CENG 102 – Algorithms and Programming II

ASSIGNMENT #1

Assignment Title: Mini Student Management System

General Description:

In this project, students are expected to develop a basic student information system using the C programming language. The project must be carried out in groups (with a maximum of 3 members). The system should be capable of storing the first name, last name, student number, and three course grades (midterm, assignment, final exam) for up to 100 students, and allow various operations to be performed on this data.

Through the program, users should be able to add new student information, list all students and their details, search for a student-by-student number, update or delete records, sort students by grade point average (GPA), and save the sorted data.

Each student record will store the following details:

- Full Name (maximum 50 characters)
- Student numbers (an integer between 0 and 100)
- Three Grades (Midterm, Assignment, Final Exam – each an integer between 0 and 100)
- GPA (calculated as the average of the three grades)

Required Functionalities:

The program must implement the following features:

The program should start with a menu and prompt the user to select an operation.

1. **File Creation**
    - A data file (.txt or .dat) should be created to store student records.
    - The initial file should be empty and contain default values (e.g., 0 for integers, empty string ("") for text fields).
2. **Add New Student**
    - The user should be prompted to enter full name, student ID, and three grades.
    - The GPA should be calculated automatically with the following weights: Midterm 40%, Assignment 10%, and Final Exam 50%.
    - The entered data should be saved in the file at the appropriate location based on student number.
    - If a student with the same ID already exists, the entry should be rejected with a warning message.
3. **List all students**
    - The program should display the full name, student number, grades, and GPA of all students already saved in the file.
4. **Search, Edit, and Delete Student Records**
    - The user should be able to search for a student-by-student number.
    - If a match is found, all information regarding the student should be displayed.
    - The user should then be able to edit the record and save the changes or delete the student entirely from the file.
5. **Sort Students**
    - Students should be sorted in descending order by GPA and displayed as a full list.
    - If desired, the user should be able to save the sorted list as a separate file.

6. **Exit**

    - The program should run via a menu-based interface and continue to operate until the user chooses to exit.
    - After completing an operation or encountering invalid input, the program should return to the previous (or any appropriate) menu.

Technical Requirements

- The program must include error handling to prevent crashes and instead inform the user, then return to the previous (or any appropriate) menu.
- Pointers, structures, and file operations **must** be used meaningfully and effectively.
- The code should be explained briefly through comment lines where necessary (in English).

Submission Requirements:

- The code must be compliable and executable.
- The project must be completed in groups of 2 or 3 students.
    - List of groups is attached to this file! No changes will be made to the groups under any circumstances, regardless of the reason.
- The project should be submitted as a single .c file, and only one member of the group should submit it via email before the deadline.
- The top of the .c file must include the student numbers and full names of all group members in comment lines.
- **Submission deadline:** *29 May 2025 – 23:59*
    - *Late submissions will not be accepted or graded.*
- **Submission email:** ikchusnaibis@gmail.com

Demo Presentation:

- Some groups will present their project on **Friday, May 30**, and others on **Wednesday, June 4**, for a brief **5 to 10 minutes** demo.
- No additional presentation slides are required.
- The demo is **mandatory**, and all group members **must attend**. Projects without a demo will **not be evaluated**, and members who do not attend will be considered as **not having submitted** the assignment.
- Group members who cannot explain the project or provide satisfactory answers during the demo will receive significantly lower grades.

NOTE: Projects found to contain plagiarism or copied content will **not be evaluated under any circumstances**. Responsibility for such issues lies entirely with the students.

Grading:

10 pts – File Creation
10 pts – Add New Student
10 pts – List Students
10 pts – Search Students
10 pts – Edit Students
10 pts – Delete Students
10 pts – Sort Students
5 pts – Menu System and Flow
10 pts – Error Handling and User Feedback
10 pts – Effective use of Pointers, Structs and File Operations
5 pts – Code Quality (e.g. naming conventions and use of comment lines)

PROJECT GROUPS

Groups	Student No	Name	Surname
Group 1	220401077	Ceren	Tolunay
	220401044	Özgür	Dağlı
	220401030	Hilal	Ay
Group 2	220401078	Enes	Türkmenoğlu
	230401096	İbrahim	Ayanoğlu
	220401054	Yılmaz Enes	Girgin
Group 3	240401030	Barış Eren	Şahin
	220401041	İbrahim	Çelik
	220401065	Necati	Kurtaran
Group 4	220401053	Yalın	Gedik
	220401029	Melihcan	Arslaner
	220401089	Abdüssamed	Yurduseven
Group 5	230401089	Behzat	Yıldırım
	230401039	Hasan	Demirci
	230401022	Olcan Osman	Akyüz
Group 6	230401080	Muhammed İkbal	Teymurtaş
	240401058	Tuna Alper	Demir
	240401063	Kadir	Duraklı
Group 7	230401041	Gökhan	Demirci
	230401087	Muhammet	Yıldırım
	230401074	Mustafa Emirhan	Özer
Group 8	230401054	Ahmet Buğra	Günay
	230401048	Mehmet	Emer
	230401075	Mustafa Bora	Özvatan
Group 9	240401098	İsmail	Tarım
	240401034	Süleyman Ege	Aktaş
Group 10	230401085	Ahmet Buğra	Yanga
	240401035	Arda	Aktürk
	230401059	Yusuf Kayra	Karakurt
Group 11	230401040	Ömer Selahattin	Demirci
	230401057	Kamil Kaan	Kabasakal
	230401050	Abdullah	Fidan
Group 12	230401069	Yaprak	Köse
	230401024	Hilal	Aliş
	230401058	Özgür	Karaaslan
Group 13	230401025	Mustafa Salih	Alp
	230401046	Mustafa	Eken
	230401095	Mehmet Meriç	Yüksel
Group 14	230401073	Akif	Özdemir
	230401045	Berkan	Dönmez
Group 15	230401063	Abdullah Samet	Kaşka
	230401029	Abdulkadir	Baran
	240401038	Mehmet Kağan	Arslan
Group 16	230401060	Miraç	Karasu
	230401101	Berçem Yaprak	Aslan
Group 17	240401113	Sıla	Yüzer
	240401097	İlayda	Tan
	230401119	Abdurrahman	Gürçay
Group 18	240401095	Arda	Sönmez
	240401093	Batuhan	Sevindik
	240401066	Hüseyin	Er
Group 19	230401052	Alican	Güldoğuş
	230401090	Mehmetcan	Yıldırım
	240401096	Mehmet Emir	Şençoban
Group 20	240401094	Irmak	Sezer
	240401028	Zeynab	Asgarova
Group 21	230401078	Elif Asya	Tanrıvere
	230401065	Göknur	Kaya
Group 22	230401055	İlker Malik	Gürdemir
	230401019	Ecem Su	Afşin
	230401036	Eda	Çiçek
Group 23	240401128	Samet Çağatay	Gaser
	230401067	Mehmet Nail	Keskin
Group 24	240401117	Yusuf	Polat
	240401071	Azizcan	Güzel
	230401031	Furkan	Battal
Group 25	230401071	Muammer	Orhan
	230401021	Ardıl	Akyıldırım
	240401090	Arda	Saraçoğlu
Group 26	230401086	Tuna	Yazıcı
	230401093	Arda Berkay	Yılmaz
Group 27	230401077	Sümeyra	Serçe
	230401053	Hayat	Güler
Group 28	230401049	Asude	Ertuğrul
	240401126	Semiha	Ünal
	230401094	Halil Kerim	Yücel
Group 29	230401023	Muhammet Eren	Alemdar
	240401033	Ömer Ziya	Akay
Group 30	230401076	Mehmet Ali	Selimoğlu
	230401030	Muhammed Numan	Baş
Group 31	210401013	İbrahim Erol	Çakıcı
	210401051	Yücel	Bayram
	210401061	Samet Kağan	Demir
Group 32	220101055	Hamza	İçel
	220401039	Yusuf Salih	Cellek
Group 33	220401046	Barış	Derelioğlu
	220401002	Dinmukhammed	Konysbay
	220401047	Hikmet Berke	Dindar
Group 34	220401071	Aydın	Sarı
	220401088	Mahmut	Yiğit
Group 35	220401090	Mehmet Buğra	Yurttaş
	230401018	Myat Noe Thar	Myat Noe Thar
	230401032	Ege	Bertan
Group 36	230401037	Davut	Demir
	230401064	Ahmet Hakan	Kavsara
	230401070	Tufan	Mudarasız
Group 37	230401117	Uğurcan	Başoğlu
	220401057	Umut Ekin	Kasun
	240401044	İsacan	Bavuk
Group 38	220401051	Barış	Ercan
	220401070	Burak	Sarı
Group 39	220401008	Rüveyda	Talu
	220401075	Beyza	Tatlıdil