

```
#include <iostream>
```

```
#include <fstream>
```

```
#include <string>
```

```
using namespace std;
```

```
struct Student {
```

```
int rollNumber;
```

```
string name;
```

```
string division;
```

```
string address;
```

```
};
```

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

```
void addStudent() {
```

```
Student student;
```

```
ofstream outFile("students.dat", ios::app | ios::binary);
```

```
if (!outFile) {
```

```
    cerr << "Error opening file for writing!" << endl;
```

```
    return;
```

```
}
```

```
cout << "Enter Roll Number: ";
```

```
cin >> student.rollNumber;
```

```
cin.ignore(); // Clear newline character from the input buffer
```

```
cout << "Enter Name: ";
```

```
getline(cin, student.name);
```

```
cout << "Enter Division: ";
```

```
getline(cin, student.division);
```

```
cout << "Enter Address: ";
```

```
getline(cin, student.address);
```

```
outFile.write((char*)&student, sizeof(Student));
```

```
outFile.close();
```

```
cout << "Student record added successfully!" << endl;
```

```
}
```

```
// Function to search for a student record by roll number
```

```
void searchStudent() {
```

```
    Student student;
```

```
    ifstream inFile("students.dat", ios::in | ios::binary);
```

```
    if (!inFile) {
```

```
        cerr << "Error opening file for reading!" << endl;
```

```
        return;
```

```
    }
```

```
    int roll;
```

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

```
    cin >> roll;
```

```
bool found = false;

while (inFile.read((char*)&student, sizeof(Student))) {

    if (student.rollNumber == roll) {

        cout << "Record Found:" << endl;

        cout << "Roll Number: " << student.rollNumber << endl;

        cout << "Name: " << student.name << endl;

        cout << "Division: " << student.division << endl;

        cout << "Address: " << student.address << endl;

        found = true;

        break;

    }

}

if (!found) {

    cout << "No record found with Roll Number " << roll << endl;

}
```

```
inFile.close();
```

```
}
```

```
// Function to display all student records
```

```
void displayStudents() {
```

```
    Student student;
```

```
    ifstream inFile("students.dat", ios::in | ios::binary);
```

```
    if (!inFile) {
```

```
        cerr << "Error opening file for reading!" << endl;
```

```
        return;
```

```
    }
```

```
    cout << "Student Records:" << endl;
```

```
    while (inFile.read((char*)&student, sizeof(Student))) {
```

```
        cout << "-----" << endl;
```

```
cout << "Roll Number: " << student.rollNumber << endl;
```

```
cout << "Name: " << student.name << endl;
```

```
cout << "Division: " << student.division << endl;
```

```
cout << "Address: " << student.address << endl;
```

```
}
```

```
inFile.close();
```

```
}
```

```
int main() {
```

```
int choice;
```

```
do {
```

```
cout << "\n--- Student Database Menu ---" << endl;
```

```
cout << "1. Add Student" << endl;
```

```
cout << "2. Search Student" << endl;
```

```
cout << "3. Display All Students" << endl;
```

```
cout << "4. Exit" << endl;
```

```
cout << "Enter your choice: ";
```

```
cin >> choice;
```

```
switch (choice) {
```

```
case 1:
```

```
addStudent();
```

```
break;
```

```
case 2:
```

```
searchStudent();
```

```
break;
```

```
case 3:
```

```
displayStudents();
```

```
break;
```

```
case 4:
```

```
cout << "Exiting program." << endl;
```

```
break;
```

```
default:
```

```
cout << "Invalid choice. Please try again." << endl;
```

```
}
```

```
} while (choice != 4);
```

```
return 0;
```

```
}
```