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ENCE 420 – T01

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ENCE 420 Software Engineering Coding Assignment 1

**Requirements Specifications:**

1. Functional Requirements:
   * Add a student (id, name)
   * Remove a student
   * Enroll a student in a course (one student -> many courses)
   * Remove a course from a student
   * Assign grades to a student in a course (multiple grades per course? Or just one grade per course?)
   * Calculate the average grade for a course (per student)
   * Calculate the overall GPA of a student (across all courses) (id, name, each course with grades and average, plus overall GPA).
   * Display all students, their courses, and grades
   * Save and load student data from a file (persist and restore all data to/from JSON so data survives across runs.
   * Provide menu-driven command line interfacing with exactly the options of:

A screen shot of a computer

AI-generated content may be incorrect.

1. **Non-functional requirements:**
   * OOP: Use classes/objects; clear separation of concerns
   * Usability: Input validation with helpful error messages; no crashes from bad input
   * Maintainability: Docstrings, readable code, single responsibility per class.
   * Portability: Standard Python 3
   * Persistence Format: stable human-readable.
2. **Constraints and Assumptions:**
   * Grades are numeric (float or int)
   * GPA is unweighted average of course averages (no credits/weights)
   * Student IDs are unique
   * A student can exist with zero courses & courses can exist with zero grades (if average is does not exist, course grades are not counted in GPA).

**UML Sketch / Diagram**

**A diagram of a computer program

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