#include <iostream>

#include <fstream>

using namespace std;

struct Student

{

int roll\_no;

char name[15];

int div;

char addr[200];

};

class Mystdb

{

public:

void addDatabase(); // Function to create a database

void addStudentRecord(); // Function to add a student record

void display(); // Function to display all records

void searchRecord(int rn); // Function to search a record

void deleteRecord(int key); // Function to delete a record

void modifyRecord(int key); // Function to modify a record

void clearDatabase(); // Function to clear database

};

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* CREATE A DATABASE \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void Mystdb::addDatabase()

{

int n;

ofstream file;

cout << "How many Students to add to the database: " << endl;

cin >> n;

file.open("std.txt", ios::out);

for (int i = 0; i < n; i++)

{

Student stdrc;

cout << "Enter Roll Number of Student: " << endl;

cin >> stdrc.roll\_no;

cout << "Enter Name: " << endl;

cin >> stdrc.name;

cout << "Enter Division: " << endl;

cin >> stdrc.div;

cout << "Enter Address: " << endl;

cin >> stdrc.addr;

file << stdrc.name << " " << stdrc.roll\_no << " " << stdrc.div << " " << stdrc.addr << endl;

}

file.close();

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ADD STUDENT RECORD \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void Mystdb::addStudentRecord()

{

ofstream file;

file.open("std.txt", ios::app);

Student stdrc;

cout << "Enter Roll Number of Student: " << endl;

cin >> stdrc.roll\_no;

cout << "Enter Name: " << endl;

cin >> stdrc.name;

cout << "Enter Division: " << endl;

cin >> stdrc.div;

cout << "Enter Address: " << endl;

cin >> stdrc.addr;

file << stdrc.name << " " << stdrc.roll\_no << " " << stdrc.div << " " << stdrc.addr << endl;

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* DISPLAY \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void Mystdb::display()

{

ifstream file;

Student stdrc;

file.open("std.txt", ios::in);

while (file >> stdrc.name >> stdrc.roll\_no >> stdrc.div >> stdrc.addr)

{

cout << "Student Roll No. : " << stdrc.roll\_no << endl;

cout << "Student Name : " << stdrc.name << endl;

cout << "Student Division : " << stdrc.div << endl;

cout << "Student Address : " << stdrc.addr << endl;

}

file.close();

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* SEARCH A RECORD \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void Mystdb::searchRecord(int rn)

{

ifstream file;

Student stdrc;

file.open("std.txt", ios::in);

while (file >> stdrc.name >> stdrc.roll\_no >> stdrc.div >> stdrc.addr)

{

if (stdrc.roll\_no == rn)

{

cout << "Found " << rn << endl;

file.close();

return;

}

}

cout << "Not Found " << endl;

file.close();

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* DELETE A RECORD \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void Mystdb::deleteRecord(int key)

{

ifstream file;

file.open("std.txt", ios::in);

Student stdrc;

ofstream temp;

bool found = 0;

temp.open("temp.txt", ios::out);

while (file >> stdrc.name >> stdrc.roll\_no >> stdrc.div >> stdrc.addr)

{

if (stdrc.roll\_no != key)

{

temp << stdrc.name << " " << stdrc.roll\_no << " " << stdrc.div << " " << stdrc.addr << endl;

}

else

{

found = 1;

}

}

file.close();

temp.close();

remove("std.txt");

rename("temp.txt", "std.txt");

if (found)

{

cout << "Deleted : " << key << endl;

}

else

{

cout << "Element Not Found to Delete" << endl;

}

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* MODIFY A RECORD \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void Mystdb::modifyRecord(int key)

{

ifstream file;

file.open("std.txt", ios::in);

Student stdrc;

ofstream temp;

bool found = 0;

temp.open("temp.txt", ios::out);

while (file >> stdrc.name >> stdrc.roll\_no >> stdrc.div >> stdrc.addr)

{

if (stdrc.roll\_no == key)

{

cout << "Enter data to Modify " << endl;

cout << "Enter Roll Number of Student: " << endl;

cin >> stdrc.roll\_no;

cout << "Enter Name: " << endl;

cin >> stdrc.name;

cout << "Enter Division: " << endl;

cin >> stdrc.div;

cout << "Enter Address: " << endl;

cin >> stdrc.addr;

found = 1;

}

temp << stdrc.name << " " << stdrc.roll\_no << " " << stdrc.div << " " << stdrc.addr << endl;

}

file.close();

temp.close();

remove("std.txt");

rename("temp.txt", "std.txt");

if (found)

{

cout << "Modified : " << key << endl;

}

else

{

cout << "Element Not Found to Modify" << endl;

}

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* CLEAR DATABASE \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void Mystdb::clearDatabase()

{

ofstream file;

file.open("std.txt", ios::trunc);

file.close();

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* MAIN \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

int main()

{

Mystdb s;

int choice, rollNo;

do

{

cout << "\n\*\*\* Student Database Management System \*\*\*\n";

cout << "1. Add Students to Database\n";

cout << "2. Add a Single Student Record\n";

cout << "3. Display All Students\n";

cout << "4. Search for a Student\n";

cout << "5. Delete a Student Record\n";

cout << "6. Modify a Student Record\n";

cout << "7. Clear Database\n";

cout << "8. Exit\n";

cout << "Enter your choice: ";

cin >> choice;

switch (choice)

{

case 1:

s.addDatabase();

break;

case 2:

s.display();

break;

case 3:

cout << "Enter Roll Number to search: ";

cin >> rollNo;

s.searchRecord(rollNo);

break;

case 4:

cout << "Enter Roll Number to delete: ";

cin >> rollNo;

s.deleteRecord(rollNo);

break;

case 5:

cout << "Enter Roll Number to modify: ";

cin >> rollNo;

s.modifyRecord(rollNo);

break;

case 6:

s.clearDatabase();

cout << "Database cleared.\n";

break;

case 7:

cout << "Exiting the program.\n";

break;

default:

cout << "Invalid choice. Please try again.\n";

break;

}

} while (choice != 8);

return 0;

}