

ISE3235
Database Design
Assignment-02

Advanced SQL Queries with a Death Note Themed Database

Overview

In this assignment, you will work with a relational database inspired by the *Death Note* anime. The database contains information about key characters, their interactions, and important events. Your goal is to write SQL queries to extract insights and analyze data through various SQL operations like joins, unions, grouping, and more complex conditions.

Database Structure

The database includes the following tables:

- **Characters:** Contains details about characters.
 - `character_id` (INTEGER, PRIMARY KEY)
 - `name` (TEXT): The name of the character.
 - `role` (TEXT): Role in the story (e.g., Kira, Detective).
 - `affiliation` (TEXT): Affiliation (e.g., Task Force, SPK).
 - `is_human` (BOOLEAN): Whether the character is a human or not.
- **Deaths:** Records the details of deaths.
 - `death_id` (INTEGER, PRIMARY KEY)
 - `character_id` (INTEGER, FOREIGN KEY): ID of the character who died.
 - `cause_of_death` (TEXT): Cause of death.
 - `death_date` (DATE): Date of the death.
 - `kira_involved` (BOOLEAN): Indicates if Kira was involved in the death.
- **Ownership:** Tracks ownership details of Death Notes.
 - `ownership_id` (INTEGER, PRIMARY KEY)
 - `character_id` (INTEGER, FOREIGN KEY): ID of the character who owned the Death Note.
 - `note_id` (INTEGER, FOREIGN KEY): ID of the Death Note.
 - `start_date` (DATE): Start date of ownership.
 - `end_date` (DATE): End date of ownership (can be NULL if still ongoing).
- **Notes:** Details about the Death Notes.
 - `note_id` (INTEGER, PRIMARY KEY)
 - `origin` (TEXT): Where the note came from (e.g., Shinigami Realm).
 - `current_location` (TEXT): Where the note is currently located.
 - `is_active` (BOOLEAN): Whether the note is active.
- **Events:** Records major events in the story.
 - `event_id` (INTEGER, PRIMARY KEY)

- `event_name` (TEXT): Name of the event.
- `event_date` (DATE): Date of the event.
- `location` (TEXT): Location of the event.
- `description` (TEXT): A brief description of the event.

Instructions

1. Set Up the Database:

- Use the provided Python script to create the database and tables.
- The script includes methods to create tables and insert initial data for the `Characters`, `Deaths`, `Ownership`, `Notes`, and `Events` tables.
- You **do not need to write SQL** for creating tables or inserting data.

2. Write SQL Queries:

- Write SQL queries for each of the 20 tasks in the provided Python file.
- Each task is marked with a comment above the `sql` variable, describing the requirement.
- Write the SQL query as the value of the `sql` variable for each task.
- Ensure that the SQL query matches the problem statement and solves the task correctly.

3. Tasks:

- The following tasks require your input. Only write the SQL queries in the designated `sql` variable:
 - **Task 1:** List all characters and their respective roles.
 - **Task 2:** List all deaths along with character names.
 - **Task 3:** Find all Shinigami who have owned a Death Note.
 - **Task 4:** List all events that occurred after L's death.
 - **Task 5:** Find the current owner of each Death Note.
 - **Task 6:** Count the number of deaths caused by Kira.
 - **Task 7:** List all characters affiliated with the "Task Force."
 - **Task 8:** Find the total number of active Death Notes.
 - **Task 9:** List all Death Notes and their current and past owners.
 - **Task 10:** Calculate the average duration of Death Note ownership.
 - **Task 11:** List characters and the number of deaths they are associated with.
 - **Task 12:** Find characters who were never involved in any events.
 - **Task 13:** Get all characters along with events they were part of using a `UNION`.
 - **Task 14:** List the number of times each character owned a Death Note.
 - **Task 15:** Get a list of all Death Notes and the number of characters who owned them.
 - **Task 16:** List all events that took place in "Tokyo" along with character names.
 - **Task 17:** Find the characters who have never owned a Death Note.
 - **Task 18:** Find which character has owned the most Death Notes.
 - **Task 19:** Find all deaths that were not caused by Kira.

- **Task 20:** List all characters involved in events both before and after L's death.

4. **Testing Your Queries:**

- Run the provided script after writing each query to test its functionality.
- Ensure that the output of each query is as expected.
- Correct any errors or mismatched results.

5. **Submission:**

- Only modify the areas marked for writing SQL queries in the provided Python file.
- Submit your modified Python file.