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**TASK:02**

**“LIBRARY MANAGEMENT SYSTEM”**

**CODE:**

#include <iostream>

#include <string>

#include <fstream>

using namespace std;

int main(){

//help option

cout << "Welcome to Library Management System!\n";

cout << "This system allows you to manage books in a library.\n";

cout << "You can add, view, search, delete and update books.\n";

cout << "You can also lend books and keep track of the return date.\n";

cout << "Penalty will be charged if the book is not returned on time.\n";

cout << "You can choose from Admin or User options from the main menu.\n";

cout << "If you choose Admin, you will be asked for your ID and password.\n";

cout << "You can exit or go back in all menus by choosing the appropriate option.\n";

cout << "\n\n";

//main menu

cout << "Main Menu\n";

cout << "1. Admin\n";

cout << "2. User\n";

cout << "3. Help\n";

cout << "4. Exit\n\n";

cout << "Please choose an option: ";

int option;

cin >> option;

//admin menu

if(option == 1){

string id, password;

cout << "\nPlease enter your ID: ";

cin >> id;

cout << "\nPlease enter your password: ";

cin >> password;

if(id == "admin" && password == "admin123"){

cout << "\nAdmin Menu\n";

cout << "1. Add Book\n";

cout << "2. View Book\n";

cout << "3. Search Book\n";

cout << "4. Delete Book\n";

cout << "5. Update Book\n";

cout << "6. Exit\n\n";

cout << "Please choose an option: ";

int adminOption;

cin >> adminOption;

//add book

if(adminOption == 1){

string bookName, authorName;

int bookID;

cout << "\nPlease enter the book name: ";

cin >> bookName;

cout << "\nPlease enter the author name: ";

cin >> authorName;

cout << "\nPlease enter the book ID: ";

cin >> bookID;

ofstream outfile;

outfile.open("BookData.txt", ios::app);

outfile << bookID << "," << bookName << "," << authorName << endl;

outfile.close();

cout << "\nBook has been added successfully!\n\n";

main();

}

//view book

else if(adminOption == 2){

ifstream infile;

infile.open("BookData.txt");

string data;

cout << "\nBook Name" << "\t" << "Author Name" << "\t" << "Book ID" << endl;

while(getline(infile, data)){

int i;

string bookName, authorName;

int bookID;

for(i = 0; data[i] != ','; i++){

bookID = bookID \* 10 + (data[i] - '0');

}

for(i = i + 1; data[i] != ','; i++){

bookName += data[i];

}

for(i = i + 1; data[i] != '\0'; i++){

authorName += data[i];

}

cout << bookName << "\t" << authorName << "\t" << bookID << endl;

}

infile.close();

cout << "\n";

main();

}

//search book

else if(adminOption == 3){

ifstream infile;

infile.open("BookData.txt");

string data;

int searchID;

cout << "\nPlease enter the Book ID to search: ";

cin >> searchID;

cout << "\nBook Name" << "\t" << "Author Name" << "\t" << "Book ID" << endl;

while(getline(infile, data)){

int i;

string bookName, authorName;

int bookID;

for(i = 0; data[i] != ','; i++){

bookID = bookID \* 10 + (data[i] - '0');

}

for(i = i + 1; data[i] != ','; i++){

bookName += data[i];

}

for(i = i + 1; data[i] != '\0'; i++){

authorName += data[i];

}

if(bookID == searchID){

cout << bookName << "\t" << authorName << "\t" << bookID << endl;

}

}

infile.close();

cout << "\n";

main();

}

//delete book

else if(adminOption == 4){

ifstream infile;

infile.open("BookData.txt");

string data;

int deleteID;

cout << "\nPlease enter the Book ID to delete: ";

cin >> deleteID;

ofstream tempFile;

tempFile.open("temp.txt");

while(getline(infile, data)){

int i;

string bookName, authorName;

int bookID;

for(i = 0; data[i] != ','; i++){

bookID = bookID \* 10 + (data[i] - '0');

}

for(i = i + 1; data[i] != ','; i++){

bookName += data[i];

}

for(i = i + 1; data[i] != '\0'; i++){

authorName += data[i];

}

if(bookID != deleteID){

tempFile << bookID << "," << bookName << "," << authorName << endl;

}

}

infile.close();

tempFile.close();

remove("BookData.txt");

rename("temp.txt", "BookData.txt");

cout << "\nBook has been deleted successfully!\n\n";

main();

}

//update book

else if(adminOption == 5){

ifstream infile;

infile.open("BookData.txt");

string data;

int updateID;

cout << "\nPlease enter the Book ID to update: ";

cin >> updateID;

ofstream tempFile;

tempFile.open("temp.txt");

while(getline(infile, data)){

int i;

string bookName, authorName;

int bookID;

for(i = 0; data[i] != ','; i++){

bookID = bookID \* 10 + (data[i] - '0');

}

for(i = i + 1; data[i] != ','; i++){

bookName += data[i];

}

for(i = i + 1; data[i] != '\0'; i++){

authorName += data[i];

}

if(bookID == updateID){

cout << "\nPlease enter the book name: ";

cin >> bookName;

cout << "\nPlease enter the author name: ";

cin >> authorName;

tempFile << bookID << "," << bookName << "," << authorName << endl;

}

else{

tempFile << bookID << "," << bookName << "," << authorName << endl;

}

}

infile.close();

tempFile.close();

remove("BookData.txt");

rename("temp.txt", "BookData.txt");

cout << "\nBook has been updated successfully!\n\n";

main();

}

//exit

else if(adminOption == 6){

return 0;

}

//invalid option

else{

cout << "\nInvalid option!\n\n";

main();

}

}

//invalid id or password

else{

cout << "\nInvalid ID or password!\n\n";

main();

}

}

//user menu

else if(option == 2){

cout << "\nUser Menu\n";

cout << "1. Lend Book\n";

cout << "2. Return Book\n";

cout << "3. View Book\n";

cout << "4. Search Book\n";

cout << "5. Exit\n\n";

cout << "Please choose an option: ";

int userOption;

cin >> userOption;

//lend book

if(userOption == 1){

ifstream infile;

infile.open("BookData.txt");

string data;

int lendID;

cout << "\nPlease enter the Book ID to lend: ";

cin >> lendID;

cout << "\nBook Name" << "\t" << "Author Name" << "\t" << "Book ID" << endl;

while(getline(infile, data)){

int i;

string bookName, authorName;

int bookID;

for(i = 0; data[i] != ','; i++){

bookID = bookID \* 10 + (data[i] - '0');

}

for(i = i + 1; data[i] != ','; i++){

bookName += data[i];

}

for(i = i + 1; data[i] != '\0'; i++){

authorName += data[i];

}

if(bookID == lendID){

cout << bookName << "\t" << authorName << "\t" << bookID << endl;

ofstream outfile;

outfile.open("LendData.txt", ios::app);

outfile << bookID << "," << bookName << "," << authorName << endl;

outfile.close();

cout << "\nBook has been lent successfully!\n\n";

}

}

infile.close();

cout << "\n";

main();

}

//return book

else if(userOption == 2){

ifstream infile;

infile.open("LendData.txt");

string data;

int returnID;

cout << "\nPlease enter the Book ID to return: ";

cin >> returnID;

cout << "\nBook Name" << "\t" << "Author Name" << "\t" << "Book ID" << endl;

while(getline(infile, data)){

int i;

string bookName, authorName;

int bookID;

for(i = 0; data[i] != ','; i++){

bookID = bookID \* 10 + (data[i] - '0');

}

for(i = i + 1; data[i] != ','; i++){

bookName += data[i];

}

for(i = i + 1; data[i] != '\0'; i++){

authorName += data[i];

}

if(bookID == returnID){

cout << bookName << "\t" << authorName << "\t" << bookID << endl;

ofstream outfile;

outfile.open("ReturnData.txt", ios::app);

outfile << bookID << "," << bookName << "," << authorName << endl;

outfile.close();

cout << "\nBook has been returned successfully!\n\n";

}

}

infile.close();

cout << "\n";

main();

}

//view book

else if(userOption == 3){

ifstream infile;

infile.open("BookData.txt");

string data;

cout << "\nBook Name" << "\t" << "Author Name" << "\t" << "Book ID" << endl;

while(getline(infile, data)){

int i;

string bookName, authorName;

int bookID;

for(i = 0; data[i] != ','; i++){

bookID = bookID \* 10 + (data[i] - '0');

}

for(i = i + 1; data[i] != ','; i++){

bookName += data[i];

}

for(i = i + 1; data[i] != '\0'; i++){

authorName += data[i];

}

cout << bookName << "\t" << authorName << "\t" << bookID << endl;

}

infile.close();

cout << "\n";

main();

}

//search book

else if(userOption == 4){

ifstream infile;

infile.open("BookData.txt");

string data;

int searchID;

cout << "\nPlease enter the Book ID to search: ";

cin >> searchID;

cout << "\nBook Name" << "\t" << "Author Name" << "\t" << "Book ID" << endl;

while(getline(infile, data)){

int i;

string bookName, authorName;

int bookID;

for(i = 0; data[i] != ','; i++){

bookID = bookID \* 10 + (data[i] - '0');

}

for(i = i + 1; data[i] != ','; i++){

bookName += data[i];

}

for(i = i + 1; data[i] != '\0'; i++){

authorName += data[i];

}

if(bookID == searchID){

cout << bookName << "\t" << authorName << "\t" << bookID << endl;

}

}

infile.close();

cout << "\n";

main();

}

//exit

else if(userOption == 5){

return 0;

}

//invalid option

else{

cout << "\nInvalid option!\n\n";

main();

}

}

//help option

else if(option == 3){

cout << "Welcome to Library Management System!\n";

cout << "This system allows you to manage books in a library.\n";

cout << "You can add, view, search, delete and update books.\n";

cout << "You can also lend books and keep track of the return date.\n";

cout << "Penalty will be charged if the book is not returned on time.\n";

cout << "You can choose from Admin or User options from the main menu.\n";

cout << "If you choose Admin, you will be asked for your ID and password.\n";

cout << "You can exit or go back in all menus by choosing the appropriate option.\n";

cout << "\n\n";

main();

}

//exit

else if(option == 4){

return 0;

}

//invalid option

else{

cout << "\nInvalid option!\n\n";

main();

}

}