

Python Homework: Student Grade Manager (File Handling)

Objective

Create a Python program that manages a list of students and their grades using file operations. The program must read from and write to a file named 'students.txt'.

Requirements

- 1. Check File Existence: If 'students.txt' does not exist, create it and add the following sample data:
John Smith, 85
Emily Johnson, 90
Michael Brown, 78
- 2. Menu System: The program must display a menu like this:
 1. Show all students
 2. Add a new student
 3. Remove a student
 4. Update a student's grade
 5. Show class average
 6. Exit
- 3. Functional Requirements:
 - Show all students: Read and print all lines from students.txt.
 - Add new student: Append a new line with 'Name, Grade' format.
 - Remove student: Delete the line matching a given name (case-insensitive).
 - Update grade: Change the grade of an existing student.
 - Show average: Read all grades and calculate the class average.
- 4. Error Handling:
 - Handle possible errors such as:
 - File not found
 - Empty file
 - Invalid grade input
 - Student not found
- 5. Output Example:
Enter your choice: 1
John Smith - 85
Emily Johnson - 90
Michael Brown - 78
- 6. Bonus (optional for extra credit):
 - Save all deleted students to a backup file named 'deleted_students.txt'.
 - Automatically create this backup file if it doesn't exist.

Deliverables

Students must submit:

1. The Python script (.py file).
2. A short screen video (max 5 minutes) explaining:
 - The structure of their code (functions, loops, conditions).
 - How file handling was implemented ('open', 'read', 'write', etc.).
 - A demonstration of the menu running.