

Q. Department maintains student's database. The file contains roll number, name, division and address. Write a program to create a sequential file to store and maintain student data. It should allow the user to add, delete information of student. Display information of particular student. If record of student does not exist an appropriate message is displayed. If student record is found it should display the student details.

Code

```
#include <fstream>
#include <iostream>
#include<climits>
#include <sstream>
using namespace std;

#define Max_Line 80

struct Student_Info {
    int roll_no;
    string name;
    int division;
};

class Students {
private:
    Student_Info records;
    int num_students = 1;
    fstream samplefile;
public:
    Students();
    void Add();
    void Search(int roll);
    void Display();
    void Delete(int roll);
    void clearFile();
    void newFile();
    void Modify(int roll);
};

Students :: Students(){
    clearFile(); //clears previous file content when new file is
created
    newFile(); //writes initial column names etc.
}

void Students :: newFile(){
    samplefile.open("sample.txt");
    //samplefile <<"Student Records"<<endl;
    samplefile <<"Sr_No.\tName\t\tRoll_No.\tDivision"<<endl;
    samplefile.close();
}

void Students ::Add(){
    samplefile.open("sample.txt", ios::app);

    cout <<"Student Record "<<num_students<<endl;
```

```

        cout<<"Enter Name: ";
        cin>>records.name;
        cout<<endl;

        cout<<"Enter Roll Number: ";
        cin >> records.roll_no;
        cout<<endl;

        cout<<"Enter Division: ";
        cin >> records.division;
        cout<<endl;

        samplefile
        <<num_students<<"\t\t"<<records.name<<"\t\t"<<records.roll_no<<"\t\t"<<
        records.division<<"\n";

        num_students++;
        samplefile.close();
    }

void Students :: clearFile(){
    samplefile.open("sample.txt",ios::out| ios :: trunc);
    samplefile.close();
}

void Students :: Display(){
    samplefile.open("sample.txt");
    if (samplefile.is_open()){
        string line;
        while (getline(samplefile,line)){
            cout <<"\n"<<line;
        }
        cout <<"\n";
        samplefile.close();
    }
    else {
        cout <<"Error! File Not Open :("<<endl;
    }
}

void Students ::Search(int roll){
    samplefile.open("sample.txt");
    if (samplefile.is_open()){

        string line;
        while (getline(samplefile,line)){

            string lineArray[4];

```

```

        int i=0;
        stringstream input (line);
        while (input.good() && i<4){

            input >>lineArray[i];
            i++;
        }
        if (to_string(roll)==lineArray[2]){
            cout <<"Record Found!"<<endl;
            for (int j=0; j<4; j++){
                cout <<lineArray[j]<<"\t\t";
            }
            cout <<"\n";
        }
        samplefile.close();
    }
    else {
        cout <<"Error! File Not Open :("<<endl;
    }
}

void Students ::Delete(int roll){
    fstream temp;
    temp.open("temp_del.txt");
    samplefile.open("sample.txt");

    if (samplefile.is_open()){
        string line;
        while (getline(samplefile,line)){
            string lineArray[4];
            int i=0;
            stringstream input (line);
            while (input.good() && i<4){
                input >>lineArray[i];
                i++;
            }
            if (to_string(roll) !=lineArray[2]){
                temp <<line<<endl;
            }
        }
        cout <<"Record Modified!"<<endl;
        samplefile.close();
        temp.close();
        remove("sample.txt");
        rename("temp_del.txt","sample.txt");
    }
}

```

```

        else {
            cout <<"Error! File Not Open :(" <<endl;
        }
    }

void Students ::Modify(int roll){
    fstream temp;
    temp.open("temp_modify.txt");
    samplefile.open("sample.txt");

    if (samplefile.is_open()){
        string line;
        while (getline(samplefile,line)){
            string lineArray[4];
            int i=0;
            stringstream input (line);
            while (input.good() && i<4){
                input >>lineArray[i];
                i++;
            }
            if (to_string(roll) !=lineArray[2]){
                temp <<line<<endl;
            }
            else {
                cout <<"Enter Modified Information"<<endl;
                cout <<"Enter Name: ";
                cin >> lineArray[1];
                cout <<"\nEnter Roll Number: ";
                cin >> lineArray[2];
                cout <<"\nEnter Division: ";
                cin >> lineArray[3];
                temp
<<lineArray[0]<<"\t\t"<<lineArray[1]<<"\t\t"<<lineArray[2]<<"\t\t"<<lin
eArray[3]<<endl;
                cout <<"Record Modified!"<<endl;
            }
        }
        samplefile.close();
        temp.close();
        remove("sample.txt");
        rename("temp_modify.txt","sample.txt");
    }

    else {
        cout <<"Error! File Not Open :(" <<endl;
    }
}

```

```

int main() {
    Students stud;
    int ch;
    cout << "Student Database using File Handling"<<endl;

    while(1){
        cout<<"\n";
        cout<<"Menu:\n1.Add Record\n2.Display Records\n3.Search
Record\n4.Modify Record\n5.Delete Record\n6.Clear File"<<endl;
        cout<<"7.Exit"<<endl;
        cout <<"Choose your option: ";
        cin >> ch;
        switch (ch){
            case 1:
                stud.Add();
                break;

            case 2:
                stud.Display();
                break;

            case 3:
                int roll;
                cout <<"Enter Roll Number to be Searched: ";
                cin >>roll;
                cout <<"\n";
                stud.Search(roll);
                break;

            case 4:
                int roll_1;
                cout <<"Enter Roll Number to be Modified: ";
                cin >>roll_1;
                cout <<"\n";
                stud.Modify(roll_1);
                break;

            case 5:
                int roll_2;
                cout <<"Enter Roll Number to be Deleted: ";
                cin >>roll_2;
                cout <<"\n";
                stud.Delete(roll_2);
                break;

            case 6:
                stud.clearFile();
                cout <<"File is now empty!"<<endl;

```

```
        stud.newFile();  
        break;  
  
        case 7:  
            cout <<"Now exiting the program..."<<endl;  
            exit(0);  
        }  
    }  
  
    return 0;  
}
```

Add Records

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Student Database using File Handling

Menu:

- 1.Add Record
- 2.Display Records
- 3.Search Record
- 4.Modify Record
- 5.Delete Record
- 6.Clear File
- 7.Exit

Choose your option: 1

Student Record 1

Enter Name: Gargi

Enter Roll Number: 23322

Enter Division: 11

Menu:

- 1.Add Record
- 2.Display Records
- 3.Search Record
- 4.Modify Record
- 5.Delete Record
- 6.Clear File
- 7.Exit

Choose your option: 1

Student Record 2

Enter Name: Seeta

Enter Roll Number: 23312

Enter Division: 11

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

Menu:

- 1.Add Record
- 2.Display Records
- 3.Search Record
- 4.Modify Record
- 5.Delete Record
- 6.Clear File
- 7.Exit

Choose your option: 1

Student Record 3

Enter Name: Geeta

Enter Roll Number: 23345

Enter Division: 11

Menu:

- 1.Add Record
- 2.Display Records
- 3.Search Record
- 4.Modify Record
- 5.Delete Record
- 6.Clear File
- 7.Exit

Choose your option: 1

Student Record 4

Enter Name: Sanika

Enter Roll Number: 23330

Enter Division: 11

```
Menu:
1.Add Record
2.Display Records
3.Search Record
4.Modify Record
5.Delete Record
6.Clear File
7.Exit
Choose your option: 1
Student Record 5
Enter Name: Pratik

Enter Roll Number: 2336

Enter Division: 11
```

File:

```
.vscode > file handling > ≡ sample.txt
```

	Sr_No.	Name	Roll_No.	Division
1	1	Gargi	23322	11
2	2	Seeta	23312	11
3	3	Geeta	23345	11
4	4	Sanika	23330	11
5	5	Pratik	2336	11
6				
7				

Display Function

```
Menu:
1.Add Record
2.Display Records
3.Search Record
4.Modify Record
5.Delete Record
6.Clear File
7.Exit
Choose your option: 2
```

Sr_No.	Name	Roll_No.	Division
1	Gargi	23322	11
2	Seeta	23312	11
3	Geeta	23345	11
4	Sanika	23330	11
5	Pratik	2336	11

Search Function

```
Menu:
1.Add Record
2.Display Records
3.Search Record
4.Modify Record
5.Delete Record
6.Clear File
7.Exit
Choose your option: 3
Enter Roll Number to be Searched: 23345
```

```
Record Found!
3           Geeta           23345           11
```

```
Menu:
1.Add Record
2.Display Records
3.Search Record
4.Modify Record
5.Delete Record
6.Clear File
7.Exit
Choose your option: 3
Enter Roll Number to be Searched: 23342
```

Modification Function

```
Menu:
1.Add Record
2.Display Records
3.Search Record
4.Modify Record
5.Delete Record
6.Clear File
7.Exit
Choose your option: 4
Enter Roll Number to be Modified: 2336

Enter Modified Information
Enter Name: Pratik

Enter Roll Number: 2336

Enter Division: 11
Record Modified!
```

After Modification

```
.vscode > file handling > ≡ sample.txt
```

1	Sr_No.	Name	Roll_No.	Division
2	1	Gargi	23322	11
3	2	Seeta	23312	11
4	3	Geeta	23345	11
5	4	Sanika	23330	11
6	5	Pratik	23336	11
7				

temp_modify File

```
.vscode > file handling > ≡ temp_modify.txt
```

1	Sr_No.	Name	Roll_No.	Division
2	1	Gargi	23322	11
3	2	Seeta	23312	11
4	3	Geeta	23345	11
5	4	Sanika	23330	11
6				

Delete Function

```
Menu:
1.Add Record
2.Display Records
3.Search Record
4.Modify Record
5.Delete Record
6.Clear File
7.Exit
Choose your option: 5
Enter Roll Number to be Deleted: 23312

Record Modified!
```

After Deletion

```
.vscode > file handling > ≡ sample.txt
```

1	Sr_No.	Name	Roll_No.	Division
2	1	Gargi	23322	11
3	3	Geeta	23345	11
4	4	Sanika	23330	11
5	5	Pratik	23336	11
6				

Clear File Function

```
Menu:
1.Add Record
2.Display Records
3.Search Record
4.Modify Record
5.Delete Record
6.Clear File
7.Exit
Choose your option: 6
File is now empty!
```

After Clearing

```
.vscode > file handling > ≡ sample.txt
1  Sr_No.   Name           Roll_No.   Division
2  
```

Exit Program

```
Menu:
1.Add Record
2.Display Records
3.Search Record
4.Modify Record
5.Delete Record
6.Clear File
7.Exit
Choose your option: 7
Now exiting the program...
PS C:\Users\suhas\OneDrive\Desktop\DSAL\.vscode\file handling> 
```