#include<bits/stdc++.h>

#include<iostream>

#include<fstream>

#include<stdlib.h>

#include<stdio.h>

#include<process.h>

#include<conio.h>

using namespace std;

#define el "\n"

#define sp " "

int res\_book(int,int); //To check whether any book a given book no. exists or not

/\*Class of books\*/

class book

{

protected:

int bno,quant; //book no

char bname[50]; //book name

char aname[50]; //book author's name

char pname[50]; //publication name

public:

void createb();

void showb();

void showlist();

void assignbno(int x) //bno assigned on the basis of no

{ //no. of objects in file

bno=10001;

bno+=x-1;

start1:

bno+=1;

if(res\_book(bno,0))

goto start1;

}

void set\_q()

{

quant-=1;

}

int quantity()

{

return quant;

}

void reset\_q()

{

quant+=1;

}

int retbno()

{

return bno;

}

};

/\*End of class book\*/

void book::createb() //To enter data in data members of class book

{

int i;

cout<<"\n\t\tEnter the details:-\n";

cout<<"\n\t\tEnter Book's Name: ";

char n[50];

cin.getline(n,50);

cin.getline(bname,50);

for(i=0;bname[i]!='\0';i++)

{

if(bname[i]>='a'&&bname[i]<='z')

bname[i]-=32;

}

cout<<"\n\t\tEnter Author's Name: ";

cin.getline(aname,50);

cout<<"\n\t\tEnter Publication Name: ";

cin.getline(pname,50);

cout<<"\n\t\tEnter Book's quantity: ";

cin>>quant;

}

void book::showb() //To display the details of books

{

cout<<"\n\t\tBook No.: "<<bno<<el;

cout<<"\n\t\tBook Name: "<<bname<<el;

cout<<"\n\t\tBook's Author Name: "<<aname<<el;

cout<<"\n\t\tBook's Publication: "<<pname<<el;

cout<<"\n\t\tBook's Quantity: "<<quant<<el;

}

void book::showlist() //To display book details in list form

{

cout<<"\n\t"<<bno<<"\t\t"<<bname<<"\t\t"<<aname<<"\t\t"<<quant;

}

/\*Class of Students\*/

class student

{

protected:

char name[25]; //Student name

int bno; //Book no. of book issued

int token; //To veirfy book issued or not

public:

void creates();

void shows();

void showlist();

void settoken(int x) //To set token and assign bno a book no

{

bno=x;

token=1;

}

void resettoken() //To reset token

{

bno=0;

token=0;

}

int retbno()

{

return bno;

}

int admno; //Admission No

};

/\*End of class Students\*/

bool res\_student(int); //To check whether the admission no. already exist or not

void student::creates() //To enter values to all data members of class student

{

int i;

plane:

system("CLS");

cout<<"\n\t\tEnter the details:-\n";

cout<<"\n\t\tEnter student's Admission no: ";

cin>>admno;

if(res\_student(admno))

{

cout<<"\n\t\tRecord already exist with this admission no.";

cout<<"\n\t\tEnter a different admission no.\n";

system("PAUSE");

goto plane;

}

cout<<"\n\t\tEnter student's Name: ";

char n[50];

cin.getline(n,50);

cin.getline(name,25);

for(i=0;name[i]!='\0';i++)

{

if(name[i]>='a'&&name[i]<='z')

name[i]-=32;

}

bno=0;

token=0;

}

void student::shows() //Show details of Students

{

cout<<"\n\t\tStudent's Admission No.: "<<admno<<el;

cout<<"\n\t\tStudent's Name: "<<name<<el;

if(token==1)

{

cout<<"\n\t\tBook Issued (Book no): "<<bno;

}

}

void student::showlist() // To display Student details in list form

{

cout<<"\n\t"<<admno<<"\t\t"<<name<<"\t\t"<<bno;

}

/\*To Write object of class book in file\*/

void write\_book()

{

book bk;

ofstream outf("book1.bin",ios::app|ios::binary);

outf.seekp(0,ios::end);

int x=outf.tellp()/sizeof(book);

bk.assignbno(x);

bk.createb();

bk.showb();

outf.write(reinterpret\_cast<char \*>(&bk),sizeof(book));

cout<<"\n\t\tRecord added successfully";

outf.close();

}

/\*To Write object of class student in file\*/

void write\_student()

{

student st;

ofstream outf("student.bin",ios::app|ios::binary);

outf.seekp(0,ios::end);

st.creates();

st.shows();

outf.write(reinterpret\_cast<char \*>(&st),sizeof(student));

cout<<"\n\t\tRecord added successfully";

outf.close();

}

/\*To display Student records in list form\*/

void list\_student()

{

system("CLS");

student st;

ifstream intf("student.bin",ios::in|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

cout<<"\n\t\tFile not found";

else

{

cout<<"\n\t\*\*\*\*\*Students Details\*\*\*\*\*\n\n";

cout<<"\n\tAdmission No:\tName: \tBook Issued:";

while(intf.read(reinterpret\_cast<char \*>(&st),sizeof(student)))

st.showlist();

}

intf.close();

}

/\*To display book records in list form\*/

void list\_book()

{

book bk;

ifstream intf("book1.bin",ios::in|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

cout<<"\n\t\tFile not found";

else

{

cout<<"\n\t\*\*\*\*\*Books Details\*\*\*\*\*\n\n";

cout<<"\n\tBook No:\t\tName: \t\tAuthor's Name: \t\tQuantity: ";

while(intf.read(reinterpret\_cast<char \*>(&bk),sizeof(book)))

bk.showlist();

}

intf.close();

}

/\*To search for a specific student\*/

void search\_student(int x)

{

student st;

int cnt=0;

ifstream intf("student.bin",ios::in|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

cout<<"\n\t\tFile not found";

else

{

while(intf.read(reinterpret\_cast<char \*>(&st),sizeof(student)))

{

if(st.admno==x)

{

cnt++;

cout<<"\n\t\tFILE FOUND!!!!";

st.shows();

break;

}

}

if(cnt==0)

cout<<"\n\t\tNo such record exists";

}

intf.close();

}

/\*To search for a specific book\*/

void search\_book(int x)

{

book bk;

int cnt=0;

ifstream intf("book1.bin",ios::in|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

cout<<"\n\t\tFile not found";

else

{

while(intf.read(reinterpret\_cast<char \*>(&bk),sizeof(book)))

{

if(bk.retbno()==x)

{

cnt++;

cout<<"\n\t\tFILE FOUND!!!!";

bk.showb();

break;

}

}

if(cnt==0)

cout<<"\n\t\tNo such record exists";

}

intf.close();

}

/\*To modify the book records\*/

void modify\_book(int x)

{

book bk;

int cnt=0;

fstream intf("book1.bin",ios::in|ios::out|ios::ate|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

cout<<"\n\t\tFile not found";

else

{

while(intf.read(reinterpret\_cast<char \*>(&bk),sizeof(book)))

{

if(bk.retbno()==x)

{

cnt++;

bk.createb();

bk.showb();

intf.seekp(intf.tellp()-sizeof(book));

intf.write(reinterpret\_cast<char \*>(&bk),sizeof(book));

cout<<"\n\t\tRecord Updated";

break;

}

}

if(cnt==0)

cout<<"\n\t\tNo such record exists";

}

intf.close();

}

/\*To modify the student records\*/

void modify\_student(int x)

{

student st;

int cnt=0;

fstream intf("student.bin",ios::in|ios::out|ios::ate|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

cout<<"\n\t\tFile not found";

else

{

while(intf.read(reinterpret\_cast<char \*>(&st),sizeof(student)))

{

if(st.admno==x)

{

cnt++;

st.creates();

st.shows();

intf.seekp(intf.tellp()-sizeof(student));

intf.write(reinterpret\_cast<char \*>(&st),sizeof(student));

cout<<"\n\t\tRecord Updated";

break;

}

}

if(cnt==0)

cout<<"\n\t\tNo such record exists";

}

intf.close();

}

/\*To delete a specific student record\*/

void delete\_student(int x)

{

student st;

int cnt=0;

ifstream intf("student.bin",ios::in|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

cout<<"\n\t\tFile not found";

else

{

ofstream outf("temp.bin",ios::app|ios::binary);

while(intf.read(reinterpret\_cast<char \*>(&st),sizeof(student)))

{

if(st.admno==x)

cnt++;

else

outf.write(reinterpret\_cast<char \*>(&st),sizeof(student));

}

intf.close();

outf.close();

if(cnt==0)

{

remove("temp.bin");

cout<<"\n\t\tNo such record exists";

}

else

{

remove("student.bin");

rename("temp.bin","student.bin");

cout<<"\n\t\tRecord deleted successfully";

}

}

}

/\*To delete a specific book record\*/

void delete\_book(int x)

{

book bk;

int cnt=0;

ifstream intf("book1.bin",ios::in|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

cout<<"\n\t\tFile not found";

else

{

ofstream outf("temp1.bin",ios::app|ios::binary);

while(intf.read(reinterpret\_cast<char \*>(&bk),sizeof(book)))

{

if(bk.retbno()==x)

cnt++;

else

outf.write(reinterpret\_cast<char \*>(&bk),sizeof(book));

}

intf.close();

outf.close();

if(cnt==0)

{

remove("temp1.bin");

cout<<"\n\t\tNo such record exists";

}

else

{

remove("book.bin");

rename("temp1.bin","book.bin");

cout<<"\n\t\tRecord deleted successfully";

}

}

}

//To search whether a specific student record exists or not

bool res\_student(int x)

{

student st;

int cnt=0,f=0;

ifstream intf("student.bin",ios::in|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

f=1;

else

{

while(intf.read(reinterpret\_cast<char \*>(&st),sizeof(student)))

{

if(st.admno==x)

{

cnt++;

break;

}

}

if(cnt==0)

f=1;

}

intf.close();

if(f)

return 0;

else

return 1;

}

/\*To search a specific book and return true or false\*/

int res\_book(int x,int z)

{

book bk;

int cnt=0,f=1;

fstream intf("book1.bin",ios::in|ios::out|ios::ate|ios::binary);

intf.seekg(0,ios::beg);

if(!intf)

f=0;

else

{

while(intf.read(reinterpret\_cast<char \*>(&bk),sizeof(book)))

{

if(bk.retbno()==x)

{

cnt++;

if(z==1)

{

bk.showb();

if(bk.quantity()>0)

{

bk.set\_q();

intf.seekp(intf.tellp()-sizeof(book));

intf.write(reinterpret\_cast<char \*>(&bk),sizeof(book));

}

else

f=2;

}

else if(z==2)

{

bk.showb();

bk.reset\_q();

intf.seekp(intf.tellp()-sizeof(book));

intf.write(reinterpret\_cast<char \*>(&bk),sizeof(book));

}

break;

}

}

if(cnt==0)

f=0;

}

intf.close();

return f;

}

/\*To issue books\*/

void book\_issue()

{

int sn,bn;

system("CLS");

cout<<"\n\n\t\t\*\*\*\*\*BOOK ISSUE\*\*\*\*\*\*";

cout<<"\n\n\t\tEnter the student's admission no: ";

cin>>sn;

int cnt=0;

student st;

fstream outf("student.bin",ios::in|ios::out|ios::ate|ios::binary);

outf.seekg(0,ios::beg);

if(!outf)

cout<<"\n\t\tFile not found\n";

else

{

while(outf.read(reinterpret\_cast<char \*>(&st),sizeof(student)))

{

if(st.admno==sn)

{

cnt++;

list\_book();

cout<<"\n\n\t\tEnter the book no.:";

cin>>bn;

cout<<"\n";

int flag=res\_book(bn,1);

if(flag==1)

{

st.settoken(bn);

outf.seekp(outf.tellp()-sizeof(student));

outf.write(reinterpret\_cast<char \*>(&st),sizeof(student));

cout<<"\n\t\tBook Issued";

cout<<"\n\t\tNote: Write the current date in backside of the book";

cout<<"\n\t\t Should be submitted within 15 days to avoid fine";

cout<<"\n\t\t The fine is Rs. 1 for each day after 15 days period\n";

break;

}

else if(flag==2)

{

cout<<"\n\t\tTHE BOOK IS OUT OF STOCK!!!";

break;

}

else

{

cout<<"\n\t\tNo such record exists\n";

break;

}

}

}

if(cnt==0)

cout<<"\n\t\tNo such record exists\n";

}

outf.close();

}

/\*To deposit books\*/

void book\_deposit()

{

int sn,bn;

system("CLS");

cout<<"\n\n\t\t\*\*\*\*\*BOOK DEPOSIT\*\*\*\*\*\*";

cout<<"\n\n\t\tEnter the student's admission no: ";

cin>>sn;

int cnt=0;

student st;

fstream outf("student.bin",ios::in|ios::out|ios::ate|ios::binary);

outf.seekg(0,ios::beg);

if(!outf)

cout<<"\n\t\tFile not found\n";

else

{

while(outf.read(reinterpret\_cast<char \*>(&st),sizeof(student)))

{

if(st.admno==sn)

{

cnt++;

bn=st.retbno();

bool flag=res\_book(bn,2);

if(flag)

{

st.resettoken();

outf.seekp(outf.tellp()-sizeof(student));

outf.write(reinterpret\_cast<char \*>(&st),sizeof(student));

int days;

cout<<"\n\t\tBook deposited in no. of days:";

cin>>days;

if(days>15)

{

int fine=(days-15)\*1;

cout<<"\n\n\t\tFine: "<<fine<<el;

}

cout<<"\n\t\tBook Deposited Successfully\n";

break;

}

else

{

cout<<"\n\t\tNo such record exists\n";

break;

}

}

}

if(cnt==0)

cout<<"\n\t\tNo such record exists\n";

}

outf.close();

}

/\*Function that has features of Admin Menu\*/

void admin\_menu()

{

fine:

system("PAUSE");

system("CLS");

int opt;

cout<<"\n\n\n\t\t\t\*\*\*\*\*\*ADMINISTRATOR MENU\*\*\*\*\*\*";

cout<<"\n\n\t1.\tCREATE STUDENT RECORD";

cout<<"\n\n\t2.\tDISPLAY ALL STUDENTS RECORD";

cout<<"\n\n\t3.\tDISPLAY SPECIFIC STUDENT RECORD ";

cout<<"\n\n\t4.\tMODIFY STUDENT RECORD";

cout<<"\n\n\t5.\tDELETE STUDENT RECORD";

cout<<"\n\n\t6.\tCREATE BOOK ";

cout<<"\n\n\t7.\tDISPLAY ALL BOOKS ";

cout<<"\n\n\t8.\tDISPLAY SPECIFIC BOOK ";

cout<<"\n\n\t9.\tMODIFY BOOK ";

cout<<"\n\n\t10.\tDELETE BOOK ";

cout<<"\n\n\t11.\tBACK TO MAIN MENU";

cout<<"\n\n\tPlease Enter Your Choice (1-11) ";

cin>>opt;

if(opt==1)

{

system("CLS");

write\_student();

cout<<el;

goto fine;

}

else if(opt==2)

{

system("CLS");

list\_student();

cout<<el;

goto fine;

}

else if(opt==3)

{

system("CLS");

int ad;

cout<<"\n\n\n\t\tEnter the admission no. of the student";

cin>>ad;

search\_student(ad);

cout<<el;

goto fine;

}

else if(opt==4)

{

system("CLS");

int ad;

cout<<"\n\n\n\t\tEnter the admission no. of the student";

cin>>ad;

modify\_student(ad);

cout<<el;

goto fine;

}

else if(opt==5)

{

system("CLS");

int ad;

cout<<"\n\n\n\t\tEnter the admission no. of the student";

cin>>ad;

delete\_student(ad);

cout<<el;

goto fine;

}

else if(opt==6)

{

system("CLS");

write\_book();

cout<<el;

goto fine;

}

else if(opt==7)

{

system("CLS");

list\_book();

cout<<el;

goto fine;

}

else if(opt==8)

{

system("CLS");

int ad;

cout<<"\n\n\n\t\tEnter the book no. of the book";

cin>>ad;

search\_book(ad);

cout<<el;

goto fine;

}

else if(opt==9)

{

system("CLS");

int ad;

cout<<"\n\n\n\t\tEnter the book no. of the book";

cin>>ad;

modify\_book(ad);

cout<<el;

goto fine;

}

else if(opt==10)

{

system("CLS");

int ad;

cout<<"\n\n\n\t\tEnter the book no. of the book";

cin>>ad;

delete\_book(ad);

cout<<el;

goto fine;

}

else if(opt==11)

return ;

else

{

cout<<"\n\t\tEnter correct option";

cout<<el;

goto fine;

}

}

/\*Checks for correct password\*/

//The password if predefined and has to be changed through the source code

//of application

bool passwords()

{

int i=0;

char ch,st[21],ch1[21]={"0000"};

cout<<"\n\n\t\tEnter Password : ";

while(1)

{

ch=getch();

if(ch==13)

{

st[i]='\0';

break;

}

else if(ch==8&&i>0)

{

i--;

cout<<"\b \b";

}

else

{

cout<<"\*";

st[i]=ch;

i++;

}

}

for(i=0;st[i]==ch1[i]&&st[i]!='\0'&&ch1[i]!='\0';i++);

if(st[i]=='\0'&&ch1[i]=='\0')

return 1;

else

return 0;

}

//Main function

int main()

{

cout<<"\n\n\t\t\t\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*";

cout<<"\n\t\t\t------------------------------------------";

cout<<"\n\t\t\t\tLIBRARY MANAGEMENT SYSTEM";

cout<<"\n\t\t\t------------------------------------------";

cout<<"\n\t\t\t\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*";

bool a=passwords();

if(!a)

{

for(int i=0;i<2;i++)

{

cout<<"\nWrong password";

cout<<"\nYou have "<<2-i<<"attempts left";

if(passwords())

goto last;

if(i==1)

{

cout<<"\n\n\n\t\t\t All attempts failed........";

cout<<"\n\n\t\t\t Sorry, but you can't login";

exit(0);

}

}

}

last:

cout<<"\n\n";

start:

system("PAUSE");

system("CLS");

int opt;

cout<<"\n\n\t\t\t------------------------------------------";

cout<<"\n\t\t\t\tLIBRARY MANAGEMENT SYSTEM";

cout<<"\n\t\t\t------------------------------------------";

cout<<"\n\n\t\t\tWhat do you want to do?";

cout<<"\n\t\t\t1.\tBOOK ISSUE";

cout<<"\n\t\t\t2.\tBOOK DEPOSIT";

cout<<"\n\t\t\t3.\tADMINISTRATOR MENU";

cout<<"\n\t\t\t4.\tExit";

cout<<"\n\n Choose your option: ";

cin>>opt;

if(opt==1)

{

system("CLS");

book\_issue();

goto start;

}

else if(opt==2)

{

system("CLS");

book\_deposit();

goto start;

}

else if(opt==3)

{

admin\_menu();

goto start;

}

else if(opt==4)

exit(0);

else

{

cout<<"\n\t\tEnter correct option";

goto start;

}

}