Student Information Management System

Target

Develop a simple student information management system using Python as the main programming language and operating the database through SQL. The project will include CRUD functionality, data analysis and a basic user interface.

technology stack

Python: Primary programming language
SQL: database query language
SQLite: lightweight database, suitable for teaching and small projects

Project requirements

(f1) student to choose course,
(f2) student accommodation related information management,
(f3) students buy books for the related course,
(f4) students to register/update his or her information

1. Database setup
    a. Create and initialize database using SQLite.
    b. Create tables containing student information, course information, course schedules, student advisor, etc. Fields include student number, name, year of enrollment, major, gender, etc.
2. Data operations
    a. Implement basic CRUD operations: add new students, update student information, delete student records, query student information.
    b. Generate sample column data, then insert it into the basic data table for database testing and generate a test report.
    c. Use SQL statements for data manipulation for f1 to f4.
3. Data analysis and reporting
    a. Use Pandas or SQL to analyze data,
        i. Calculate the number of students and gender ratio for each major.
        ii. Analyze the comparison of results in different majors
        iii. Analyze the relationship between student age and test scores
        iv. Analyze the relationship between students' regional distribution and test scores
        v. Other analysis
    b. Generate and display analysis reports, either as text output or using charts (e.g. using matplotlib or seaborn)
4. Miscellaneous
    I. Build the GUI to visualize the results
    II. Build the DB test code
    III. Run the concurrent query tests

Project structure:

```
student-info-system/
|
 ├── db/
| └── database.sqlite # SQLite database file
|
 ├── modules/
| ├── database.py # Database operation related code
| ├── analysis.py # Data analysis related code|
└── main.py # Main program entry
```