Code:

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

typedef struct date{

int day;

int month;

int year;

}date;

typedef struct book{

char code[10];

char b\_name[30];

char s\_name[30];

struct date issue\_date;

}book;

void display();

void add();

void search();

int countLeapYears(date d);

int getDifference(date dt1, date dt2);

void fine();

void display()

{

FILE \*fp;

fp = fopen("libr.bin", "rb");

book disbook = {0};

if(fp == NULL)

{

printf("File is not opened\n");

exit(1);

}

int count = 0, flag = 0;

while(fread(&disbook, sizeof(disbook), 1, fp))

{

printf("\nSr no.: %d\n", count + 1);

printf("Book ID: %s\n", disbook.code);

printf("Name of the Book: %s\n", disbook.b\_name);

printf("Name of the issuer: %s\n", disbook.s\_name);

printf("Date of Issue: %d/%d/%d\n", disbook.issue\_date.day, disbook.issue\_date.month, disbook.issue\_date.year);

count++;

flag = 1;

}

if(flag == 0)

printf("No Record Found!!!\n");

fclose(fp);

}

void add()

{

FILE \*fp;

fp = fopen("libr.bin", "ab+");

book addbook = {0};

if(fp == NULL)

{

printf("File is not opened\n");

exit(1);

}

printf("Enter the Book ID: ");

scanf("%s", addbook.code);

fflush(stdin);

printf("Enter the name of the book: ");

scanf("%s", addbook.b\_name);

fflush(stdin);

printf("Enter the name of the issuer: ");

scanf("%s", addbook.s\_name);

fflush(stdin);

printf("Enter the date of issue: ");

scanf("%d %d %d", &addbook.issue\_date.day, &addbook.issue\_date.month, &addbook.issue\_date.year);

fflush(stdin);

fwrite(&addbook, sizeof(addbook), 1, fp);

fclose(fp);

}

void search()

{

FILE \*fp;

fp = fopen("libr.bin", "rb");

book findbook = {0};

if(fp == NULL)

{

printf("File is not opened\n");

exit(1);

}

int option = 0;

printf("\nSearching Menu:\n");

printf("1. Search by ID\n");

printf("2. Search by name of book\n");

printf("3. Search by name of issuer\n");

printf("Choose an option from 1 to 3: ");

scanf("%d", &option);

switch(option)

{

case 1:

{

int found = 0;

char b\_id[30];

fflush(stdin);

printf("Enter the book ID: ");

scanf("%s", b\_id);

while(fread(&findbook, sizeof(findbook), 1, fp))

{

if(!strcmp(findbook.code, b\_id))

{

printf("\nBook ID: %s\n", findbook.code);

printf("Name of the Book: %s\n", findbook.b\_name);

printf("Name of the issuer: %s\n", findbook.s\_name);

printf("Date of Issue: %d/%d/%d\n", findbook.issue\_date.day, findbook.issue\_date.month, findbook.issue\_date.year);

found = 1;

}

}

if(!found)

printf("No such record found in the Library database\n");

break;

}

case 2:

{

int found = 0;

char book\_name[30];

fflush(stdin);

printf("\nEnter the name of the book: ");

scanf("%s", book\_name);

while(fread(&findbook, sizeof(findbook), 1, fp))

{

if(!strcmp(findbook.b\_name, book\_name))

{

printf("\nBook ID: %s\n", findbook.code);

printf("Name of the Book: %s\n", findbook.b\_name);

printf("Name of the issuer: %s\n", findbook.s\_name);

printf("Date of Issue: %d/%d/%d\n", findbook.issue\_date.day, findbook.issue\_date.month, findbook.issue\_date.year);

found = 1;

}

}

if(!found)

printf("No such record found in the Library database\n");

break;

}

case 3:

{

int found = 0;

char issuer\_name[30];

fflush(stdin);

printf("Enter the name of the issuer: ");

scanf("%s", issuer\_name);

while(fread(&findbook, sizeof(findbook), 1, fp))

{

if(!strcmp(findbook.s\_name, issuer\_name))

{

printf("\nBook ID: %s\n", findbook.code);

printf("Name of the Book: %s\n", findbook.b\_name);

printf("Name of the issuer: %s\n", findbook.s\_name);

printf("Date of Issue: %d/%d/%d\n", findbook.issue\_date.day, findbook.issue\_date.month, findbook.issue\_date.year);

found = 1;

}

}

if(!found)

printf("No such record found in the Library database\n");

break;

}

fclose(fp);

}

}

int countLeapYears(date d)

{

int years = d.year;

if (d.day <= 2)

years--;

return (years / 4 - years / 100 + years / 400);

}

const int monthDays[12]

= { 31, 28, 31, 30, 31, 30,

31, 31, 30, 31, 30, 31 };

int getDifference(date dt1, date dt2)

{

long int n1 = dt1.year \* 365 + dt1.day;

for (int i = 0; i < dt1.month - 1; i++)

n1 += monthDays[i];

n1 += countLeapYears(dt1);

long int n2 = dt2.year \* 365 + dt2.day;

for (int i = 0; i < dt2.month - 1; i++)

n2 += monthDays[i];

n2 += countLeapYears(dt2);

return (n2 - n1);

}

void fine()

{

printf("\nFine Calculation\n");

printf("Rate of fine is Rs.1 per day after 15 days\n");

FILE \*fp;

fp = fopen("libr.bin", "rb");

if(fp == NULL)

{

printf("File is not opened\n");

exit(1);

}

book findbook = {0};

date d\_user;

int found = 0;

char b\_id[30];

fflush(stdin);

printf("\nEnter the book ID: ");

scanf("%s", b\_id);

while(fread(&findbook, sizeof(findbook), 1, fp))

{

if(!strcmp(findbook.code, b\_id))

{

d\_user = findbook.issue\_date;

found = 1;

}

}

if(!found)

{

printf("No such record found in the Library database\n");

exit(1);

}

date d;

printf("Enter today's date: ");

scanf("%d %d %d", &d.day, &d.month, &d.year);

int diff = getDifference(d\_user, d);

if(diff > 15)

printf("Fine: Rs. %d\n", diff - 15);

else

printf("No Fine\n");

fclose(fp);

}

void drop()

{

FILE \*fp;

FILE \*tmp;

fp = fopen("libr.bin", "rb");

tmp = fopen("newlibr.bin", "wb");

if(fp == NULL)

{

printf("File is not opened\n");

exit(1);

}

if(tmp == NULL)

{

printf("File is not opened\n");

exit(1);

}

int found = 0;

char b\_id[30];

fflush(stdin);

book findbook = {0};

printf("\nEnter the book ID of the book to be deleted: ");

scanf("%s", b\_id);

while(fread(&findbook, sizeof(findbook), 1, fp))

{

if(strcmp(findbook.code, b\_id) != 0)

fwrite(&findbook, sizeof(findbook), 1, tmp);

else

found = 1;

}

if(found == 1)

printf("Required record deleted\n");

else

printf("No such record found in the Library database\n");

fclose(fp);

fclose(tmp);

remove("libr.bin");

rename("newlibr.bin", "libr.bin");

}

int main()

{

printf("Welcome to Ahan's Library Database Management Systems!!!\n");

int option = 0;

do{

printf("\nMenu:\n");

printf("1. Display record\n");

printf("2. Add a record\n");

printf("3. Drop a record\n");

printf("4. Search any book\n");

printf("5. Calculate fine\n");

printf("6. Exit\n");

printf("\nChoose an option: ");

scanf("%d", &option);

switch(option)

{

case 1:

display();

break;

case 2:

add();

break;

case 3:

drop();

break;

case 4:

search();

break;

case 5:

fine();

break;

case 6:

printf("Exiting library database!!!\n");

break;

default:

printf("Wrong option. Please enter again!!!\n");

}

}while(option != 6);

return 0;

}

Output:













