#include <stdio.h>

#include <stdlib.h>

#include <string.h>

// Structure to represent a student

struct Student {

int rollNumber;

char name[50];

char division;

char address[100];

};

// Function to add a new student record to the file

void addStudent(FILE \*file) {

struct Student student;

printf("Enter Roll Number: ");

scanf("%d", &student.rollNumber);

printf("Enter Name: ");

scanf("%s", student.name);

printf("Enter Division: ");

scanf(" %c", &student.division);

printf("Enter Address: ");

scanf("%s", student.address);

// Write the student record to the file

fwrite(&student, sizeof(struct Student), 1, file);

printf("Student added successfully.\n");

}

// Function to display details of a particular student

void displayStudent(FILE \*file, int rollNumber) {

struct Student student;

int found = 0;

// Rewind the file to the beginning

rewind(file);

// Search for the student record

while (fread(&student, sizeof(struct Student), 1, file) == 1) {

if (student.rollNumber == rollNumber) {

found = 1;

printf("Roll Number: %d\n", student.rollNumber);

printf("Name: %s\n", student.name);

printf("Division: %c\n", student.division);

printf("Address: %s\n", student.address);

break;

}

}

if (!found) {

printf("Student with Roll Number %d not found.\n", rollNumber);

}

}

// Function to delete a student record

void deleteStudent(FILE \*file, int rollNumber) {

struct Student student, temp;

FILE \*tempFile = fopen("temp.dat", "w");

// Rewind the file to the beginning

rewind(file);

// Copy records to a temporary file, skipping the record to be deleted

while (fread(&temp, sizeof(struct Student), 1, file) == 1) {

if (temp.rollNumber != rollNumber) {

fwrite(&temp, sizeof(struct Student), 1, tempFile);

}

}

fclose(file);

fclose(tempFile);

// Remove the original file and rename the temporary file

remove("students.dat");

rename("temp.dat", "students.dat");

printf("Student with Roll Number %d deleted successfully.\n", rollNumber);

}

int main() {

FILE \*file = fopen("students.dat", "ab+");

if (file == NULL) {

printf("Error opening file.\n");

return 1; // Return with an error code

}

int choice, rollNumber;

do {

printf("\nStudent Database Management System\n");

printf("1. Add Student\n");

printf("2. Display Student Details\n");

printf("3. Delete Student\n");

printf("4. Exit\n");

printf("Enter your choice: ");

scanf("%d", &choice);

switch (choice) {

case 1:

addStudent(file);

break;

case 2:

printf("Enter Roll Number to display details: ");

scanf("%d", &rollNumber);

displayStudent(file, rollNumber);

break;

case 3:

printf("Enter Roll Number to delete: ");

scanf("%d", &rollNumber);

deleteStudent(file, rollNumber);

break;

case 4:

printf("Exiting program.\n");

break;

default:

printf("Invalid choice. Please enter a valid option.\n");

}

} while (choice != 4);

fclose(file);

return 0;

}