# Student Management System

This is a student management system implemented in C++ that provides functionalities to manage student data. The system allows you to add, view, search, and display students based on specific criteria like the highest and lowest average grades.

## Features

1. 1. \*\*Add New Student: Allows users to input and add new students to the system with details such as student code, full name, date of birth, and average grade.\*\*
2. 1. \*\*Display All Students: Displays the list of all students with their details.\*\*
3. 1. \*\*Search by Student Code: Search for a student by their unique student code.\*\*
4. 1. \*\*Display Students with the Highest Average Grade: Displays the student(s) with the highest average grade.\*\*
5. 1. \*\*Display Students with the Lowest Average Grade: Displays the student(s) with the lowest average grade.\*\*
6. 1. \*\*Data Persistence: Student information is saved and loaded from a file (danhsachsinhvien.txt), ensuring data is preserved even after the program is closed.\*\*

## How to Use

* Run the program: PLEASE RUN THE ONLY .EXE FILE
* The following options will be available:
* Add new student to the list: Enter student details like code, full name, date of birth, and average grade.
* Display all students: View a list of all students in the system.
* Search for a student by student code: Search for a specific student by entering their student code.
* Display student with the highest average grade: View the student(s) with the highest grade.
* Display student with the lowest average grade: View the student(s) with the lowest grade.
* Exit: Exit the application.

## File Format

The file danhsachsinhvien.txt stores the student information in the following format:

* - The first line contains the number of students in the list.  
  - Each student’s information is stored in the following order:  
   - Student Code  
   - Full Name  
   - Date of Birth (dd/mm/yyyy)  
   - Average Grade  
  - Do not change the danhsachsinhvien.txt file

## Code Explanation

* - Standardization of Input: The system ensures that the name is capitalized properly and that the date format is consistent (dd/mm/yyyy).
* - Validation: The program validates the student code, date of birth, and average grade to ensure correctness.
* - Leap Year Check: The system accounts for leap years when checking the validity of a student's date of birth.

## License

Just build it myself

## Acknowledgments

The system is built using C++ Standard Library (STL) and basic file handling. Special thanks to the creators of C++ documentation and tutorials.

## For Examiner

Thank you, teacher, for reviewing my code. I have added detailed notes for each function, method, and feature in the code. I hope you can provide feedback and help improve my code so that I can perform better in the future.  
- 24110215  
- Lương Chí Dũng

## NOTES

THIS PROGRAM CAN NOT RUN WITH A LIST OF 100000 Students or above because I use linear search for searching (I'll overload operators to apply binary\_search or something faster on this program, but I think there won't be any school that has more than 10000 students).