University Student Records – FinalExam3

Create a program in Java that processes student records.

1. Create FileHandler class that takes a filename and has a readData() method. (5 marks)
2. Create abstract class Student with attributes id, name, and enrollmentYear. Getters/setters included. (5 marks)
3. Create class UndergraduateStudent extending Student with attributes gpa and creditsEarned. (5 marks)
4. Create class GraduateStudent extending Student with attributes gpa and researchPapers. (5 marks)
5. Create class PhDStudent extending Student with attributes gpa and citations. (5 marks)
6. Create interface IAcademicPerformance with method performanceScore() returning double. Implement rules:
    - Undergraduate → gpa * creditsEarned / 30
    - Graduate → gpa * researchPapers * 2
    - PhD → gpa * citations / 10 (5 marks)

Main Program:

- Load undergrad.txt, grad.txt, phd.txt. Save in Map<String, ArrayList<Student>>. (5 marks)

1. Calculate average performance score per category, output to files. (15 marks)
2. Find top 10 students per category. Save to file. (10 marks)
3. Find best performing students enrolled in 2024 with score > 80. Save to file. (10 marks)
4. Implement **Singleton design pattern** for a class UniversityDatabase. (10 marks)
5. Find student with highest performance score overall:
    - (i) Without threads (10 marks)
    - (ii) With threads (20 marks)