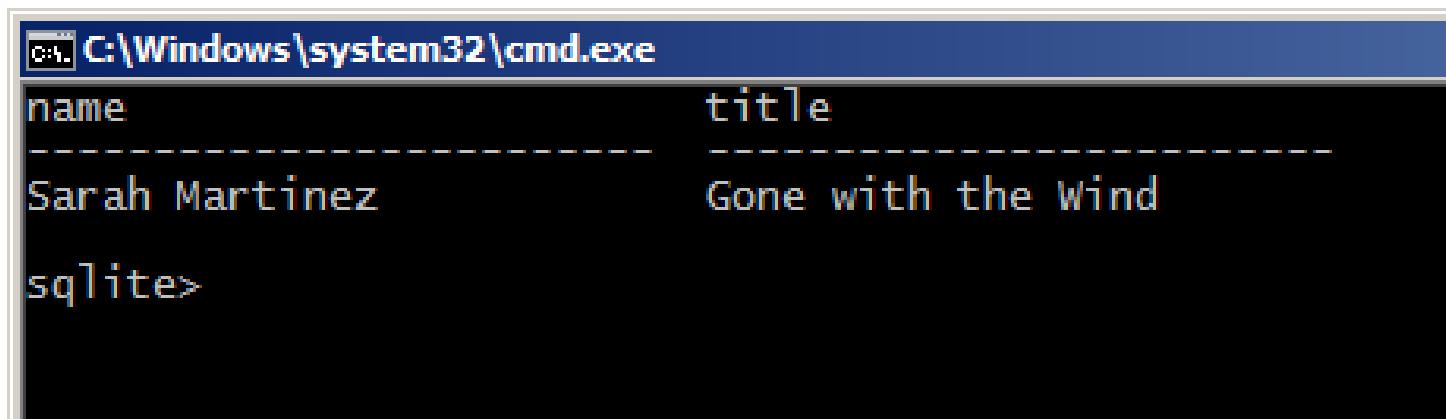
sqlite> ■

Task 06

Task:

For all cases where the same reviewer rated the same movie twice and gave it a higher rating the second time, return the reviewer's name and the title of the movie.

Expected output:



```
C:\Windows\system32\cmd.exe
sqlite>SELECT name, title FROM reviews WHERE name = 'Sarah Martinez' AND title = 'Gone with the Wind'
sqlite>
```

The screenshot shows a Windows Command Prompt window with the title bar "C:\Windows\system32\cmd.exe". The command "SELECT name, title FROM reviews WHERE name = 'Sarah Martinez' AND title = 'Gone with the Wind'" is entered at the sqlite> prompt. The output displays two columns: "name" and "title". A dashed horizontal line separates the header from the data. Below the line, the row "Sarah Martinez" is listed under "name" and "Gone with the Wind" is listed under "title". The "sqlite>" prompt appears again at the bottom.



Task 07

Task:

For each movie that has at least one rating, find the highest number of stars that movie received. Return the movie title and number of stars. Sort by movie title.

Expected output:



```
C:\Windows\system32\cmd.exe
title          max(stars)
-----
Avatar         5
E.T.           3
Gone with the Wind 4
Raiders of the Lost Ark 4
Snow White     5
The Sound of Music 3

sqlite> -
```

Task 08

Task:

For each movie, return the title and the ‘rating spread’, that is, the difference between highest and lowest ratings given to that movie. Sort by rating spread from highest to lowest, then by movie title.

Expected output:

| title | result_ |
|-------------------------|---------|
| Avatar | 2 |
| Gone with the Wind | 2 |
| Raiders of the Lost Ark | 2 |
| E.T. | 1 |
| Snow White | 1 |
| The Sound of Music | 1 |



Task 09

Task:

Find the difference between the average rating of movies released before 1980 and the average rating of movies released after 1980. (Make sure to calculate the average rating for each movie, then the average of those averages for movies before 1980 and movies after. Don't just calculate the overall average rating before and after 1980).

Expected output:



```
C:\Windows\system32\cmd.exe
result_
-----
0.055555555555549
sqlite> ■
```

Credits and Materials

- [Get started with SQL: Plan and design a database](#) by Thomas Nield
- Tutorial "Beginner's Guide to Data Modelling" via http://www.databaseanswers.org/tutorial4_data_modelling/index.htm
- “Industry Data Models” via http://www.databaseanswers.org/data_models/
- MOOC course on databases [Introduction to Databases](#) by [Jennifer Widom](#).
- “SQL Exercises, Practice, Solution” via <http://www.w3resource.com/sql-exercises/>
- "SQLBolt - Learn SQL with simple, interactive exercises" via <https://sqlbolt.com/>
- SQL tasks with different difficulty levels can be found on [HackeRank](#)



Submission

- Use StudIP to upload your solution (PDF report with SQL queries)
- You should upload PDF report with verified SQL queries
 - Further information on the SQL verification system is announced separately
- Name convention for your submission file (without extension)
 - **E03_FIRSTNAME LASTNAME**
- Submission deadline (it is a “soft” deadline)
 - 10 days after this exercise starts
 - Some exercises could take a bit more time and could be submitted later
 - NOTE: to receive feedback, you should first submit your progress

