```cpp
#include<iostream>
#include<fstream>
#include<iomanip>
using namespace std;

// the class that stores data
class student
{
int rollno;
char name[50];
int eng_marks, math_marks, sci_marks, lang2_marks, cs_marks;
double average;
char grade;

public:
void getdata();
void showdata() const;
void calculate();
int retrollno() const;
}; //class ends here

void student::calculate()
{
average=(eng_marks+math_marks+sci_marks+lang2_marks+cs_marks)/5.0;
if(average>=90)
grade='A';
else if(average>=75)
grade='B';
else if(average>=50)
grade='C';
else
grade='F';
}

void student::getdata()
{
cout<<"\nEnter student's roll number: ";
cin>>rollno;
cout<<"\n\nEnter student name: ";
cin.ignore();
cin.getline(name,50);
cout<<"\nAll marks should be out of 100";
cout<<"\nEnter marks in English: ";
cin>>eng_marks;
cout<<"\nEnter marks in Math:  ";
cin>>math_marks;
cout<<"\nEnter marks in Science:  ";
cin>>sci_marks;
cout<<"\nEnter marks in 2nd language:  ";
cin>>lang2_marks;
cout<<"\nEnter marks in Computer science:  ";
cin>>cs_marks;
calculate();
}
void student::showdata() const
```

```
{
cout<<"\nRoll number of student : "<<rollno;
cout<<"\nName of student : "<<name;
cout<<"\nEnglish : "<<eng_marks;
cout<<"\nMaths : "<<math_marks;
cout<<"\nScience : "<<sci_marks;
cout<<"\nLanguage2 : "<<lang2_marks;
cout<<"\nComputer Science :"<<cs_marks;
cout<<"\nAverage Marks :"<<average;
cout<<"\nGrade of student is :"<<grade;
}
int  student::retrollno() const
{
return rollno;
}
//function declaration
void create_student();
void display_sp(int);//display particular record
void display_all(); // display all records
void delete_student(int);//delete particular record
void change_student(int);//edit particular record
//MAIN
int main()
{
char ch;
cout<<setprecision(2);
do
{
char ch;
int num;
system("cls");
cout<<"\n\n\n\tMENU";
cout<<"\n\n\t1.Create student record";
cout<<"\n\n\t2. Search student record";
cout<<"\n\n\t3. Display all students records ";
cout<<"\n\n\t4.Delete student record";
cout<<"\n\n\t5.Modify student record";
cout<<"\n\n\t6.Exit";
cout<<"\n\n\What is your Choice (1/2/3/4/5/6) ";
cin>>ch;
system("cls");
switch(ch)
{
case '1': create_student(); break;
case '2': cout<<"\n\n\tEnter The roll number ";
cin>>num;
display_sp(num); break;
case '3': display_all(); break;
case '4': cout<<"\n\n\tEnter The roll number: ";
cin>>num;
delete_student(num);break;
case '5': cout<<"\n\n\tEnter The roll number "; cin>>num;
change_student(num);break;
case '6': cout<<"Exiting, Thank you!";exit(0);
}
```

```
    }while(ch!='6');
    return 0;
    }
    //write student details to file
    void create_student()
    {
    student stud;
    ofstream oFile;
    oFile.open("student.dat",ios::binary|ios::app);
    stud.getdata();
    oFile.write(reinterpret_cast<char *> (&stud), sizeof(student));
    oFile.close();
         cout<<"\n\nStudent record Has Been Created ";
    cin.ignore();
    cin.get();
    }
    // read file records
    void display_all()
    {
    student stud;
    ifstream inFile;
    inFile.open("student.dat",ios::binary);
    if(!inFile)
    {
    cout<<"File could not be opened !! Press any Key to exit";
    cin.ignore();
    cin.get();
    return;
    }
    cout<<"\n\n\n\t\tDISPLAYING ALL RECORDS\n\n";
    while(inFile.read(reinterpret_cast<char *> (&stud), sizeof(student)))
    {
    st.showdata();
    cout<<"\n\n====================================\n";
    }
    inFile.close();
    cin.ignore();
    cin.get();
    }
    //read specific record based on roll number
    void display_sp(int n)
    {
    student stud;
    ifstream iFile;
    iFile.open("student.dat",ios::binary);
    if(!iFile)
    {
    cout<<"File could not be opened... Press any Key to exit";
    cin.ignore();
    cin.get();
    return;
    }
    bool flag=false;
    while(iFile.read(reinterpret_cast<char *> (&stud), sizeof(student)))
    {
```

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    if(stud.retrollno()==n)
    {
      stud.showdata();
    flag=true;
    }
    }
    iFile.close();
    if(flag==false)
    cout<<"\n\nrecord does not exist";
    cin.ignore();
    cin.get();
    }
    // modify record for specified roll number
    void change_student(int n)
    {
    bool found=false;
    student stud;
    fstream fl;
    fl.open("student.dat",ios::binary|ios::in|ios::out);
    if(!fl)
    {
    cout<<"File could not be opened. Press any Key to exit...";
    cin.ignore();
    cin.get();
    return;
    }
         while(!fl.eof() && found==false)
    {
    fl.read(reinterpret_cast<char *> (&stud), sizeof(student));
    if(stud.retrollno()==n)
    {
    stud.showdata();
    cout<<"\n\Enter new student details:"<<endl;
    stud.getdata();
        int pos=(-1)*static_cast<int>(sizeof(stud));
        fl.seekp(pos,ios::cur);
        fl.write(reinterpret_cast<char *> (&stud), sizeof(student));
        cout<<"\n\n\t Record Updated";
        found=true;
    }
    }
    File.close();
    if(found==false)
    cout<<"\n\n Record Not Found ";
    cin.ignore();
    cin.get();
    }
    //delete record with particular roll number
    void delete_student(int n)
    {
    student stud;
    ifstream iFile;
    iFile.open("student.dat",ios::binary);
    if(!iFile)
    {
```

```
    cout<<"File could not be opened... Press any Key to exit...";
    cin.ignore();
    cin.get();
    return;
    }
    ofstream oFile;
    oFile.open("Temp.dat",ios::out);
    iFile.seekg(0,ios::beg);
    while(iFile.read(reinterpret_cast<char *> (&stud), sizeof(student)))
    {
    if(stud.retrollno()!=n)
    {
    oFile.write(reinterpret_cast<char *> (&stud), sizeof(student));
    }
    }
    oFile.close();
    iFile.close();
    remove("student.dat");
    rename("Temp.dat","student.dat");
    cout<<"\n\n\tRecord Deleted ..";
    cin.ignore();
    cin.get();
    }
```