Final Project

Student and Professor Management System

EM Lyon Edition

Academic Year: 2024–2025

Course: C Programming

Instructor: Arij Azzabi

Contents

1 Project Context

Context

At EM Lyon Business School, academic administration includes managing both student records and professor supervision responsibilities. This project simulates a simplified internal system to manage these relationships using the C programming language.
You are tasked with creating a console-based application that stores, manipulates, and links data related to students and professors using **structures**, **pointers**, and **input validation**.

2 Learning Objectives

Learning Goals

- Understand and implement `struct` in C to model real-world entities.
- Use `pointers` for dynamic memory management.
- Apply input validation techniques to ensure robust and secure data handling.
- Simulate real-world interactions between students and professors.

3 Entities to Manage

3.1 Students

Student Fields

Each student must have the following information:

- A unique ID (positive integer)
- Full name
- Program (e.g., MSc in Finance)
- GPA (float between 0.0 and 4.0)

3.2 Professors

Professor Fields

Each professor must have:

- A unique ID
- Full name
- Department (e.g., Marketing, Finance)
- A list of supervised students (maximum 10)

4 Core Functionalities

4.1 Student Features

- Add a new student with validated inputs.
- Display the full list of students.
- Search for a student by ID.
- Modify or delete a student record.

4.2 Professor Features

- Add a new professor.
- Display all professors.
- Assign a student to a professor (mentorship or thesis supervision).
- Display students supervised by a specific professor.

5 Interaction Scenarios

Scenario 1 – Supervision Assignment

Professor **Martin** from the Marketing department wants to supervise top-performing students. The system should allow assigning a student to Professor **Martin**, ensuring he doesn't exceed the supervision limit of 10 students.

Scenario 2 – Invalid Input Prevention

A user tries to enter a GPA of 4.9 or a negative student ID. The system should reject such entries and prompt the user to enter a valid value.

Scenario 3 – Search and Relationship View

An administrator wants to view all students supervised by Professor Claire. The system should retrieve and display their names, IDs, and GPAs.

6 Constraints

Project Constraints

- Use only **standard C** (no external libraries).
- Use **dynamic memory allocation** (`malloc`, `free`) where appropriate.
- Ensure modular programming with clear function separation.
- Validate all user inputs.
- Ensure the program has no memory leaks.

7 Optional Enhancements (Bonus)

Bonus Ideas

- Save and load student and professor data using files.
- Support co-supervision (a student having multiple professors).
- Sort students by GPA or by academic program.

Submission Requirements

To Submit:

- Well-documented C source code.
- A short README file explaining how to compile and run the project.
- Screenshots of program output or a demo video :)