Library Management System Exercise

Based on SQLite Notebook Commands

Exercise Overview

Create a simple library management system using the same SQLite commands demonstrated in the notebook, but applied to a library context.

Part 1: Setup and Import

1. Import the SQLite3 module
2. Print a success message: "SQLite3 module imported successfully!"

Part 2: Database Connection

1. Connect to a database file called 'library.db'
2. Create a cursor object for executing SQL commands

Part 3: Table Creation

1. Create a table named 'books' with the following structure:
    - id: Integer, Primary Key, Auto-increment
    - title: Text, Not Null
    - author: Text, Not Null
    - available: Integer (1 = available, 0 = borrowed)
2. Use IF NOT EXISTS to avoid errors if table already exists
3. Commit the transaction
4. Print confirmation message: "Table 'books' created successfully"

Part 4: Data Insertion

1. Insert two books into the table:
    - Book 1: Title = '1984', Author = 'George Orwell', Available = 1
    - Book 2: Title = 'To Kill a Mockingbird', Author = 'Harper Lee', Available = 1
2. Commit the changes
3. Print confirmation message: "Inserted 2 books into the library"

Part 5: Data Retrieval

1. Execute a SELECT query to retrieve all books
2. Use fetchall() to get all results
3. Display the results showing all books with their details

Part 6: Data Update

1. Update '1984' status from available (1) to borrowed (0)
2. Use a WHERE clause to target the specific book by title
3. Commit the transaction
4. Print confirmation message: "Updated '1984' status to borrowed"
5. Verify the update by selecting the '1984' record again

Part 7: Data Deletion

1. Delete 'To Kill a Mockingbird' record from the books table
2. Use a WHERE clause to target the specific book by title
3. Commit the transaction
4. Print confirmation message: "Deleted 'To Kill a Mockingbird' record"
5. Verify deletion by selecting all remaining records

Part 8: Parameterized Insert

1. Create variables for a new book:
    - Get book title from user input
    - Set author to 'J.K. Rowling'
    - Set available to 1
2. Insert the new book using parameterized query (with ? placeholders)
3. Commit the transaction
4. Print confirmation with the inserted values
5. Display all records to verify the insertion

Part 9: Connection Cleanup

1. Close the database connection properly

2. Print confirmation message: "Database connection closed"

Part 10: Context Manager (Bonus)

1. Demonstrate using SQLite with a with statement
2. Connect to 'library.db' within the context manager
3. Execute a SELECT query to show all books
4. Note that the connection closes automatically