

SYSTEM SOFTWARE DEVELOPMENT USER GUIDE

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Test Our Program

Below are terminal commands so that we can execute our student management System
Kindly make sure all files are in same Folder

```
[k3h5z@remotelabm01 ~/CS]$ gcc main.c student.c -o main
[k3h5z@remotelabm01 ~/CS]$ ./main
```

After putting commands, you will see our management system

```
k3h5z@remotelabm01 ~/CS]$ gcc main.c student.c -o main
k3h5z@remotelabm01 ~/CS]$ ./main

=====
      2263 Project: Student_Management_System
    MADE BY DIVYANSHI, Muhammad Jahanzib, Swati Mehta
=====

    Press any key to continue...
```

Overview of Features

This Student Management System allows users to manage student records efficiently. These are its main features:

1. Add Student: Add a new student to the system by entering their ID, name, and grades for preregistered courses.
2. Display Students: View all students currently stored in the system.
3. Delete Student: Remove a student from the system by entering their unique ID.
4. Table Visualization: Display all students in a with their ID, name, and CGPA.
5. Bar Chart Visualization:
 - a. Press 1: Visualize course grades as bar charts for each student.
 - b. Press 2: Visualize CGPA as bar charts for all students.
6. Sort Students:
 - a. Sort students by ID, name, or GPA.
7. Search Student: Search for a specific student by their ID.
8. Modify Student: Update grades for an existing student by entering their ID.

9. Calculate Student Efficiency: Assess and categorize students' academic performance based on their GPA.
10. Exit Program: Save all data to a CSV file and exit the program.

Expected Inputs and Outputs

- **Inputs:**
 - Numeric IDs for students.
 - Grades for already registered courses (e.g., CS2043, CS2263).
 - Menu options (1–10) to navigate through features.
- **Outputs:**
 - Visualizations such as bar charts for grades or CGPA.
 - Displays the student records in a table format.
 - Success messages for actions like adding, deleting, or updating students.

Known Limitations and Special Instructions

Limitations

1. Input Validation:

- a. The program does not handle alphabets instead of numbers very well in numeric fields (e.g., IDs or grades). Ensure valid inputs are provided.
- b. Invalid menu options will show an error message but do not force shut the program.

2. File Handling:

- a. If students.csv is missing, the program will create a new file but will start with an empty record set.

Special Instructions

1. Always ensure that you have saved your data before exiting the program. Data is automatically saved to students.csv.
2. Use Valgrind to check memory management during testing:
valgrind --leak-check=full --show-leak-kinds=all ./main