(By Tech Involvers)

Project 1: Student Management System

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**Instructions:**

* Read the problem carefully before trying to solve it.
* Do the tasks on your own. Don’t copy it.
* The output of your program must be the same as given in the sample run.

#### **Overview:**

Develop a simple Student Management System (SMS) that performs various operations such as adding a student, displaying student details, searching for a student, and updating or deleting student records.

#### **Requirements:**

1. **Student Structure:**
   * Use a struct to represent a student. Include fields like ID, name, age, gender, and marks.
2. **File Handling:**
   * Store student data in a file to persist the data even after the program ends.
   * Implement functions to read from and write to the file.
3. **Functions:**
   * Add Student: Add a new student record.
   * Display Students: Display all student records.
   * Search Student: Search for a student by ID.
   * Update Student: Update details of an existing student.
   * Delete Student: Delete a student record.
4. **Enumerations and Macros:**
   * Use enum to define student gender.
   * Use macros for constants like the maximum number of students.
5. **Pointers and Arrays:**
   * Use pointers for dynamic memory allocation if needed.
   * Use arrays for storing student records in memory.
6. **Error Handling:**
   * Implement error handling for file operations and invalid inputs.

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### **Features Covered:**

1. **Structs and typedef:**
   * Student structure and Gender enum.
2. **File Handling:**
   * loadStudents and saveStudents functions.
3. **Functions:**
   * Adding, displaying, searching, updating, and deleting students.
4. **Error Handling:**
   * Checking for file operations and array bounds.
5. **Pointers and Arrays:**
   * Using arrays to store student records and pointers for dynamic memory (if extended).
6. **Input/Output and Operators:**
   * Using scanf and printf for input and output, and various operators within functions.