HW 3 - Decision Making with External Data Input (Python Assignment)

Start Assignment

- Due Nov 3 by 11:59pm
- Points 25
- Submitting a file upload

HW - Decision Making with External Data

Input

NOTE: All coding problems must be done via code - no hard coding of any type is allowed for credit. Any crash or execution errors that are not gracefully handled will result in a mandatory 20% reduction.

This assignment extends upon HW 2. You are tasked with working on a Python program to process and analyze data from multiple external sources, including CSV files and a database. The goal is to calculate and display final grades for students based on weighted scores.

Tasks:

1. **Prepare the Data Files (Points: 1)**
    - Use the provided Python-HW-WeightedSums-Data.csv file, which contains data for students Student1, Student2 and Student3.
    - Use an SQLite database (StudentData.db) to store Student1, Student2, and Student3 data.
    - Prepare a second CSV file (StudentA_B_Data.csv) with data for two additional students:
        - StudentA and StudentB with the same fields as in the first csv file.
        - Student A scores (85, 130, 60, 80)
        - Student B scores (40, 100, 50, 65)
2. **Stack up the Database and read CSV File (Points: 7 + 3 = 10)**
    - Import Student1, Student2, and Student3 data from the Python-HW-WeightedSums-Data.csv file into the SQLite database (StudentData.db).

    - Table Name: Students
    - Columns: Name, Quizzes, Homework, Team Project, Final Exam
  - Read StudentA and StudentB data from the second CSV file (StudentA_B_Data.csv).

3. **Process All Data (Points: 6 + 6 =12)**
   - Combine the data from the database and the second CSV file into a DataFrame (pandas).
   - Calculate the final scores for all students based on the weighted formula from HW 2 assignment.

4. **Save and Display Results (Points: 2)**
   - Save the combined data (with calculated final scores) to a new CSV file (FinalStudentGrades.csv).
   - Display the final grades in a tabular format using Python (e.g., tabulate or pandas).

There is a provided csv file in the assignment zip folder. There is also a base Python file for you to use and add your code to.

Download the zip folder here: **ExternalDataInput.zip (https://canvas.asu.edu/courses/234472/files/112833187?wrap=1)** ⬇ **(https://canvas.asu.edu/courses/234472/files/112833187/download?download_frd=1)**
(https://canvas.asu.edu/courses/234472/files/112833181/download)

Take time to look through the csv and the Python file. You are not expected to edit the csv file at all, but since your code should work for the mentioned properly formatted csv file with any number of students, you may edit it for testing purposes, but ensure that your code works with the provided one.

There are five functions in the Python file that are effectively blank (remember that the pass keyword allows you to make stubs for code). Implement your solution in the matching function for each of the requirements above.

Submission Details:

.zip folder comprising:-

- your .py file.
- your terminal displaying final results snapshot.
- your generated FinalStudentGrades.csv file.

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Criteria	Ratings				Pts
Prepare the Data Files	**1 pts** **Full Marks** Properly prepares and organizes both CSV files and SQLite database for further use.		**0 pts** **No Marks**		1 pts
Stack up the Database and Read CSV File	**10 pts** **Full Marks** Imports Student1, Student2, and Student3 into the SQLite database correctly. Reads StudentA and StudentB data from the second CSV file.	**7 pts** **1st subtask**	**3 pts** **2nd subtask**	**0 pts** **No Marks**	10 pts
Process All Data	**12 pts** **Full Marks** Combines the database data and the second CSV file data into a pandas DataFrame. Calculates the final scores using the correct weighted formula.	**6 pts** **Partial Task**	**0 pts** **No Marks**		12 pts
Save and Display Results	**2 pts** **Full Marks** Final data (including calculated scores) is saved to FinalStudentGrades.csv without errors. Outputs the final grades clearly in the terminal using pandas or tabulate.	**1 pts** **Partial Task**	**0 pts** **No Marks**		2 pts
					Total Points: 25