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## DATA STRUCTURES AND ALGORITHMS

### CSE 2003 PROJECT FINAL REVIEW

## RESIDENTIAL SCHOOL MANAGEMENT SYSTEM

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## **Abstract**

This Project is a Residential School Management System aimed at developing program that helps in reading and writing the student data and manipulating it. The manipulation of this data is done by the authority. The data being entered is securely stored in a file, which is accessible only by the authority. The major aspect is to simplify the process of maintaining the records in a secure way. This is done using binary files.

## **Aim**

The fundamental aim is to build a student management system where students, faculty members and warden, librarian can log in through separate portals and have access to access necessary information through inbuilt features. An admin to maintain the whole system and control the access given to users.

## **Objective**

To create an efficient and secure software to manage day to day activities like grading tests, marking attendance, applying for leave, etc. To save the data in the storage rather than residing in the main memory so that the data isn't lost when the program goes out of scope.

## **Applicability**

This program can be implemented in residential schools and small-mid scale institutions. It is easily scalable to suit the needs of a small-med number of populations. It is secure and protected compared to normal management systems.

## **Scope**

One of the limitations is the user interface. It doesn't have a graphical user interface and hence it isn't the best user-friendly program around. Data is stored in binary format hence secure but it is not encrypted using any modern encryptions.

## **Introduction**

This project is a student management system, where the faculty, librarian, students of the school and the hostel wardens have separate logins. Each of the above mentioned can login using their correct username and password and alter details. Students can view their profile details, can view their marks, can apply for leave. They can also modify the details that they wish to modify. Faculty of the college can view their faculty details; they can upload marks of the student under them. They can view the marks of all the students registered under them. The hostel wardens have the provision to approve or disapprove student's leave request, they can also post attendance for every student and view any student's details. Librarians can store books, modify, search and remove. Admin controls the whole system, can add users and give them access.

## **Literature Survey**

A school management software is a collection of computer instructions, specially designed to manage the day-to-day administrative tasks of schools. School management software allow schools to digitally monitor the daily activities along with managing all the resources and information on a single platform. In efficiency, productivity, and hence saving a lot of time involved to carry out various administrative operations. These software also help in reducing the pressure of managing huge data from schools.

Right from keeping a track of a student records with a single click, school management software let schools perform a large number of tasks with the power of automation. Parents can easily keep track of their ward's performance and look after his or her academic needs. Not to mention, school management system has rightly replaced the traditional method of data management with pen and register, thus reducing the possibility of errors in the process. Furthermore, a lot of expenditure and time is saved, letting the school staff perform more work in a lesser amount of time and that too with higher accuracy.

Whilst the whole process of administration runs seamlessly, schools can deliver students a more effective and constructive academic experience than ever before, therefore providing every student with an educational experience that is more tailored. School management system is one such software that has been specially designed and developed to conform to all the requirements of different schools. It not only saves you time and money but also helps in increasing the efficiency and productivity of your workforce. High speed, security, and ease of use are some of the features that come along with school management system software.

## **Modules**

- 1. STUDENT**
- 2. LIBRARY**
- 3. FACULTY**
- 4. WARDEN**
- 5. ADMIN**

## **Module Description**

### **MODULE 1:**

Contains the class student which has functions to get the student details and print the student details.

It has functions to save the details to a dat.file and to search the same. It has the function to apply for leaves.

It contains the major student login portal

### **MODULE 2:**

Contains the class library which has got the function to create and store books. Modify and delete them.

It has functions to save the details to a dat.file and to search the same.

Function to find specific books

It contains the major library login portal

### **MODULE 3:**

Contains Class Faculty which has got functions to grade students, view student profiles

It has functions to save the details to a dat.file and to search the same.

It contains the major faculty login portal

**MODULE 4:**

Contains the Class Warden which contains the function to mark attendance.

It contains the function to approve leaves

It has functions to save the details to a dat.file and to search the same.

It has the major warden login portal

**MODULE 5:**

Contains Class Admin which contain the functions to create users of above-mentioned modules.

It also has password creation which controls access to the whole system

Admin accounts are created by using the hidden root user which isn't accessible by normal users.

It contains the admin login portal

## Implementation

### Source Code

```
#include<iostream>
#include<iomanip>
#include<stdlib.h>
#include<math.h>
#include<string.h>
#include<fstream>
using namespace std;

//Some variables needed for checking date format
const int MAX_VALID_YR = 2099;
const int MIN_VALID_YR = 2000;
int s_size=5;
int f_size=5;
int w_size=1;
int a_size=1;
int l_size=1;
```

```
class marks

{
    char sub[5][10];
    float fa1[5],fa2[5],sa1[5];

    public:

        marks()
        {
            strcpy(sub[0],"MAT");
            strcpy(sub[1],"PHY");
            strcpy(sub[2],"CHEM");
            strcpy(sub[3],"CSE");
            strcpy(sub[4],"ENG");

            for(int i=0;i<5;i++)
            {
                fa1[i]=fa2[i]=sa1[i]=-1;
            }
        }

    void enter_marks(char c[])//for getting input from the teacher for the marks of a particular subject
    {
        char code[10];
        int pos=-1;
```

```

strcpy(code,c);

for(int i=0;i<5;i++)

{

    if(strcmp(code,sub[i])==0)

    {

        pos=i;

        break;

    }

}

if(pos>=0)

{

    cout<<endl<<"Enter the marks for subject "<<sub[pos]<<endl;

    int n;

    cout<<"1:FA 1 1\t2:FA 2 2\t3:SA 1"<<endl<<endl;

    cout<<"Enter your option:";

    cin>>n;

    switch(n)

    {

        case 1:

            cout<<"Enter the marks:";

            cin>>fa1[pos];

            cout<<endl;

            break;

        case 2:

            cout<<"Enter the marks:";

            cin>>fa2[pos];

            cout<<endl;

```

```

        break;

    case 3:

        cout<<"Enter the marks:";

        cin>>sa1[pos];

        cout<<endl;

        break;

    default:

        cout<<"You have entered the wrong option. Pls start from the
begining."<<endl;

        break;

    }

//system("cls");
}

}

else

cout<<"You have entered the wrong option. Pls start from the begining."<<endl;

```

//input marks

void print\_marks(char a[]{"Nil"})//a contains teacher code if displaying for teacher

```

{
    int pos=-1;

    if(strcmp(a,"Nil")!=0)

    {
        for(int i=0;i<5;i++)

        {

```

```

if(strcmp(a,sub[i])==0)

{
    pos=i;
    break;
}

}

if(pos!=-1)

{
    if(fa1[pos]!=-1)

    {
        cout<<"FA 1:"<<fa1[pos]<<'t';

    }

    else

        cout<<"FA 1:"<<"Nil"<<'t';




if(fa2[pos]!=-1)

{
    cout<<"FA 2:"<<fa2[pos]<<'t';

}

else

    cout<<"FA 2:"<<"Nil"<<'t';

if(sa1[pos]!=-1)

{
    cout<<"SA 1 :"<<sa1[pos]<<endl;

}

else

    cout<<"SA 1 :"<<"Nil"<<endl;

```

```

    }

    else

        cout<<"You have entered the wrong subject code. Pls start from the
begining."<<endl;

    }

    else

    {

        for(int i=0;i<5;i++)

        {

            pos=i;

            cout<<sub[pos]<<'t';

            if(fa1[pos]!=-1)

            {

                cout<<"FA 1:"<<fa1[pos]<<'t';

            }

            else

                cout<<"FA 1:"<<"Nil"<<'t';




        if(fa2[pos]!=-1)

        {

            cout<<"FA 2:"<<fa2[pos]<<'t';

        }

        else

            cout<<"FA 2:"<<"Nil"<<'t';

        if(sa1[pos]!=-1)

        {

```

```

        cout<<"SA 1 :"<<sa1[pos]<<endl;

    }

    else

        cout<<"SA 1 :"<<"Nil"<<endl;

    }

}

}

};

class leave

{

public:

    char frm[10],tt[10];

    char from[10],to[10],reason[200];

    bool permission,applied;

    leave()

    {

        permission=false;

        applied=false;

    }

/*check1(char a[],char b[])

{

    strcpy(from,a);

    strcpy(to,b);

}*/



bool isLeap(int year)

```

```

{

    // Return true if year is a multiple pf 4 and
    // not multiple of 100.

    // OR year is multiple of 400.

    return (((year%4==0) && (year%100!=0)) ||
            (year%400==0));

}

// Returns true if given year is valid or not.

bool check(char fr[])
{
    int d, m, y;

    d=((fr[0]-48)*10)+(fr[1]-48);

    m=((fr[3]-48)*10)+(fr[4]-48);

    y=((fr[6]-48)*1000)+((fr[7]-48)*100)+((fr[8]-48)*10)+(fr[9]-48);

    // If year, month and day are not in given range

    if (y > MAX_VALID_YR || y < MIN_VALID_YR)

        return false;

    if (m < 1 || m > 12)

        return false;

    if (d < 1 || d > 31)

        return false;

    // Handle February month with leap year

    if (m == 2)

    {
        if (isLeap(y))

```

```

        return (d <= 29);

    else

        return (d <= 28);

    }

// Months of April, June, Sept and Nov

// must have number of days less than

// or equal to 30.

if (m==4 || m==6 || m==9 || m==11)

    return (d <= 30);

return true;

}

```

```

bool check_duration(char fr[],char to[])

{
    int dayf,dayt,mf,mt;

    bool chk=true;

    dayf=((fr[0]-48)*10)+(fr[1]-48);

    dayt=((to[0]-48)*10)+(to[1]-48);

    mf=((fr[3]-48)*10)+(fr[4]-48);

    mt=((to[3]-48)*10)+(to[4]-48);

    if((mf==mt))

    {
        if(dayf>dayt)

            chk=false;
    }
}

```

```

        if(mt<mf)

            chk=false;

        return chk;

    }

    bool find()

    {

        if((check(from)==true)&&(check(to)==true)&&(check_duration(from,to)==true))

        {

            return true;

        }

        else

            return false;

    }

/*void copydate()

{

    strcpy(from,date1);

    strcpy(to,date2);

}*/



void apply_leave(int n=0)

{



char date1[10];

char temp[2],yr[4];

char date2[10];

int fd,fm,fy,td,tm,ty;

```

```
if(n==1)

{
    permission=false;

    cout<<"Enter the from date(dd): ";

    cin>>temp;

    strcpy(date1,temp);

    strcat(date1,"-");

    cout<<"Enter to month (mm): ";

    cin>>temp;

    strcat(date1,temp);

    strcat(date1,"-");

    cout<<"Enter to year (yyyy): ";

    cin>>yr;

    strcat(date1,yr);

    strcpy(from,date1);

//strcpy(frm,from);

cout<<"Enter the to date(dd): ";

cin>>temp;

strcpy(date2,temp);

strcat(date2,"-");

cout<<"Enter to month (mm): ";

cin>>temp;

strcat(date2,temp);

strcat(date2,"-");

cout<<"Enter to year (yyyy): ";

cin>>yr;

strcat(date2,yr);
```

```

strcpy(from,date1);

strcpy(to,date2);

fd=((from[0]-48)*10)+(from[1]-48);

fm=((from[3]-48)*10)+(from[4]-48);

fy=((from[6]-48)*1000)+((from[7]-48)*100)+((from[8]-48)*10)+(from[9]-48);

td=((to[0]-48)*10)+(to[1]-48);

tm=((to[3]-48)*10)+(to[4]-48);

ty=((to[6]-48)*1000)+((to[7]-48)*100)+((to[8]-48)*10)+(to[9]-48);

if(check(from)==false)

{

    cout<<endl<<"Wrong input for from date";

    return;

}

if(check(to)==false)

{

    cout<<endl<<"Wrong input for to date";

    return;

}

if(find()==true)

{

    cout<<"Enter your reason for leave: ";

    cin.ignore();

    cin.getline(reason,200);

    applied=true;

    cout<<endl<<"Leave Saved."<<endl;

}

else

```

```

    {

        cout<<endl<<"From date cannot be greater than to date";

        return;

    }

}

if((find()==true))

{

    //cout<<"From: "<<fd<<"-"<<fm<<"-"<<fy<<endl;

    //cout<<"To: "<<td<<"-"<<tm<<"-"<<ty<<endl;

    cout<<"Reason: "<<reason<<endl;

    cout<<"Leave status: "<<((permission==true)?"Approved":"Not Approved")<<endl;

}

else

cout<<"leave not yet applied"<<endl;

}

};

// MODULE 1 : STUDENT

//All student related functions and classes

class profile

```

```

{

public:

char father[50],mother[50],address[100],phone[15],blood[4],email[50],name[50];




//functions for input

void get_profile()

{

    cout<<"Enter The Details of the student mentioned below, in the same order"<<endl;

    cout<<"Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID"<<endl;

    cin.ignore();

    cin.getline(name,50);

    cin.getline(father,50);

    cin.getline(mother,50);

    cin.getline(address,100);

    cin.getline(phone,15);

    cin.getline(blood,4);

    cin.getline(email,50);

}

void print_profile()//??to print the details

{

    cout<<"Student's name: "<<name<<endl;

    cout<<"Father's name : "<<father<<endl;

    cout<<"Mother's name : "<<mother<<endl;

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

    cout<<"Phone Number : "<<phone<<endl;
}

```

```

cout<<"Blood group : "<<blood<<endl;
cout<<"Email-ID : "<<email<<endl;
}

void modify_profile()
{
    char a[50];
    char detail[20];
    cout<<"Enter the detail you want to modify(Please enter the detail name as given in the profile):
";
    cin.ignore();
    cin.getline(detail,20);
    cout<<"Enter the change you want to make : ";
    //cin.ignore();
    cin.getline(a,50);
    cout<<endl;
    if(strcmpi(detail,"Father's name")==0)
    {
        strcpy(father,a);
        cout<<"Changes Saved."<<endl;
    }
    else if(strcmpi(detail,"mother's name")==0)
    {
        strcpy(mother,a);
        cout<<"Changes Saved."<<endl;
    }
    else if(strcmpi(detail,"Student's name")==0)

```

```
{  
  
    strcpy(name,a);  
  
    cout<<"Changes Saved."<<endl;  
  
}  
  
else if(strcmpi(detail,"Address")==0)  
  
{  
  
    strcpy(address,a);  
  
    cout<<"Changes Saved."<<endl;  
  
}  
  
else if(strcmpi(detail,"Phone number")==0)  
  
{  
  
    strcpy(phone,a);  
  
    cout<<"Changes Saved."<<endl;  
  
}  
  
else if(strcmpi(detail,"Blood group")==0)  
  
{  
  
    strcpy(blood,a);  
  
    cout<<"Changes Saved."<<endl;  
  
}  
  
else if(strcmpi(detail,"Email-ID")==0)  
  
{  
  
    strcpy(email,a);
```

```

        cout<<"Changes Saved."<<endl;
    }

    else

    {

        cout<<"Entered detail not in the same as given in the profile"<<endl;

    }

}

};


```

//class student contains all student info

```

class student

{

public:

profile p;

marks m;

leave l;

int reg,room_no;

char password[20];

int pcount;

int acount;

student()

{

pcount=0;

account=0;

```

```
    }

void get_student()

{

    cout<<"reg:";

    cin>>reg;

    cout<<"password:";

    cin>>password;

    cout<<"room:";

    cin>>room_no;

    p.get_profile();

}

void print_attendence()

{

    cout<<"Number of days present:"<<pcount<<endl;

    cout<<"Number of days absent:"<<acount<<endl;

}

};

//extracts all the data in the student file to an array of type student(s[])

void extract_to(student s[])
{
```

```

ifstream in("student.dat",ios::in|ios::binary|ios::app);

in.seekg(ios::beg);

int i;

for(i=0;i<s_size;i++)

{

    in.read((char*)&s[i],sizeof(s[i]));

}

in.close();

}

```

```

//returns position of the object in student file with reg_no=rno

int find_student(int rno)

{

    student s;

    ifstream fin;

    fin.open("student.dat",ios::in|ios::binary);

    while(fin.read((char*)&s,sizeof(s)))

    {

        if(rno==s.reg)

        {

            return(fin.tellg()-sizeof(s));

        }

    }

    fin.close();

}

```

```
//the student login page(asks for password and shows the student menu)
```

```
void s_login()
```

```
{
```

```
    int r;char p[20],pos;
```

```
    student s1[s_size],s;
```

```
    cout<<"Reg no:"; cin>>r;
```

```
/*ifstream in("student.dat",ios::in|ios::binary|ios::app);
```

```
in.seekg(ios::beg);
```

```
int i;
```

```
for(i=0;i<3;i++)
```

```
{
```

```
    in.read((char*)&s1[i],sizeof(s1[i]));
```

```
}
```

```
in.close();*/
```

```
extract_to(s1);
```

```
/*ifstream i("student.dat",ios::in|ios::binary);
```

```
i.seekg(pos);
```

```
i.read((char*)&s,sizeof(s));
```

```
i.close();
```

```
if(strcmp(s.p.name,"Nil")==0)
```

```
{
```

```
    cout<<"Reg number not found!!!";
```

```

        return;

    }*/



for(int i=0;i<s_size;i++)
{
    if(r==s1[i].reg)
    {
        pos=i;
        s=s1[i];
        break;
    }
}

cout<<"Enter Password:";cin>>p;
if(strcmp(p,s.password)!=0)
{
    cout<<"Wrong Reg no/Password combination!!"<<endl;
    system("pause");
    return;
}

int ch=0;
while(ch!=7)
{
    system("cls");
    cout<<"\n\t\tSTUDENT LOGIN\n"=<endl;
    cout<<"Student reg no: "<<s.reg<<endl<<endl;
}

```

```
cout<<"1-View profile\n2-Modify profile\n3-View marks\n4-Apply leave\n5-To view leave\n6-To view  
attendance\n7-Return to main menu\n\nEnter your choice : ";

cin>>ch;

switch(ch)

{

    case 1:

        cout<<endl;

        s.p.print_profile();

        cout<<endl;

        system("pause");

        break;

    case 2:

        cout<<endl;

        s.p.print_profile();

        cout<<endl;

        s.p.modify_profile();

        system("pause");

        cout<<endl;

        break;

    case 3:

        cout<<endl;

        s.m.print_marks();

        cout<<endl;

        system("pause");

        break;

    case 4:

        cout<<endl;
```

```
s.l.apply_leave(1);

cout<<endl;

system("pause");

break;

case 5:

cout<<endl;

s.l.apply_leave();

cout<<endl;

system("pause");

break;

case 6:

cout<<endl;

s.print_attendence();

cout<<endl;

system("pause");

break;

case 7:

break;

default:

cout<<endl;

cout<<"You have entered Invalid option";

cout<<endl;

system("pause");

break;

}

}
```

```
s1[pos]=s;  
ofstream o("student.dat",ios::out|ios::binary);  
//o.seekp(pos);  
  
for(int i=0;i<s_size;i++)  
{  
    o.write((char*)&s1[i],sizeof(s1[i]));  
}  
o.close();  
}
```

// MODULE 2: LIBRARY

//library related

class book

```
{  
    char bno[6];  
    char bname[50];  
    char aname[20];
```

```
public:

    void create_book()

    {

cout<<"\nNEW BOOK ENTRY...\n";

cout<<"\nEnter The book no./";

cin>>bno;

cout<<"\n\nEnter The Name of The Book ";

cin>>bname;

cout<<"\n\nEnter The Author's Name ";

cin>>aname;

cout<<"\n\nBook Created..";

}


```

```
void show_book()

{

cout<<"\nBook no. : "<<bno;

cout<<"\nBook Name : ";

cout<<bname;

cout<<"\nAuthor Name : ";

cout<<aname;

}


```

```
void modify_book()

{

cout<<"\nBook no. : "<<bno;

cout<<"\nModify Book Name : ";

cin>>bname;
```

```

cout<<"\nModify Author's Name of Book : ";
cin>>aname;

}

char* retbno()
{
    return bno;
}

void report()
{cout<<bno<<setw(30)<<bname<<setw(30)<<aname<<endl;}

};

//class ends here

fstream fp,fp1;
book bk;

void write_book()
{
    char ch;
    fp.open("book.dat",ios::out|ios::app);
    do
    {
        bk.create_book();

```

```

fp.write((char*)&bk,sizeof(book));

cout<<"\n\nDo you want to add more record..(y/n?)";

cin>>ch;

}while(ch=='y' || ch=='Y');

fp.close();

}

```

```

void display_spb(char n[])

{
    cout<<"\nBOOK DETAILS\n";

    int flag=0;

    fp.open("book.dat",ios::in);

    while(fp.read((char*)&bk,sizeof(book)))

```

```

    {
        if(strcmpi(bk.retno(),n)==0)

        {
            bk.show_book();

            flag=1;
        }
    }

```

```

fp.close();

if(flag==0)

cout<<"\n\nBook does not exist";

```

```
}
```

```

void modify_book()
{
    char n[6];
    int found=0;

    cout<<"\n\n\tMODIFY BOOK REOCORD.... ";
    cout<<"\n\n\tEnter The book no. of The book";
    cin>>n;
    fp.open("book.dat",ios::in|ios::out);
    while(fp.read((char*)&bk,sizeof(book)) && found==0)
    {
        if(strcmpi(bk.retbno(),n)==0)
        {
            bk.show_book();
            cout<<"\nEnter The New Details of book"<<endl;
            bk.modify_book();
            int pos=-1*sizeof(bk);
            fp.seekp(pos,ios::cur);
            fp.write((char*)&bk,sizeof(book));
            cout<<"\n\n\t Record Updated";
            found=1;
        }
    }
    fp.close();
}

```

```

if(found==0)
    cout<<"\n\n Record Not Found ";

}

void delete_book()
{
char n[6];

cout<<"\n\n\n\tDELETE BOOK ...";
cout<<"\n\nEnter The Book no. of the Book You Want To Delete : ";
cin>>n;

fp.open("book.dat",ios::in|ios::out);
fstream fp2;
fp2.open("Temp.dat",ios::out);
fp.seekg(0,ios::beg);

while(fp.read((char*)&bk,sizeof(book)))
{
    if(strcmpi(bk.retbno(),n)!=0)
    {
        fp2.write((char*)&bk,sizeof(book));
    }
}

fp2.close();
fp.close();

```

```

remove("book.dat");

rename("Temp.dat","book.dat");

cout<<"\n\n\tRecord Deleted ..";

}

void display_allb()
{
    fp.open("book.dat",ios::in);

    if(!fp)
    {
        cout<<"ERROR!!! FILE COULD NOT BE OPEN ";

        return;
    }

    cout<<"\n\n\tBook LIST\n\n";
    cout<<"=====\n";
    cout<<"Book Number"<<setw(20)<<"Book Name"<<setw(25)<<"Author\n";
    cout<<"=====\n\n";

    while(fp.read((char*)&bk,sizeof(book)))
    {
        bk.report();
    }
}

```

```
fp.close();  
  
}  
  
void ladmin_menu()  
{  
    int choice=0;  
  
    while(choice!=6)  
    {  
        system("cls");  
  
        cout<<"\n\t\tLIBRARY MENU\n\n 1.CREATE BOOK 2.DISPLAY ALL BOOKS 3.DISPLAY SPECIFIC BOOK 4.MODIFY  
BOOK 5.DELETE BOOK 6.BACK TO PREV MENU "<<endl;  
  
        cin>>choice;  
  
        switch(choice)  
        {  
            case 1:  
                write_book();  
                system("pause");  
                break;  
  
            case 2:  
                display_allb();  
                system("pause");  
                break;  
  
            case 3: {  
                char num[6];  
  
                cout<<"\n\n\tPlease Enter The book No. ";
```

```
    cin>>num;

    display_spb(num);

    system("pause");

    break;

}

case 4:

modify_book();

system("pause");

break;

case 5:

delete_book();

system("pause");

break;

case 6:

break;

default:

cout<<endl;

cout<<"You have entered Invalid option";

cout<<endl;

}

}

}

class lib

{

public:
```

```

int lib_no;

char name[20];

char password[20];


void get_lib()

{

    cout<<"Librarian no"; cin>>lib_no;

    cout<<"Name:";      cin>>name;

    cout<<"password:";   cin>>password;

}

void print_lib()

{

    cout<<"Librarian no: "<<lib_no<<endl;

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

}

};

//returns position of the object in librarian file with lib_no=rno

int find_lib(int rno)

{

    lib a,nil;

    strcpy(nil.name,"Nil");

    ifstream fin;

    fin.open("lib.dat",ios::in|ios::binary);

    while(fin.read((char*)&a,sizeof(a)))

    {

```

```

        if(rno==a.lib_no)

    {

        return(fin.tellg()-sizeof(a));

    }

fin.close();

return -1;

}

//the librarian login page(asks for password and shows the librarian menu)

void l_login()

{

    int r;char p[20];

    lib w;

    cout<<"Librarian no:"; cin>>r;

    int pos=find_lib(r);

    if(pos==-1)

    {

        cout<<endl<<"Librarian number not found!!"<<endl;

        system("pause");

        return;

    }

ifstream i("lib.dat",ios::in|ios::binary);

```

```

i.seekg(pos);

i.read((char*)&w,sizeof(w));

i.close();

/*
ifstream in("warden.dat",ios::in|ios::binary|ios::app);

in.seekg(ios::beg);

int i;

for(i=0;i<1;i++)

{

    in.read((char*)&w,sizeof(w));

}

in.close();

*/
cout<<"Enter Password:";cin>>p;

if(strcmp(p,w.password)!=0)

{

    cout<<endl<<"Wrong password!!"<<endl;

    system("pause");

    return;

}

ladmin_menu();

ofstream o("lib.dat",ios::out|ios::binary);

o.seekp(pos);

for(int i=0;i<1;i++)

```

```
{  
    o.write((char*)&w,sizeof(w));  
}  
  
o.close();  
}
```

// MODULE 3 FACULTY

//All faculty related functions and classes

//class faculty contains all faculty info

class faculty

```
{  
public:  
    int fac_no;  
    char sub_code[10];  
    char name[50];  
    char password[20];  
    //student s[100];
```

```
void get_faculty()
{
    cout<<"reg no:"<<endl;
    cin>>fac_no;
    cout<<"subject code"<<endl;
    cin>>sub_code;
    cout<<"name"<<endl;
    cin.ignore();
    cin.getline(name,50);
    cout<<"password"<<endl;
    cin>>password;
}
```

```
void print_faculty()
{
    cout<<"Faculty number : "<<fac_no<<endl;
    cout<<"Subject code : "<<sub_code<<endl;
    cout<<"Faculty name : "<<name<<endl;
}
```

```

void view_marks()
{
    student s[s_size];
    extract_to(s);
    for(int i=0;i<s_size;i++)
    {
        cout<<"Reg no:"<<s[i].reg<<'\t';
        s[i].m.print_marks(sub_code);
    }
}

void enter_marks()
{
    student s[s_size];
    extract_to(s);

    int reg_no=0;
    while(reg_no!=-1)
    {
        view_marks();
        cout<<endl<<"Enter the Reg no of the student to enter marks or -1 to quit: ";
        cin>>reg_no;
        for(int i=0;i<s_size;i++)
        {
            if(reg_no==s[i].reg)
            {

```

```

        s[i].m.enter_marks(sub_code);

    }

}

ofstream o("student.dat",ios::out|ios::binary);

int i;

for(i=0;i<s_size;i++)

{

    o.write((char*)&s[i],sizeof(s[i]));

}

}

//void check_reval()//mark correction

};

//returns position of the object in faculty file with fac_no=rno

int find_faculty(int rno)

{

faculty s,nil;

strcpy(nil.name,"Nil");

ifstream fin;

fin.open("faculty.dat",ios::in|ios::binary);

while(fin.read((char*)&s,sizeof(s)))

{

    if(rno==s.fac_no)

    {

        return(fin.tellg()-sizeof(s));

```

```

        }

    }

fin.close();

return -1;

}

//the faculty login page(asks for password and shows the faculty menu)

void f_login()

{

/*ifstream in("faculty.dat",ios::in|ios::binary);

faculty f1;

in.seekg(ios::beg);

for(int i=0;i<f_size;i++)

{

    in.read((char*)&f1,sizeof(f1));

    f1.print_faculty();

}

in.close();

system("pause");*/



int r;char p[20];

faculty t[f_size],f;

cout<<"Faculty no:"; cin>>r;

int pos;

/*int pos=find_faculty(r);

```

```
if(pos==-1)
{
    cout<<endl<<"Faculty number not found!!"<<endl;
    system("pause");
    return;
}
```

```
ifstream i("faculty.dat",ios::in|ios::binary);
i.seekg(pos);
i.read((char*)&f,sizeof(f));
i.close();
*/
```

```
ifstream in("faculty.dat",ios::in|ios::binary);
in.seekg(ios::beg);
int i;
for(i=0;i<f_size;i++)
{
    in.read((char*)&t[i],sizeof(t[i]));
    /*t.print_faculty();
    if(t.fac_no==r)
    {
        f=t;
        cout<<endl<<"found"<<endl;
    }*/
}
in.close();
```

```

for(int i=0;i<f_size;i++)
{
    if(r==t[i].fac_no)
    {
        pos=i;
        f=t[i];
        break;
    }
}

cout<<"Enter Password:";cin>>p;
if(strcmp(p,f.password)!=0)
{
    cout<<"Wrong Reg no/Password combination!!"<<endl;
    system("pause");
    return;
}

int ch=0;
while(ch!=4)
{
    system("cls");
    cout<<"\n\t\t\tFACULTY LOGIN\n";
    cout<<"Faculty no: "<<f.fac_no<<endl<<endl;
    cout<<"1-View profile\n2-View Students Marks\n3-Enter student marks\n4-Return to main
menu\n\nEnter your choice : ";

```

```
cin>>ch;

switch(ch)

{

    case 1:

        cout<<endl;

        f.print_faculty();

        cout<<endl;

        system("pause");

        break;

    case 2:

        cout<<endl;

        f.view_marks();

        cout<<endl;

        system("pause");

        break;

    case 3:

        cout<<endl;

        f.enter_marks();

        cout<<endl;

        //system("pause");

        break;

    case 4:

        break;

    default:

        cout<<endl;

        cout<<"You have entered Invalid option";

        cout<<endl;
```

```
        system("pause");

        break;

    }

}

/*ofstream o("faculty.dat",ios::out|ios::binary);

o.seekp(pos);

o.write((char*)&f,sizeof(f));

o.close();*/

t[pos]=f;

ofstream o("faculty.dat",ios::out|ios::binary);

for(int i=0;i<f_size;i++)

{

    o.write((char*)&t[i],sizeof(t[i]));

}

o.close();

}

// MODULE 4 WARDEN

//All warden related functions and classes

//class warden contains all warden info
```

```
class warden

{

//student s[100];

public:

int ward_no;

char name[20];

char password[20];

/*void extract_to(student& a[])
{
}*/



void get_warden()

{

    cout<<"Warden no";    cin>>ward_no;

    cout<<"Name:";        cin>>name;

    cout<<"password:";    cin>>password;

}

void print_warden()

{

    cout<<"Warden no: "<<ward_no<<endl;

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

}

void mark_attendance()
```

```

{

student s[s_size];

extract_to(s);

//has the object of the students from the file

//input to the student object is done here

for(int i=0;i<s_size;i++)

{

    cout<<"Enter if Reg no: "<<s[i].reg<<" is present or absent (p/a): ";

    char a;

    cin>>a;

    if(a=='p')

        s[i].pcount++;

    else

        s[i].acount++;

}

ofstream o("student.dat",ios::out|ios::binary);

o.seekp(ios::beg);

for(int i=0;i<s_size;i++)

{

    o.write((char*)&s[i],sizeof(s[i]));

}

o.close();

}

void approve_leave()

{

student s[s_size];

```

```

extract_to(s);

char l;

int flag=0;

for(int i=0;i<s_size;i++)

{

    if(s[i].l.applied==true)

    {

        flag=1;

        cout<<"Reg no : "<<s[i].reg<<" has applied leave."<<endl;

        s[i].l.apply_leave();

        cout<<"Do you want to approve the leave? (y/n) "<<endl;

        cin>>l;

        if(l=='y')

        {

            s[i].l.permission=true;

            s[i].l.applied=false;

        }

        else

        {

            s[i].l.permission=false;

            s[i].l.applied=false;

        }

    }

}

if(flag==0)
{

```

```

        cout<<endl<<"No leave applications yet"<<endl;

    }

ofstream o("student.dat",ios::out|ios::binary);

o.seekp(ios::beg);

for(int i=0;i<s_size;i++)

{

o.write((char*)&s[i],sizeof(s[i]));




}

o.close();

}

void warden_search()

{

student s[s_size];

extract_to(s);

for(int i=0;i<s_size;i++)

{

cout<<"Reg no: "<<s[i].reg<<"\tName :"<<s[i].p.name<<endl;

}

cout<<endl<<"Enter the reg no of the student whose profile you want to view: ";

int temp_reg;

cin>>temp_reg;

cout<<endl;

for(int i=0;i<s_size;i++)

{



if(s[i].reg==temp_reg)

```

```

    {
        s[i].p.print_profile();

        cout<<"Room no: "<<s[i].room_no<<endl;

        s[i].print_attendance();
    }

}

};

//returns position of the object in warden file with ward_no=rno

int find_warden(int rno)

{
    warden s,nil;

    strcpy(nil.name,"Nil");

    ifstream fin;

    fin.open("warden.dat",ios::in|ios::binary);

    while(fin.read((char*)&s,sizeof(s)))

    {
        if(rno==s.ward_no)

        {
            return(fin.tellg()-sizeof(s));
        }
    }

    fin.close();

    return -1;
}

```

```
}
```

```
//the warden login page(asks for password and shows the warden menu)
```

```
void w_login()
```

```
{
```

```
    int r;char p[20];
```

```
    warden w;
```

```
    cout<<"Warden no:"; cin>>r;
```

```
    int pos=find_warden(r);
```

```
    if(pos==-1)
```

```
{
```

```
        cout<<endl<<"Warden number not found!!"<<endl;
```

```
        system("pause");
```

```
        return;
```

```
}
```

```
ifstream i("warden.dat",ios::in|ios::binary);
```

```
i.seekg(pos);
```

```
i.read((char*)&w,sizeof(w));
```

```
i.close();
```

```
/*
```

```
ifstream in("warden.dat",ios::in|ios::binary|ios::app);
```

```
in.seekg(ios::beg);
```

```

int i;

for(i=0;i<1;i++)
{
    in.read((char*)&w,sizeof(w));
}

in.close();

*/



cout<<"Enter Password:";cin>>p;

if(strcmp(p,w.password)!=0)
{
    cout<<endl<<"Wrong password!!"<<endl;
    system("pause");
    return;
}

int ch=0;

while(ch!=4)

{
    system("cls");

    cout<<"\n\t\tWARDEN LOGIN\n";
    cout<<"Warden no: "<<w.ward_no<<endl<<endl;

    cout<<"1-Mark attendance\n2-Approve leave\n3-View student detail\n4-Return to main
menu\n\nEnter your choice : ";

    cin>>ch;
}

```

```
switch(ch)

{
    case 1:
        cout<<endl;
        w.mark_attendance();
        cout<<endl;
        system("pause");
        break;

    case 2:
        cout<<endl;
        w.approve_leave();
        cout<<endl;
        system("pause");
        break;

    case 3:
        cout<<endl;
        w.warden_search();
        cout<<endl;
        system("pause");
        break;

    case 4:
        //return;
        break;

    default:
        cout<<endl;
        cout<<"You have entered Invalid option";
        cout<<endl;
```

```
        system("pause");

    }

ofstream o("warden.dat",ios::out|ios::binary);

o.seekp(pos);

for(int i=0;i<1;i++)

{

    o.write((char*)&w,sizeof(w));

}

o.close();

}
```

//MODULE 5 ADMIN

//All admin related functions and classes

```
class admin

{

public:

int admin_no;

char name[20];

char password[20];
```

```

void get_admin()

{
    cout<<"Admin no";      cin>>admin_no;
    cout<<"Name:";        cin>>name;
    cout<<"password:";    cin>>password;
}

void print_admin()

{
    cout<<"Admin no: "<<admin_no<<endl;
    cout<<"Name: "<<name<<endl;
}

//returns position of the object in admin file with admin_no=rno

int find_admin(int rno)

{
    admin a,nil;

    strcpy(nil.name,"Nil");

    ifstream fin;

    fin.open("admin.dat",ios::in|ios::binary);

    while(fin.read((char*)&a,sizeof(a)))

    {
        if(rno==a.admin_no)

        {
            return(fin.tellg()-sizeof(a));
        }
    }
}

```

```
}

fin.close();

return -1;

}

//the admin login page(asks for password and shows the admin menu)

void a_login()

{

int r;char p[20];

admin a;

cout<<"Admin no:"; cin>>r;

int pos=find_admin(r);

if(pos==-1)

{

    cout<<endl<<"Admin not found!!"<<endl;

    system("pause");

    return;

}

ifstream i("admin.dat",ios::in|ios::binary);

i.seekg(pos);

i.read((char*)&a,sizeof(a));

i.close();
```

```

cout<<"Enter Password:";cin>>p;
if(strcmp(p,a.password)!=0)
{
    cout<<endl<<"Wrong password!!"<<endl;
    system("pause");
    return;
}

int ch=0;

while(ch!=5)
{
    system("cls");
    cout<<"\n\t\t\tADMIN LOGIN\n"<<endl;
    cout<<"0-VIEW PROFILE\n1-STUDENT DETAILS\n2-FACULTY DETAILS\n3-WARDEN DETAILS\n4-
LIBRARIAN DETAILS\n5-Return to main menu\n\n Enter your choice : ";
    cin>>ch;
    switch(ch)
    {
        case 0:
            cout<<endl;
            a.print_admin();
            cout<<endl;
            system("pause");
    }
}

```

```
        break;

    case 1:

    {

        cout<<endl;

        //To input student data to file

ofstream o("student.dat",ios::out|ios::binary);

for(int i=0;i<s_size;i++)

{

    student s1;

    s1.get_student();

    o.write((char*)&s1,sizeof(s1));

}

o.close();
```

```
        cout<<endl;

        system("pause");

        break;

}
```

```
case 2:

{

    cout<<endl;

    //To input faculty data to file

ofstream o("faculty.dat",ios::out|ios::binary);

for(int i=0;i<f_size;i++)

{

    faculty f;
```

```

f.get_faculty();

o.write((char*)&f,sizeof(f));

}

o.close();

cout<<endl;

system("pause");

break;

}

case 3:

{

cout<<endl;

//To input warden data to file

ofstream o("warden.dat",ios::out|ios::binary);

warden w;

w.get_warden();

o.write((char*)&w,sizeof(w));

o.close();

cout<<endl;

system("pause");

break;

}

case 4:

{

```

cout<<endl;

//To input librarian data to file

```

ofstream o("lib.dat",ios::out|ios::binary);

lib w;

```

```

w.get_lib();

o.write((char*)&w,sizeof(w));

o.close();

cout<<endl;

system("pause");

break;

}

case 5:

//return;

break;

default:

cout<<endl;

cout<<"You have entered Invalid option";

cout<<endl;

system("pause");




}

}

void crad()

{

int input=0;

cout<<"Enter Root Password to Access Administrator Creation"<<endl;

cin>>input;

if(input==7168)

{

```

```
//To input Admin data to file

ofstream o("admin.dat",ios::out|ios::binary);

for(int i=0;i<a_size;i++)

{

    admin a;

    a.get_admin();

    o.write((char*)&a,sizeof(a));

}

o.close();

}

else

;

}
```

// MAIN FUNCTION

//The main function shows initial menu to login as stud, faculty or warden

```
int main()

{

    int choice=0;

    while(choice!=5)

    {
```

```

system("cls");

cout<<"\n\t\tRESIDENTIAL SCHOOL MANAGEMENT SYSTEM\n\n"<<endl;

cout<<"\tEnter 0-Administrator 1-Student 2-Faculty 3-Warden 4-Library 5-Exit"<<endl<<"\t";

cin>>choice;

switch(choice)

{

    case 0:

        system("cls");

        cout<<"\n\t\tADMIN LOGIN\n"<<endl;

        a_login();

        break;

    case 1:

        system("cls");

        cout<<"\n\t\tSTUDENT LOGIN\n"<<endl;

        s_login();

        break;

    case 2:

        system("cls");

        cout<<"\n\t\tFACULTY LOGIN\n"<<endl;

        f_login();

        system("cls");

        break;

    case 3:

        system("cls");

        cout<<"\n\t\tWARDEN LOGIN\n"<<endl;

        w_login();

        system("cls");

```

```
        break;

case 4:
    system("cls");
    cout<<"\n\t\tLIBRARY MENU\n"<<endl;
    l_login();
    system("cls");

        break;

case 5:
    break;

case 99:
    system("cls");
    crad();
    system("cls");

        break;

default:
    cout<<"You have entered an invalid option."<<endl;
    system("pause");
}

}

}
```

## Results

### Screenshots

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
ADMIN LOGIN

0-VIEW PROFILE
1-STUDENT DETAILS
2-FACULTY DETAILS
3-WARDEN DETAILS
4-LIBRARIAN DETAILS
5-Return to main menu

Enter your choice : 0

Admin no: 1
Name: admin

Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\dsaproj5.0.exe
ADMIN LOGIN

Admin no:1
Enter Password:admin
```

```

C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
LIBRARY MENU
1.CREATE BOOK 2.DISPLAY ALL BOOKS 3.DISPLAY SPECIFIC BOOK 4.MODIFY BOOK 5.DELETE BOOK 6.BACK TO PREV MENU
3

Please Enter The book No. 1

BOOK DETAILS
Book no. : 1
Book Name : HarryPotter
Author Name : JK.RowlingPress any key to continue . . .

C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
FACULTY LOGIN
Faculty no: 11
1-View profile
2-View Students Marks
3-Enter student marks
4-Return to main menu
Enter your choice : 3

Reg no:1 FA 1:50 FA 2:45 SA 1 :40
Reg no:2 FA 1:Nil FA 2:Nil SA 1 :Nil
Reg no:3 FA 1:Nil FA 2:Nil SA 1 :Nil
Reg no:4 FA 1:Nil FA 2:Nil SA 1 :Nil
Reg no:5 FA 1:Nil FA 2:Nil SA 1 :Nil

Enter the Reg no of the student to enter marks or -1 to quit: 2
Enter the marks for subject MAT
1:FA 1 1 2:FA 2 2 3:SA 1
Enter your option:1
Enter the marks:35

Reg no:1 FA 1:50 FA 2:45 SA 1 :40
Reg no:2 FA 1:35 FA 2:Nil SA 1 :Nil
Reg no:3 FA 1:Nil FA 2:Nil SA 1 :Nil
Reg no:4 FA 1:Nil FA 2:Nil SA 1 :Nil
Reg no:5 FA 1:Nil FA 2:Nil SA 1 :Nil

Enter the Reg no of the student to enter marks or -1 to quit: 2
Enter the marks for subject MAT
1:FA 1 1 2:FA 2 2 3:SA 1
Enter your option:2
Enter the marks:22

Reg no:1 FA 1:50 FA 2:45 SA 1 :40
Reg no:2 FA 1:35 FA 2:22 SA 1 :Nil
Reg no:3 FA 1:Nil FA 2:Nil SA 1 :Nil
Reg no:4 FA 1:Nil FA 2:Nil SA 1 :Nil
Reg no:5 FA 1:Nil FA 2:Nil SA 1 :Nil

Enter the Reg no of the student to enter marks or -1 to quit: 2
Enter the marks for subject MAT
1:FA 1 1 2:FA 2 2 3:SA 1
Enter your option:3
Enter the marks:39

Reg no:1 FA 1:50 FA 2:45 SA 1 :40
Reg no:2 FA 1:35 FA 2:22 SA 1 :39
Reg no:3 FA 1:Nil FA 2:Nil SA 1 :Nil
Reg no:4 FA 1:Nil FA 2:Nil SA 1 :Nil
Reg no:5 FA 1:Nil FA 2:Nil SA 1 :Nil

Enter the Reg no of the student to enter marks or -1 to quit: -1

```

Activate Windows  
Go to Settings to activate Windows.

```
C:\Users\DELL\Desktop\DSA\COMPONENT\dsaproj5.0.exe
ADMIN LOGIN

0-VIEW PROFILE
1-STUDENT DETAILS
2-FACULTY DETAILS
3-WARDEN DETAILS
4-LIBRARIAN DETAILS
5-Return to main menu

Enter your choice : 2

reg no:
11
subject code
MAT
name
Raja
password
raja
reg no:
12
subject code
ENG
name
srinivasan
password
srinivasan
reg no:
13
subject code
CSE
name
Ashok
password
ashok
reg no:
14
subject code
PHY
name
Ankur
password
ankur
reg no:
15
subject code
CHEM
name
Amit
password
amit

Press any key to continue . . .
```

Activate Windows  
Go to Settings to activate Windows.

```
C:\Users\DELL\Desktop\dsaproj5.0.exe
RESIDENTIAL SCHOOL MANAGEMENT SYSTEM

Enter 0-Administrator 1-Student 2-Faculty 3-Warden 4-Library 5-Exit
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
ADMIN LOGIN

0-VIEW PROFILE
1-STUDENT DETAILS
2-FACULTY DETAILS
3-WARDEN DETAILS
4-LIBRARIAN DETAILS
5-Return to main menu

Enter your choice : 4

Librarian no 1
Name:Lisa
password:lib

Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
LIBRARY MENU

1.CREATE BOOK 2.DISPLAY ALL BOOKS 3.DISPLAY SPECIFIC BOOK 4.MODIFY BOOK 5.DELETE BOOK 6.BACK TO PREV MENU
2

Book LIST
=====
Book Number      Book Name          Author
=====
2              Timelapse          Follet
Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
LIBRARY MENU
1.CREATE BOOK 2.DISPLAY ALL BOOKS 3.DISPLAY SPECIFIC BOOK 4.MODIFY BOOK 5.DELETE BOOK 6.BACK TO PREV MENU
1

NEW BOOK ENTRY...
Enter The book no.1

Enter The Name of The Book HarryPotter

Enter The Author's Name JK.Rowling

Book Created..

Do you want to add more record..(y/n?)y
NEW BOOK ENTRY...
Enter The book no.2

Enter The Name of The Book Timelapse

Enter The Author's Name Follet

Book Created..

Do you want to add more record..(y/n?)n
Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
LIBRARY MENU
1.CREATE BOOK 2.DISPLAY ALL BOOKS 3.DISPLAY SPECIFIC BOOK 4.MODIFY BOOK 5.DELETE BOOK 6.BACK TO PREV MENU
5

DELETE BOOK ...

Enter The Book no. of the Book You Want To Delete : 1

Record Deleted ..Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
LIBRARY MENU
1.CREATE BOOK 2.DISPLAY ALL BOOKS 3.DISPLAY SPECIFIC BOOK 4.MODIFY BOOK 5.DELETE BOOK 6.BACK TO PREV MENU
2

Book LIST
=====
Book Number      Book Name          Author
=====
1              HarryPotter        JK.Rowling
2              Timelapse          Follet
Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
LIBRARY MENU
1.CREATE BOOK 2.DISPLAY ALL BOOKS 3.DISPLAY SPECIFIC BOOK 4.MODIFY BOOK 5.DELETE BOOK 6.BACK TO PREV MENU
4

MODIFY BOOK RECORD...
Enter The book no. of The book1
Book no. : 1
Book Name : HarryPotter
Author Name : JK.Rowling
Enter The New Details of book
Book no. : 1
Modify Book Name : HarryStyles
Modify Author's Name of Book : OneDirection

Record UpdatedPress any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
LIBRARY MENU
1.CREATE BOOK 2.DISPLAY ALL BOOKS 3.DISPLAY SPECIFIC BOOK 4.MODIFY BOOK 5.DELETE BOOK 6.BACK TO PREV MENU
2

Book LIST
=====
Book Number      Book Name          Author
=====
1              HarryStyles        OneDirection
2              Timelapse           Follet
Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
STUDENT LOGIN

Student reg no: 1
1-View profile
2-Modify profile
3-View marks
4-Apply leave
5-To view leave
6-To view attendance
7-Return to main menu

Enter your choice : 2

Student's name: Veera
Father's name : Vijayaprasad
Mother's name : Vaishnavi
Address : Chennai
Phone Number : 9876453788
Blood group : B
Email-ID : veera.v@gmail.com

Enter the detail you want to modify(Please enter the detail name as given in the profile): Phone Number
Enter the change you want to make : 9800001123

Changes Saved.
Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
STUDENT LOGIN

Student reg no: 1

1-View profile
2-Modify profile
3-View marks
4-Apply leave
5-To view leave
6-To view attendance
7-Return to main menu

Enter your choice : 6

Number of days present:0
Number of days absent:0

Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
STUDENT LOGIN

Student reg no: 1

1-View profile
2-Modify profile
3-View marks
4-Apply leave
5-To view leave
6-To view attendance
7-Return to main menu

Enter your choice : 4

Enter the from date(dd): 10
Enter to month (mm): 10
Enter to year (yyyy): 2017
Enter the to date(dd): 12
Enter to month (mm): 10
Enter to year (yyyy): 2017
Enter your reason for leave: Festival

Leave Saved.
Reason: Festival
Leave status: Not Approved

Press any key to continue . . .
```

```
■ Select C:\Users\Del\Desktop\DSA\COMPONENT\dsaproj5.0.exe
ADMIN LOGIN

0-VIEW PROFILE
1-STUDENT DETAILS
2-FACULTY DETAILS
3-MODERATOR DETAILS
4-LIBRARIAN DETAILS
5-Return to main menu

Enter your choice : 1

reg1
password1
room:1
Enter The Details of the student mentioned below, in the same order
Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID
Veera
Vijayaprasad
Vaishnavi
Chennai
9876453788
B
veera.v@gmail.com
reg2
password2
room:2
Enter The Details of the student mentioned below, in the same order
Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID
Rajat
Rajkumar
Bushila
Bangalore
9870065433
B
rajat.t@gmail.com
reg3
password3
room:3
Enter The Details of the student mentioned below, in the same order
Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID
Samyogita
Kashi Raj
Sanu
Pokhara
9858690878
B
samyogita.b@gmail.com
reg4
password4
room:4
Enter The Details of the student mentioned below, in the same order
Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID
Arsh
Amitya
Sonyiya
Mumbai
9987564453
B
arsh.t@gmail.com
reg5
password5
room:5
```

Activate Windows  
Go to Settings to activate Windows.

```
■ Select C:\Users\Del\Desktop\DSA\COMPONENT\dsaproj5.0.exe
room:1
Enter The Details of the student mentioned below, in the same order
Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID
Veera
Vijayaprasad
Vaishnavi
Chennai
9876453788
B
veera.v@gmail.com
reg2
password2
room:2
Enter The Details of the student mentioned below, in the same order
Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID
Rajat
Rajkumar
Bushila
Bangalore
9870065433
B
rajat.t@gmail.com
reg3
password3
room:3
Enter The Details of the student mentioned below, in the same order
Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID
Samyogita
Kashi Raj
Sanu
Pokhara
9858690878
B
samyogita.b@gmail.com
reg4
password4
room:4
Enter The Details of the student mentioned below, in the same order
Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID
Arsh
Amitya
Sonyiya
Mumbai
9987564453
B
arsh.t@gmail.com
reg5
password5
room:5
Enter The Details of the student mentioned below, in the same order
Student's name,Father's name, Mother's name, Address, phone, blood group, Email-ID
Prakash
Padma
Shivam
New Delhi
9764588035
AB
prakash.s@gmail.com

Press any key to continue . . .
```

Activate Windows  
Go to Settings to activate Windows.

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
STUDENT LOGIN

Student reg no: 1

1-View profile
2-Modify profile
3-View marks
4-Apply leave
5-To view leave
6-To view attendance
7-Return to main menu

Enter your choice : 1

Student's name: Veera
Father's name : Vijayaprasad
Mother's name : Vaishnavi
Address : Chennai
Phone Number : 9876453788
Blood group : B
Email-ID : veera.v@gmail.com

Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
STUDENT LOGIN

Student reg no: 1

1-View profile
2-Modify profile
3-View marks
4-Apply leave
5-To view leave
6-To view attendance
7-Return to main menu

Enter your choice : 3

MAT      FA 1:50 FA 2:45 SA 1 :10
PHY      FA 1:Nil        FA 2:Nil        SA 1 :Nil
CHEM    FA 1:Nil        FA 2:Nil        SA 1 :Nil
CSE      FA 1:Nil        FA 2:Nil        SA 1 :Nil
ENG      FA 1:Nil        FA 2:Nil        SA 1 :Nil

Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
FACULTY LOGIN

Faculty no: 11

1-View profile
2-View Students Marks
3-Enter student marks
4-Return to main menu

Enter your choice : 2

Reg no:1      FA 1:50 FA 2:45 SA 1 :10
Reg no:2      FA 1:Nil      FA 2:Nil      SA 1 :Nil
Reg no:3      FA 1:Nil      FA 2:Nil      SA 1 :Nil
Reg no:4      FA 1:Nil      FA 2:Nil      SA 1 :Nil
Reg no:5      FA 1:Nil      FA 2:Nil      SA 1 :Nil

Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
FACULTY LOGIN

Faculty no: 11

1-View profile
2-View Students Marks
3-Enter student marks
4-Return to main menu

Enter your choice : 1

Faculty number : 11
Subject code : MAT
Faculty name : Raja

Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
ADMIN LOGIN

0-VIEW PROFILE
1-STUDENT DETAILS
2-FACULTY DETAILS
3-WARDEN DETAILS
4-LIBRARIAN DETAILS
5-Return to main menu

Enter your choice : 3

Warden no1
Name:warden
password:warden

Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
WARDEN LOGIN

Warden no: 1
1-Mark attendance
2-Approve leave
3-View student detail
4-Return to main menu

Enter your choice : 2

Reg no : 1 has applied leave.
Reason: Festival
Leave status: Not Approved
Do you want to approve the leave? (y/n)
y

Press any key to continue . . .
```

```
C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
WARDEN LOGIN

Warden no: 1

1-Mark attendance
2-Approve leave
3-View student detail
4-Return to main menu

Enter your choice : 1

Enter if Reg no: 1 is present or absent (p/a): p
Enter if Reg no: 2 is present or absent (p/a): p
Enter if Reg no: 3 is present or absent (p/a): p
Enter if Reg no: 4 is present or absent (p/a): a
Enter if Reg no: 5 is present or absent (p/a): a

Press any key to continue . . .
```

```
Select C:\Users\DELL\Desktop\DSAJCOMPONENT\dsaproj5.0.exe
WARDEN LOGIN

Warden no: 1

1-Mark attendance
2-Approve leave
3-View student detail
4-Return to main menu

Enter your choice : 3

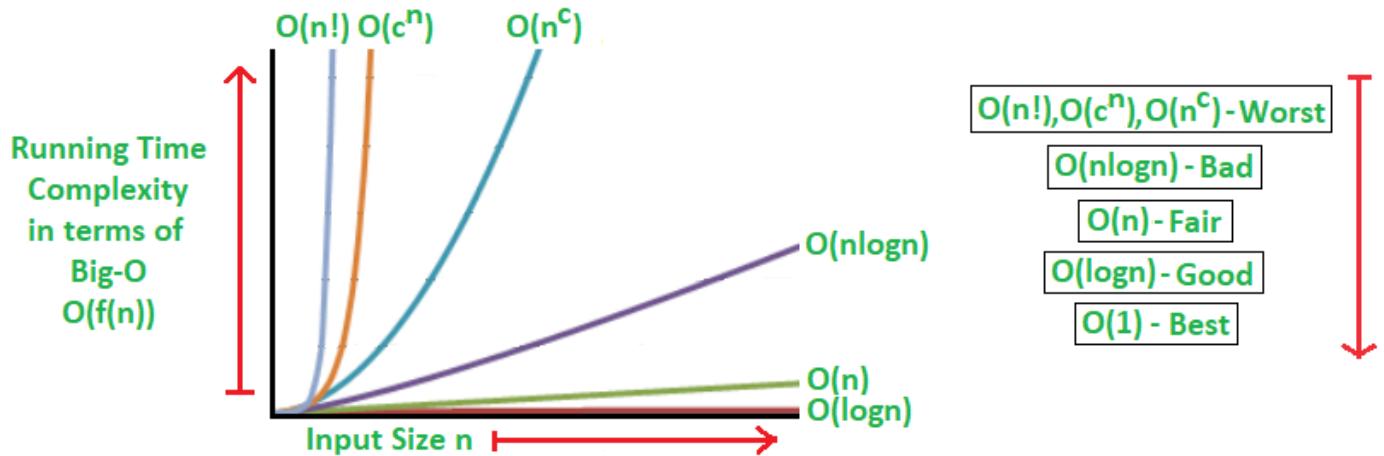
Reg no: 1      Name :Veera
Reg no: 2      Name :Rajat
Reg no: 3      Name :Samyogita
Reg no: 4      Name :Arsh
Reg no: 5      Name :Prikshit

Enter the reg no of the student whose profile you want to view: 2

Student's name: Rajat
Father's name : Rajkumar
Mother's name : Sushila
Address : Bangalore
Phone Number : 9870065433
Blood group : A
Email-ID : rajat.t@gmail.com
Room no: 2
Number of days present:1
Number of days absent:0

Press any key to continue . . .
```

## Time complexity



## Module 1

Get\_profile ->  $O(1)$

Print\_profile ->  $O(1)$

Modify\_profile ->  $O(1)$

Get\_student ->  $O(1)$

Print\_attnd ->  $O(1)$

Extract\_to ->  $O(s\_size)$

Find\_student ->  $O(1)$

S\_login ->  $O(s\_size)$

## Module-2

Create\_book ->  $O(1)$

Show\_book ->  $O(1)$

Report()

Display\_spb ->  $O(1)$

Write\_book ->  $O(1)$

Modify\_book -> O(1)

Delete\_book -> O(1)

Display\_alib() -> O(1)

Ladmin\_menu -> O(1)

Class\_lib

Find\_lib -> O(1)

L\_login -> O(1)

### **Module 3**

Void enter\_marks -> O(no. Of subjects)

Functions before -> O(1)

Enter\_marks -> O(s\_size)

Find\_faculty -> O(1)

F\_login -> O(f\_size)

### **Module 4**

All functions before -> O(1)

Mark\_attendance -> O(s\_size)

Warden\_search -> O(s\_size)

Find\_warden -> O(1)

W\_login -> O(1)

### **Module 5**

O(1) for before functions

A\_login -> O(s\_size or f\_size)

Void crad -> O(a\_size)

## References

- 1 <https://www.ijcsmc.com/docs/papers/July2014/V3I7201499a53.pdf>
- 2 <https://www.cs.bham.ac.uk/~jxb/DSA/dsa.pdf>
- 3 [http://ijirt.org/master/publishedpaper/IJIRT142686\\_PAPER.pdf](http://ijirt.org/master/publishedpaper/IJIRT142686_PAPER.pdf)
- 4 <https://visualgo.net/en>
- 5 <http://svslibrary.pbworks.com/f/Data+Structures+and+Algorithm+Analysis+in+C+++Mark+Allen+Weiss.pdf>
- 6 <https://code.tutsplus.com/tutorials/the-linked-list--cms-20660>
- 7 [https://www.tutorialspoint.com/data\\_structures\\_algorithms/index.htm](https://www.tutorialspoint.com/data_structures_algorithms/index.htm)
- 8 <https://code.tutsplus.com/series/data-structures-succinctly-part-1--cms-551>
- 9 <https://www.codesdope.com/course/data-structures-introduction/>
- 10 <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-006-introduction-to-algorithms-fall-2011/lecture-videos/>
- 11 <https://www.geeksforgeeks.org/data-structures/>
- 12 <https://www.codinggeek.com/data-structure-tutorials/>
- 13 <https://www.includehelp.com/data-structure-tutorial/>
- 14 <https://www.studytonight.com/cpp/file-streams-in-cpp.php>
- 15 <https://www.w3schools.in/cplusplus-tutorial/working-with-files/>