Individual/Team name: Angry Birds

Student management systems

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```cpp
//Project on Student Management - Data File Handling (For Class XII Students)
#include<iostream>
#include<fstream>
#include<iomanip>
#include<stdlib.h>

using namespace std;

class Student
{
    int admno;
    char name[20];
    char gender;
    int std;
    float marks;
    float percentage;

    public:
        void getData();
        void showData();
        int getAdmno(){return admno;}
};

void Student::getData()
{
    cout<<"\n\nEnter Student Details......\n";
    cout<<"Enter Admission No.     : "; cin>>admno;
    cout<<"Enter Full Name         : "; cin.ignore(); cin.getline(name,20);
    cout<<"Enter Gender (M/F)      : "; cin>>gender;
    cout<<"Enter Standard          : "; cin>>std;
    cout<<"Enter Marks (out of 500): "; cin>>marks;
    cout<<endl;
    percentage=marks*100.0/500.00;
}

void Student::showData()
{
    cout<<"\n\n.......Student Details......\n";
    cout<<"Admission No.     : "<<admno<<endl;
    cout<<"Full Name         : "<<name<<endl;
    cout<<"Gender            : "<<gender<<endl;
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    cout<<"Standard          : "<<std<<endl;
    cout<<"Marks (out of 500): "<<marks<<endl;
    cout<<"Percentage        : "<<percentage<<endl;
    cout<<endl;
}

void addData()
{
    ofstream fout;
    fout.open("Students.dat",ios::binary|ios::out|ios::app);
    s.getData();
    fout.write((char*)&s,sizeof(s));
    fout.close();
    cout<<"\n\nData Successfully Saved to File....\n";
}

void displayData()
{
    ifstream fin;
    fin.open("Students.dat",ios::in|ios::binary);
    while(fin.read((char*)&s,sizeof(s)))
    {
        s.showData();
    }
    fin.close();
    cout<<"\n\nData Reading from File Successfully Done....\n";
}

void searchData()
{
    int n, flag=0;
    ifstream fin;
    fin.open("Students.dat",ios::in|ios::binary);
    cout<<"Enter Admission Number you want to search : ";
    cin>>n;

    while(fin.read((char*)&s,sizeof(s)))
    {
        if(n==s.getAdmno())
        {
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            cout<<"The Details of Admission No. "<<n<<" shown herewith:\n";
            s.showData();
            flag++;
        }
    }
    fin.close();
    if(flag==0)
        cout<<"The Admission No. "<<n<<" not found....\n\n";
    cout<<"\n\nData Reading from File Successfully Done....\n";
}

void deleteData()
{
    int n, flag=0;
    ifstream fin;
    ofstream fout,tout;

    fin.open("Students.dat",ios::in|ios::binary);
    fout.open("TempStud.dat",ios::out|ios::app|ios::binary);
    tout.open("TrashStud.dat",ios::out|ios::app|ios::binary);

    cout<<"Enter Admission Number you want to move to Trash : ";
    cin>>n;

    while(fin.read((char*)&s,sizeof(s)))
    {
        if(n==s.getAdmno())
        {
            cout<<"The Following Admission No. "<<n<<" has been moved to Trash:\n";
            s.showData();
            tout.write((char*)&s,sizeof(s));
            flag++;
        }
        else
        {
            fout.write((char*)&s,sizeof(s));
        }
    }
    fout.close();
    tout.close();
```

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    fin.close();
    if(flag==0)
        cout<<"The Admission No. "<<n<<" not found....\n\n";
    remove("Students.dat");
    rename("tempStud.dat","Students.dat");
}

void getTrash()
{
    ifstream fin;
    fin.open("TrashStud.dat",ios::in|ios::binary);
    while(fin.read((char*)&s,sizeof(s)))
    {
        s.showData();
    }
    fin.close();
    cout<<"\n\nData Reading from Trash File Successfully Done....\n";
}

void modifyData()
{
    int n, flag=0, pos;
    fstream fio;

    fio.open("Students.dat",ios::in|ios::out|ios::binary);

    cout<<"Enter Admission Number you want to Modify : ";
    cin>>n;

    while(fio.read((char*)&s,sizeof(s)))
    {
        pos=fio.tellg();
        if(n==s.getAdmno())
        {
            cout<<"The Following Admission No. "<<n<<" will be modified with new data:\n";
            s.showData();
            cout<<"\n\nNow Enter the New Details....\n";
            s.getData();
            fio.seekg(pos-sizeof(s));
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            fio.write((char*)&s,sizeof(s));
            flag++;
        }
    }
    fio.close();

    if(flag==0)
        cout<<"The Admission No. "<<n<<" not found....\n\n";
}

void project()
{
    int ch;
    do
    {
        system("cls");
        cout<<".............STUDENT MANAGEMENT SYSTEM.............\n";
        cout<<"═══════════════════════════════════════════════════\n";
        cout<<"0. Exit from Program\n";
        cout<<"1. Write Data to File\n";
        cout<<"2. Read Data From File\n";
        cout<<"3. Search Data From File\n";
        cout<<"4. Delete Data From File\n";
        cout<<"5. Get Deleted Records from Trash file\n";
        cout<<"6. Modify Data in File\n";
        cout<<"Enter your choice  : ";
        cin>>ch;
        system("cls");
        switch(ch)
        {
            case 1: addData(); break;
            case 2: displayData(); break;
            case 3: searchData(); break;
            case 4: deleteData(); break;
            case 5: getTrash(); break;
            case 6: modifyData(); break;
        }
        system("pause");
    }while(ch);
}
```

```
int main()
{
    project();
}
```