**Lab Assignment No.11**

**Problem statement** : Department maintains a student information. The file contains roll number, name, division and address. Allow user to add, delete information of student. Display information of particular employee. If record of student does not exist an appropriate message is displayed. If it is, then the system displays the student details. Use sequential file to maintain the data.

**Code :**

#include <iostream>

#include <fstream>

#include <string>

using namespace std;

// Student structure

struct Student {

int rollNumber;

string name;

string division;

string address;

};

// Function to add a student record

void addStudent(const string &filename) {

ofstream file;

file.open(filename, ios::app); // Open file in append mode

if (!file) {

cerr << "Error opening file!" << endl;

return;

}

Student student;

cout << "Enter Roll Number: ";

cin >> student.rollNumber;

cin.ignore(); // Ignore newline character left by cin

cout << "Enter Name: ";

getline(cin, student.name);

cout << "Enter Division: ";

getline(cin, student.division);

cout << "Enter Address: ";

getline(cin, student.address);

// Write the student information to the file

file.write(reinterpret\_cast<char\*>(&student), sizeof(student));

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

file.close();

}

// Function to delete a student record

void deleteStudent(const string &filename) {

ifstream file(filename, ios::binary);

ofstream tempFile("temp.dat", ios::binary);

if (!file || !tempFile) {

cerr << "Error opening file!" << endl;

return;

}

int rollNumber;

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

cin >> rollNumber;

bool studentFound = false;

Student student;

while (file.read(reinterpret\_cast<char\*>(&student), sizeof(student))) {

if (student.rollNumber != rollNumber) {

tempFile.write(reinterpret\_cast<char\*>(&student), sizeof(student));

} else {

studentFound = true;

}

}

if (studentFound) {

cout << "Student record deleted successfully!" << endl;

} else {

cout << "Student with Roll Number " << rollNumber << " not found!" << endl;

}

file.close();

tempFile.close();

// Remove original file and rename the temp file

remove(filename.c\_str());

rename("temp.dat", filename.c\_str());

}

// Function to display a student record

void displayStudent(const string &filename) {

ifstream file(filename, ios::binary);

if (!file) {

cerr << "Error opening file!" << endl;

return;

}

int rollNumber;

cout << "Enter Roll Number of student to display: ";

cin >> rollNumber;

bool studentFound = false;

Student student;

while (file.read(reinterpret\_cast<char\*>(&student), sizeof(student))) {

if (student.rollNumber == rollNumber) {

cout << "Student Found!" << endl;

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

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

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

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

studentFound = true;

break;

}

}

if (!studentFound) {

cout << "Student with Roll Number " << rollNumber << " not found!" << endl;

}

file.close();

}

int main() {

string filename = "students.dat"; // File to store student records

int choice;

do {

cout << "\n--- Student Information System ---\n";

cout << "1. Add Student\n";

cout << "2. Delete Student\n";

cout << "3. Display Student\n";

cout << "4. Exit\n";

cout << "Enter your choice: ";

cin >> choice;

switch (choice) {

case 1:

addStudent(filename);

break;

case 2:

deleteStudent(filename);

break;

case 3:

displayStudent(filename);

break;

case 4:

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

break;

default:

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

}

} while (choice != 4);

return 0;

}