SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

PPS MINI GROUP PROJECT

Library Management System
(Using file handling)

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OBJECTIVE :

The purpose of this library management system is to operate a library with efficiency and at reduced costs.

The code can be used as a System to manage a library, the code has 5 primary options

First option is to add a book record in library.

Second option is to Show the list of books.

Third option is to remove a book record.

The fourth option is to issue a book by the student.

Fifth option is to show the list of the books which are issued.

Structure of the program is divided into two parts. The first structure explains the information about the book like its name , author and date it was added in the system.

The second is the structure is the information about the student who will issue the book like the name of the student, class ,roll number and most importantly the name of the book issued.

Information about the book is stored in the text file called book.txt. Information about the book which are issued is stored in the text file called issue.txt.

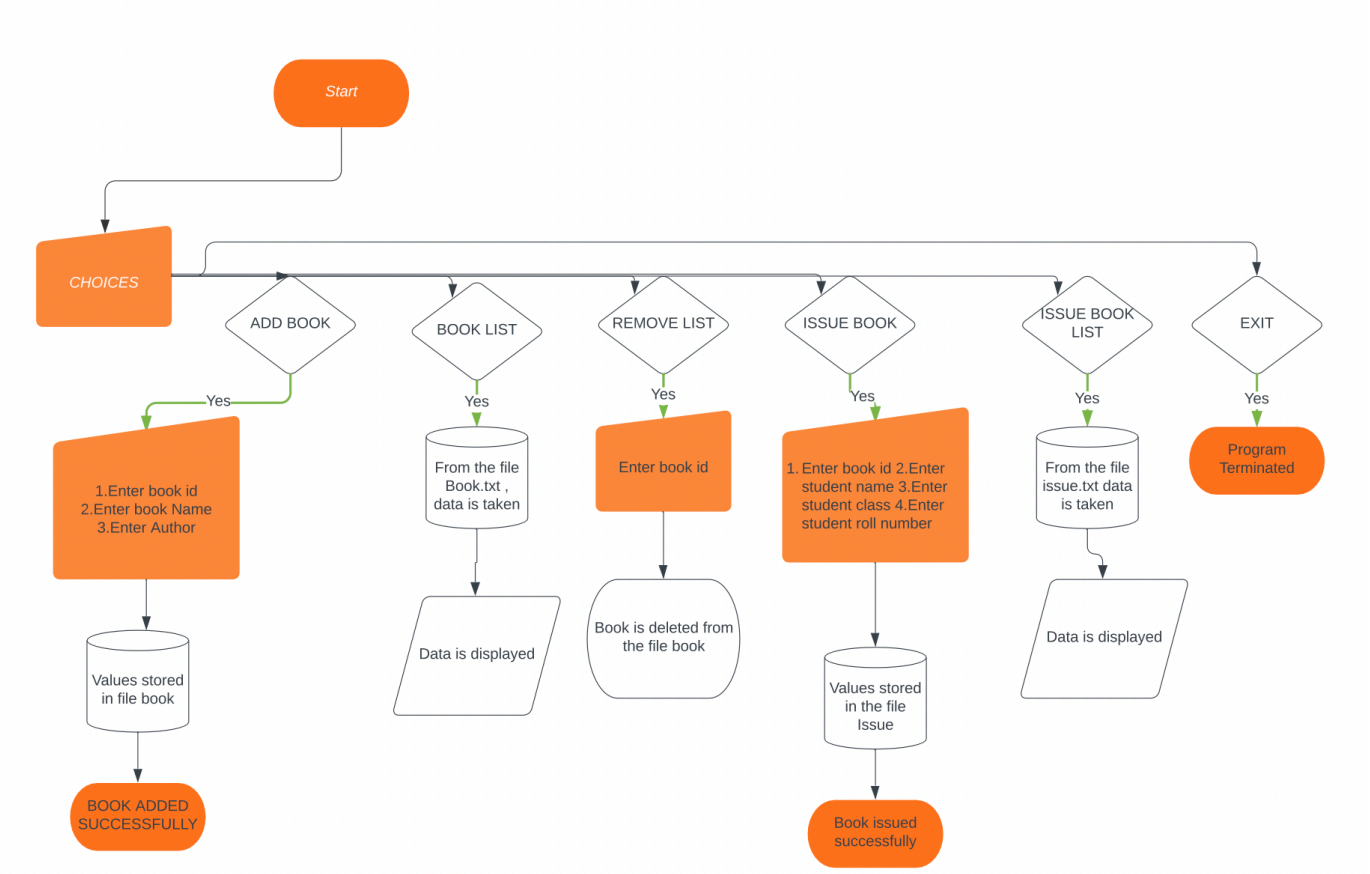
The code also shows the date on which the book was added in the system as well the date on which the book was issued by the person.

It is easy for the user to see the list of the books and the list of the books which are issued.

Problem Definition :

The common problems that libraries face are that they cannot communicate about the changes in the library, validate book issues, keeping track of all the books in the library, allowing space for the books for easier access. Hence a library management system will help the management to carry the tasks of the library in a much efficient manner in which it is beneficial to both the library and their readers.

Flowchart :



Algorithm :

1. The user is presented with a lot of options to choose from.
2. Based on the user input the respective switch case block is executed.
3. If the user chooses “Add Book”, the user will be presented with a screen to input the details of the book.
4. After the input file is opened in write mode and the book details are stored in struct are written into the file.
5. The program shows a list of all the books with their “Book id”, “Book Name”, “Author” and “Date”.
6. After any key is pressed, the screen falls back to the original one.
7. Here the user can choose to see all the books issued.
8. In this case, the file is opened in read only mode.
9. The mapping of the struct is done through the size of the stored structs in the file and a while loop is run until all details are printed.
10. File is then closed after printing.
11. The user goes back to the original screen.
12. Now the user can choose to issue a book based on the book id and take the student details.
13. The program shows a list of all the students and the books they have been issued.
14. The user returns to the home page.

PROGRAM :

```c
#include<stdio.h>
#include<stdlib.h>
#include<time.h>

struct books{
    int id;
    char bookName[50];
    char authorName[50];
    char date[12];
}b;

struct student{
    int id;
    char sName[50];
    char sClass[50];
    int sRoll;
    char bookName[50];
    char date[12];
}s;

FILE *fp;

int main(){

    int ch;

    while(1){
        system("cls");
        printf("<== LIBRARY MANAGEMENT SYSTEM ==>\n");
        printf("<== MAIN MENU\n ==>");
        printf("1.Add Book\n");
        printf("2.Books List\n");
        printf("3.Remove Book\n");
        printf("4.Issue Book\n");
        printf("5.Issued Book List\n");
        printf("0.Exit\n\n");
        printf("Enter your choice: ");
        scanf("%d", &ch);

        switch(ch){
        case 0:
            exit(0);

        case 1:
            addBook();
            break;
```

```
        case 2:
            booksList();
            break;

        case 3:
            del();
            break;

        case 4:
            issueBook();
            break;

        case 5:
            issueList();
            break;

        default:
            printf("Invalid Choice...\n\n");

        }
        printf("Press Any Key To Continue...");
        getch();
    }

    return 0;
}


void addBook(){
    char myDate[12];
    time_t t = time(NULL);
    struct tm tm = *localtime(&t);
    sprintf(myDate, "%02d/%02d/%d", tm.tm_mday, tm.tm_mon+1,
tm.tm_year + 1900);
    strcpy(b.date, myDate);

    fp = fopen("books.txt", "ab");

    printf("Enter book id: ");
    scanf("%d", &b.id);

    printf("Enter book name: ");
    fflush(stdin);
    gets(b.bookName);

    printf("Enter author name: ");
    fflush(stdin);
    gets(b.authorName);

    printf("Book Added Successfully");
```

```
    fwrite(&b, sizeof(b), 1, fp);
    fclose(fp);
}


void booksList(){

    system("cls");
    printf("<== Available Books ==>\n\n");
    printf("%-10s %-30s %-20s %s\n\n", "Book id", "Book Name",
"Author", "Date");

    fp = fopen("books.txt", "rb");
    while(fread(&b, sizeof(b), 1, fp) == 1){
        printf("%-10d %-30s %-20s %s\n", b.id, b.bookName,
b.authorName, b.date);
    }

    fclose(fp);
}

void del(){
    int id, f=0;
    system("cls");
    printf("<== Remove Books ==>\n\n");
    printf("Enter Book id to remove: ");
    scanf("%d", &id);

    FILE *ft;

    fp = fopen("books.txt", "rb");
    ft = fopen("temp.txt", "wb");

    while(fread(&b, sizeof(b), 1, fp) == 1){
        if(id == b.id){
            f=1;
        }else{
            fwrite(&b, sizeof(b), 1, ft);
        }
    }

    if(f==1){
        printf("\n\nDeleted Successfully.");
    }else{
        printf("\n\nRecord Not Found !");
    }

    fclose(fp);
    fclose(ft);

    remove("books.txt");
    rename("temp.txt", "books.txt");
```

```
}


void issueBook(){

    char myDate[12];
    time_t t = time(NULL);
    struct tm tm = *localtime(&t);
    sprintf(myDate, "%02d/%02d/%d", tm.tm_mday, tm.tm_mon+1,
tm.tm_year + 1900);
    strcpy(s.date, myDate);

    int f=0;

    system("cls");
    printf("<== Issue Books ==>\n\n");

    printf("Enter Book id to issue: ");
    scanf("%d", &s.id);

    //Check if we have book of given id
    fp = fopen("books.txt", "rb");

    while(fread(&b, sizeof(b), 1, fp) == 1){
        if(b.id == s.id){
            strcpy(s.bookName, b.bookName);
            f=1;
            break;
        }
    }

    if(f==0){
        printf("No book found with this id\n");
        printf("Please try again...\n\n");
        return;
    }

    fp = fopen("issue.txt", "ab");

    printf("Enter Student Name: ");
    fflush(stdin);
    gets(s.sName);

    printf("Enter Student Class: ");
    fflush(stdin);
    gets(s.sClass);

    printf("Enter Student Roll: ");
    scanf("%d", &s.sRoll);

    printf("Book Issued Successfully\n\n");
```

```
    fwrite(&s, sizeof(s), 1, fp);
    fclose(fp);
}

void issueList(){
    system("cls");
    printf("<== Book Issue List ==>\n\n");

    printf("%-10s %-30s %-20s %-10s %-30s %s\n\n", "S.id", "Name",
"Class", "Roll", "Book Name", "Date");

    fp = fopen("issue.txt", "rb");
    while(fread(&s, sizeof(s), 1, fp) == 1){
        printf("%-10d %-30s %-20s %-10d %-30s %s\n", s.id,
s.sName, s.sClass, s.sRoll, s.bookName, s.date);
    }

    fclose(fp);
}
```

Output screen :

```
<== LIBRARY MANAGEMENT SYSTEM ==>
<== MAIN MENU ==>1.Add Book
2.Books List
3.Remove Book
4.Issue Book
5.Issued Book List
0.Exit

Enter your choice:
```

```
<== LIBRARY MANAGEMENT SYSTEM ==>
<== MAIN MENU ==>1.Add Book
2.Books List
3.Remove Book
4.Issue Book
5.Issued Book List
0.Exit

Enter your choice: 1
Enter book id: 01
Enter book name: Mein Kamf
Enter author name: Adolf Hitler
Book Added SuccessfullyPress Any Key To Continue...
```

```
<== Available Books ==>

Book id    Book Name                    Author              Date

3          The Overstory                Richard Powers      13/06/2022
789        The fault in my stars        john greens         14/06/2022
1          Mein Kamf                    Adolf Hitler        18/06/2022
Press Any Key To Continue...
```

```
<== Issue Books ==>

Enter Book id to issue: 1
Enter Student Name: Advaith
Enter Student Class: q1
Enter Student Roll: 038
Book Issued Successfully

Press Any Key To Continue...
```

```
<== Book Issue List ==>

S.id       Name                    Class              Roll       Book Name                 Date

3          Sarthak                 Btech 1st year     116        The Overstory             13/06/2022
1          Vishesh Singh           Btech Cse 1st year 809        Mein Kampf                14/06/2022
789        Durgesh Singh           Q1                 890        The fault in my stars     14/06/2022
3          dhruv                   1st year btech     33         The Overstory             17/06/2022
1          Advaith                 q1                 38         Mein Kamf                 18/06/2022
Press Any Key To Continue...
```