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#include <iostream>
#include <fstream>
#include <string>
using namespace std;

class Student {
public:
    int rollno;
    string name, division, address, dob, grade;
    float percentage;

    void getData() {
        cout << "\nEnter Roll No: ";
        cin >> rollno;
        cin.ignore(); // to ignore newline after number input
        cout << "Enter Name: ";
        getline(cin, name);
        cout << "Enter Division: ";
        getline(cin, division);
        cout << "Enter Address: ";
        getline(cin, address);
        cout << "Enter Date of Birth (dd/mm/yyyy): ";
        getline(cin, dob);
        cout << "Enter Percentage: ";
        cin >> percentage;
        cin.ignore();
        cout << "Enter Grade: ";
        getline(cin, grade);
    }

    void displayData() {
```

```
        cout << "\n-----------------------------------";
        cout << "\nRoll No: " << rollno;
        cout << "\nName: " << name;
        cout << "\nDivision: " << division;
        cout << "\nAddress: " << address;
        cout << "\nDate of Birth: " << dob;
        cout << "\nPercentage: " << percentage;
        cout << "\nGrade: " << grade;
        cout << "\n-----------------------------------\n";
    }
};

// 1️⃣ Create a File
void CreateAFile() {
    ofstream fout("StudentData.txt");
    if (!fout) {
        cout << "\nError creating file!";
        return;
    }

    int n;
    cout << "Enter number of student records: ";
    cin >> n;
    cin.ignore();

    Student s;
    for (int i = 0; i < n; i++) {
        //cout << "\nEnter information for student " << i + 1 << ":";
        s.getData();

        fout << s.rollno << "," << s.name << "," << s.division << ","
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            << s.address << "," << s.dob << "," << s.percentage << ","
            << s.grade << endl;
    }

    fout.close();
    cout << "\nFile created successfully!\n";
}

// 2️⃣ Display File Contents
void DisplayFileContents() {
    ifstream fin("StudentData.txt");
    if (!fin) {
        cout << "\nError: File not found!";
        return;
    }

    string line;
    cout << "\n----- Student Data -----\n";
    while (getline(fin, line)) {
        cout << line << endl;
    }

    fin.close();
}

// 3️⃣ Add New Record
void AddNewRecords() {
    ofstream fout("StudentData.txt", ios::app);
    if (!fout) {
        cout << "\nError: File not found!";
        return;
```

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    }

    Student s;
    cout << "\nEnter new student information:";
    s.getData();

    fout << s.rollno << "," << s.name << "," << s.division << ","
         << s.address << "," << s.dob << "," << s.percentage << ","
         << s.grade << endl;

    fout.close();
    cout << "\nNew record added successfully!\n";
}

// 4️⃣ Search a Record
void SearchRecord() {
    ifstream fin("StudentData.txt");
    if (!fin) {
        cout << "\nError: File not found!";
        return;
    }

    int key;
    cout << "Enter Roll No to search: ";
    cin >> key;

    string line;
    bool found = false;

    while (getline(fin, line)) {
        size_t pos = line.find(',');
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        int roll = stoi(line.substr(0, pos));

        if (roll == key) {
            cout << "\nRecord Found:\n" << line << endl;
            found = true;
            break;
        }
    }

    if (!found)
        cout << "\nRecord not found!\n";

    fin.close();
}

// 5 Modify a Record
void ModifyRecord() {
    ifstream fin("StudentData.txt");
    ofstream fout("Temp.txt");

    if (!fin) {
        cout << "\nError: File not found!";
        return;
    }

    int key;
    cout << "Enter Roll No to modify: ";
    cin >> key;
    cin.ignore();

    string line;
```

```
bool found = false;
Student s;

while (getline(fin, line)) {
    size_t pos = line.find(',');
    int roll = stoi(line.substr(0, pos));

    if (roll == key) {
        cout << "\nRecord found. Enter new details:\n";
        s.getData();

        fout << s.rollno << "," << s.name << "," << s.division << ","
             << s.address << "," << s.dob << "," << s.percentage << ","
             << s.grade << endl;

        found = true;
    } else {
        fout << line << endl;
    }
}

fin.close();
fout.close();

remove("StudentData.txt");
rename("Temp.txt", "StudentData.txt");

if (found)
    cout << "\nRecord modified successfully!\n";
else
    cout << "\nRecord not found!\n";
```

```
}

// 6️⃣ Delete a Record
void DeleteRecord() {
    ifstream fin("StudentData.txt");
    ofstream fout("Temp.txt");

    if (!fin) {
        cout << "\nError: File not found!";
        return;
    }

    int key;
    cout << "Enter Roll No to delete: ";
    cin >> key;

    string line;
    bool found = false;

    while (getline(fin, line)) {
        size_t pos = line.find(',');
        int roll = stoi(line.substr(0, pos));

        if (roll == key) {
            found = true;
            continue; // skip writing (delete)
        }
        fout << line << endl;
    }

    fin.close();
```

```
    fout.close();

    remove("StudentData.txt");
    rename("Temp.txt", "StudentData.txt");

    if (found)
        cout << "\nRecord deleted successfully!\n";
    else
        cout << "\nRecord not found!\n";
}

// 📜 Main Function
int main() {
    int choice;

    do {
        cout << "\n========= STUDENT FILE MANAGEMENT =========";
        cout << "\n1. Create File";
        cout << "\n2. Display File Contents";
        cout << "\n3. Add New Record";
        cout << "\n4. Search Record";
        cout << "\n5. Modify Record";
        cout << "\n6. Delete Record";
        cout << "\n7. Exit";
        cout << "\nEnter your choice: ";
        cin >> choice;

        switch (choice) {
        case 1: CreateAFile(); break;
        case 2: DisplayFileContents(); break;
        case 3: AddNewRecords(); break;
```

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        case 4: SearchRecord(); break;
        case 5: ModifyRecord(); break;
        case 6: DeleteRecord(); break;
        case 7: cout << "\nExiting program..."; break;
        default: cout << "\nInvalid choice!"; break;
        }

    } while (choice != 7);

    return 0;
}
```