#include <iostream>

#include<fstream>

#include<cstring>

#include<iomanip>

using namespace std;

const int MAX=20;

class Student

{

 int rollno;

 char name[20],city[20];

 char div;

 int year;

public:

 Student()

{

  strcpy(name,"");

  strcpy(city,"");

  rollno=year=div=0;

}

 Student(int rollno,char name[MAX],int year,char div,char city[MAX])

 {

  strcpy(this->name,name);

  strcpy(this->city,city);

  this->rollno=rollno;

  this->year=year;

  this->div=div;

 }

 int getRollNo()

 {

  return rollno;

 }

 void displayRecord()

 {

  cout<<endl<<setw(5)<<rollno<<setw(20)<<name<<setw(5)<<year<<setw(5)<<div<<setw(10)<<city;

 }

};

//==========File Operations ===========

class FileOperations

{

 fstream file;

public:

 FileOperations(char\* filename)

{

file.open(filename,ios::in|ios::out|ios::ate|ios::binary);

}

 void insertRecord(int rollno, char name[MAX],int year, char div,char city[MAX])

 {

  Student s1(rollno,name,year,div,city);

  file.seekp(0,ios::end);

  file.write((char \*)&s1,sizeof(Student));

  file.clear();

 }

 void displayAll()

 {

  Student s1;

  file.seekg(0,ios::beg);

  while(file.read((char \*)&s1, sizeof(Student)))

  {

   s1.displayRecord();

  }

  file.clear();

 }

 void displayRecord(int rollNo)

 {

  Student s1;

  file.seekg(0,ios::beg);

  bool flag=false;

  while(file.read((char\*)&s1,sizeof(Student)))

  {

   if(s1.getRollNo()==rollNo)

   {

    s1.displayRecord();

    flag=true;

    break;

   }

  }

  if(flag==false)

  {

   cout<<"\nRecord of "<<rollNo<<"is not present.";

  }

  file.clear();

 }

 void deleteRecord(int rollno)

 {

  ofstream outFile("new.dat",ios::binary);

  file.seekg(0,ios::beg);

  bool flag=false;

  Student s1;

  while(file.read((char \*)&s1, sizeof(Student)))

  {

   if(s1.getRollNo()==rollno)

   {

    flag=true;

    continue;

   }

   outFile.write((char \*)&s1, sizeof(Student));

  }

  if(!flag)

  {

   cout<<"\nRecord of "<<rollno<<" is not present.";

  }

  file.close();

  outFile.close();

  remove("student.dat");

  rename("new.dat","student.dat");

  file.open("student.dat",ios::in|ios::out|ios::ate|ios::binary);

 }

 ~FileOperations()

 {

  file.close();

  cout<<"\nFile Closed.";

 }

};

int main() {

 ofstream newFile("student.dat",ios::app|ios::binary);

  newFile.close();

  FileOperations file((char\*)"student.dat");

     int rollNo,year,choice=0;

     char div;

     char name[MAX],address[MAX];

     while(choice!=5)

     {

         //clrscr();

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

         cout<<"1) Add New Record\n";

         cout<<"2) Display All Records\n";

         cout<<"3) Display by RollNo\n";

         cout<<"4) Deleting a Record\n";

         cout<<"5) Exit\n";

         cout<<"Choose your choice : ";

         cin>>choice;

         switch(choice)

         {

             case 1 : //New Record

               cout<<endl<<"Enter RollNo and name : \n";

               cin>>rollNo>>name;

               cout<<"Enter Year and Division : \n";

               cin>>year>>div;

               cout<<"Enter address : \n";

               cin>>address;

               file.insertRecord(rollNo,name,year,div,address);

               cout<<"\nRecord Inserted.";

               break;

             case 2 :

              cout<<endl<<setw(5)<<"ROLL"<<setw(20)<<"NAME"<<setw(5)<<"YEAR"<<setw(5)<<"DIV"<<setw(10)<<"CITY";

               file.displayAll();

               break;

             case 3 :

               cout<<"Enter Roll Number";

               cin>>rollNo;

                file.displayRecord(rollNo);

               break;

             case 4:

               cout<<"Enter rollNo";

               cin>>rollNo;

               file.deleteRecord(rollNo);

               break;

            case 5 :break;

         }

     }

 return 0;

}