ReadTrack: School Reading Challenge

Scenario. Your school runs a reading programme. You're given three CSV files with members, books, and reading logs. The provided SQLite database file exists but is empty. Your job is to: (1) import the CSVs into a normalized schema, (2) build a small Flask app that takes a book title from a form and shows per-class readership, and (3) extend the app with extra pages, links via `url_for()`, and simple CSS.
For a timed practice, you should complete Tasks 1 to 3 in 50 min.

Database schema

- Member
  One row per student in the programme.
  MemberID is formatted like M-2023-007. Use Class (e.g., 4A2) and IndexNo for grouping and display; Gender is M/F. YearEnrolled is the intake year.
- Book
  One row per book. BookID is the integer primary key. Includes Title, Author, and Genre (chosen from a fixed set).
- ReadingLog
  One row per (member, book) pair with the date they completed it. We only count at most once per member per book (i.e., re-reads don't create duplicates). Foreign keys point to Member and Book.
  Primary key is (MemberID, BookID); DateCompleted is stored as YYYY-MM-DD.

Follow the instructions in `task_1.ipynb` to create `readtrack.db`.

Task 1

The files `members.csv`, `books.csv` and `reading_logs.csv` contains the students, books, and reading records of the students involved in the reading programme. The first row of each file contains the header of the respective columns. Each row in the files is a comma-separated list of values.

Write a Python program to insert all information from the files into the database. Do this in `task_1.ipynb`.

Hint: There are some duplicates in `reading_logs.csv`. You will have to factor that in when writing the SQL query.

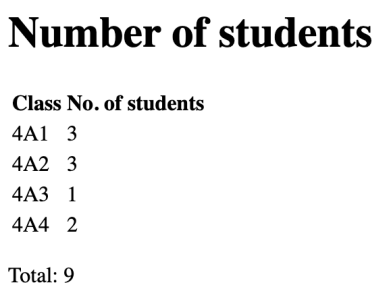
Task 2

Create a Flask web application in the `Task_2` folder. It should:

- Accept a form submission for a book title
- Queries the database
- Tallies the number of students who read it by class

Refer to the following segment of sample output and display the following information on the results page:

- Book title
- A table containing the number of students who read the book by class
- The total number of students who read the book



Number of students who read Fantasy Tales Vol 3

Class	No. of students
4A1	3
4A2	3
4A3	1
4A4	2

Total: 9

Task 3

Create another web application in the `Task_3` folder, formatted appropriately using css, which provides the following functionality.

1. A search page where the user can enter the class (4A1, 4A2, 4A3, or 4A4) and the gender (Male, Female, Both) of a specific group of students. (through a dropdown list)
2. The search result will be displayed in a table form to list out all the `MemberID` of the students who meet the criteria, their index number, along with all the genres of the books each student has read.
3. Users can click on a link behind each `MemberID` to view, in a table format, a list of book titles that the student has read and their corresponding `BookID`, along with the date the student completed the book.

Refer to the following segment of sample output.

Search for Students

Class: 4A1

Gender: Male

Search

Student List

MemberID	Index No	Genres
M-2023-001	1	Fantasy, Horror, Mystery, Sci-Fi
M-2023-003	3	Historical, Horror, Mystery, Non-Fiction, Sci-Fi
M-2023-005	5	Historical, Horror, Mystery, Non-Fiction
M-2023-007	7	Fantasy, Horror, Mystery, Non-Fiction
M-2023-009	9	Fantasy, Horror, Non-Fiction, Sci-Fi

Student Book Info

Book Title	BookID	Completion Date
Fantasy Tales Vol 1	1	2024-02-05
Mystery Tales Vol 1	3	2024-05-21
Sci-Fi Tales Vol 2	8	2024-05-03
Mystery Tales Vol 2	9	2024-06-24
Horror Tales Vol 4	24	2024-06-04

Task 4 (optional)

Create another web application in the `Task_4` folder, formatted appropriately using css, which provides the following functionality.

1. A form submission containing a dropdown list containing the 12 different months of the year.
2. Queries the database for the students who finished reading at least one book in the selected month, along with a list of book(s) that the student has read.
3. Display a table containing the `MemberID` of the students who completed their book(s) during that month and the titles of the book(s) that they read.

Refer to the following segment of sample output.

Book Completion Date

Month: Feburary

Search

Student List

MemberID	Book Title
M-2023-024	Historical Tales Vol 2
M-2023-010	Sci-Fi Tales Vol 5
M-2023-014	Historical Tales Vol 5
M-2023-001	Fantasy Tales Vol 1
M-2023-022	Horror Tales Vol 4
M-2023-021	Horror Tales Vol 3
M-2023-002	Non-Fiction Tales Vol 4
M-2023-034	Sci-Fi Tales Vol 4
M-2023-009	Fantasy Tales Vol 3
M-2023-024	Sci-Fi Tales Vol 1
M-2023-033	Horror Tales Vol 4
M-2023-006	Mystery Tales Vol 5
M-2023-035	Fantasy Tales Vol 1
M-2023-033	Horror Tales Vol 3
M-2023-009	Non-Fiction Tales Vol 2
M-2023-028	Sci-Fi Tales Vol 1
M-2023-038	Historical Tales Vol 5
M-2023-030	Historical Tales Vol 1
M-2023-003	Non-Fiction Tales Vol 2
M-2023-004	Horror Tales Vol 4
M-2023-008	Horror Tales Vol 1

Task 5 (optional)

Create another web application in the `Task_5` folder, formatted appropriately using css, which provides the following functionality.

1. A form submission where the user can input 3 fields: Member ID, Book Title, and the date on which the student completed the book.
2. Uses the information submitted to add a new set of values to the `ReadingLog` table.
3. Users will be sent to a success page after successfully submitting the form, where information about the student of the specified `MemberID` (in the form) is reflected in a table. The table should contain the titles of the books the student has read, as well as the date the student has completed reading the books.

Refer to the following segment of sample output.

Update ReadingLog

Member ID: M-2023-001

Book Title: Non-Fiction Tales Vol 1

Date Completed: 2024-06-17

Search

Success!

Here are the reading logs of M-2023-001:

Book Title	Date Completed
Fantasy Tales Vol 1	2024-02-05
Mystery Tales Vol 1	2024-05-21
Non-Fiction Tales Vol 1	2024-06-17
Sci-Fi Tales Vol 2	2024-05-03
Mystery Tales Vol 2	2024-06-24
Horror Tales Vol 4	2024-06-04