LIBRARY MANAGEMENT SYSTEM

Title: LIBRARY MANAGEMENT SYSTEM

Objective:

- To enter and preserve details of the various issues and keep a track on their returns.

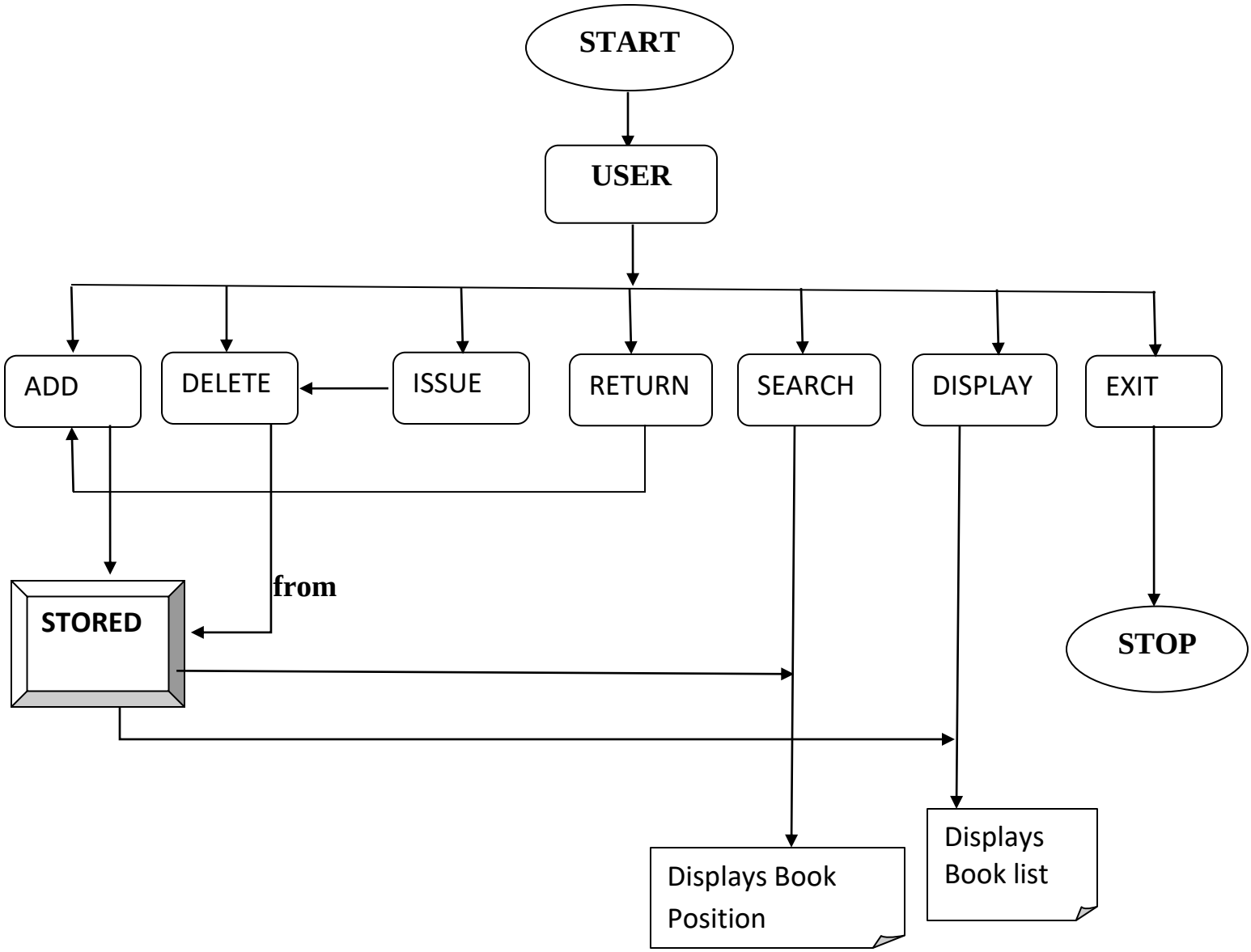
Introduction:

- A library management system, also known as an automated library system is software that has been developed to handle basic housekeeping functions of a library.
- It's a well-organized software solution for a library.
- It helps to provide information on any book present in library to the user as well as staff member.
- It keeps a track of book issued, returned and added to library.
- It keeps updating and displaying the number of books available in the library.

Proposed System:

- To build a system that can receive input and generate automatically output in easy way and short time.

Block diagram:



Data Structures used:

- Singly Linked List

Design – Pseudocode/Algorithm:

Addbook():

1. Create a temp node
2. If start=null//list is empty
   Set start=temp

   Else

   Set p=start
   [move p till its next is not equal to null]
   If p->next=null//insert at last node
   Set p->next=temp
   [end of if loop]
   [end of if-else loop]
3. Exit

Deletebook():

a) Case 1: if list is empty
   1. If start=null
      Print "nothing to delete"
      [end of if loop]
   2. Exit

b) Case 2:if list is not empty
   1. Set p=pre=start
   2. If it is the 1st node / only node
      i. If p->name=n and p->number=d_n
         - Delete the 1st node
         - Print "empty"

         else

         [keep comparing till equal and if the node is found the delete the node]

         [end of if loop]

   3. Exit

Issuebook():

1. A) ask the user for the book name and book no. Needed to issue

   B) scan the book name and book no.

2. Ask the user to entry the issue date of the book

3. Call the delete function to delete the book from addbook list

4. Exit

Returnbook():

1. A) ask the user to enter the book name and book no. Needed to return

   B) scan the book name and book no.

2. Print the issue date of the book

3. Call the add function to add the book in addbook list

4.exit

Search():

1. Set p=start
2. Set i=1
3. Repeat step 3 while !=null

   If p->number=n

   print" book found at position"

   else
   [keep comparing by incrementing p and i]
   p=p+1
   i=i+1
   [end of if loop]
   [end of loop]
4. Print "node not found in the list"
   [if list is on the last node and searching book is not found]
5. Exit

Display():

1. If start =null
   Print "no book to display"

   else

   set p=start

   while p!=null

   print "book details book name and book no."

   set p=p+1

[increment p after displaying the entry]

[end of if-else loop]

2. Exit

Main():

1. Print choices as follows:

    1. ADD

    2. DELETE

    3. SEARCH

    4. ISSUE

    5. RETURN

    6. DISPLAY

    7. EXIT

2. Ask the user for desired choice

3. If the choice is : '1' then call add()

    '2' then call delete_db()

    '3' then call search()

    '4' then call issue()

    '5' then call return()

    '6' then call display()

    '7' then exit

4. Exit

Implementation:

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
struct node
{
        int number;
        char name[20];
        struct node *next;
};

struct reader
{
        struct date
  {
        int day,month,year;
}d;
}r;

struct node *start=NULL,*temp,*p;

void addbook(char b[20],int n)
{
   temp=(struct node *)malloc(sizeof(struct node));
        strcpy(temp->name,b);
        temp->number=n;
        if(start==NULL)
        {
                start=temp;
        }
        else
        {
                p=start;
                while(p->next!=NULL)
                {
                        p=p->next;
                }
                p->next=temp;
        }
}



void delete_first ()
{
```

```
  temp = (struct node *) malloc (sizeof (struct node));
  if (start == NULL)
    {
printf ("Empty\n");
    }
  else
    {
      temp = start;
      start = start->next;
      free (temp);
    }
}
void deletebook(char n[20],int d_n)
{
  struct node *pre;
  temp = (struct node *) malloc (sizeof (struct node));


  if (start == NULL)
    {
printf ("Nothing to Delete\n");
    }
  else
    {
      p = start;
      pre = start;
      if (strcmp (p->name, n) == 0 && p->number == d_n)
            {
            delete_first ();
            }
      else
            {
              while (strcmp (p->name, n) != 0 && p->number != d_n)
                {
                  pre = p;
                  p = p->next;

                }
              pre->next = p->next;
              free (p);
            }
    }
}

void search()
{
```

```
int i=1,n;
char b[20];
printf("Enter Name Of the Book: ");
scanf("%s",b);
printf("Enter Book Number: ");
scanf("%d",&n);
p=start;
while(p!=NULL)
{
if(p->number==n)
{
printf("Book Found At Position %d\n\n",i);
return;
}
p=p->next;
i++;
}
printf("Book Not Found\n\n");
}

void issuebook()
{
	struct reader r[100];

	char b[20];
	int i,n,db[20];
	printf("Enter The Book you want to Borrow: ");
	scanf("%s",b);
	printf("Enter Book Number: ");
	scanf("%d",&n);
	deletebook(b,n);
	printf("Enter Date:\n");
printf("Day: ");
	scanf("%d",&r[n].d.day);
	printf("Month: ");
scanf("%d",&r[n].d.month);
printf("Year: ");
scanf("%d",&r[n].d.year);
}

void returnbook()
{
	struct reader r[100];
	char b[20];
	int n,db[20];
	printf("Enter The Name of Book: ");
```

```
        scanf("%s",b);
        printf("Enter Book Number: ");
        scanf("%d",&n);
        addbook(b,n);
        printf("Date of Borrow: %d/%d/%d\n",r[n].d.day,r[n].d.month,r[n].d.year);
}

void display()
{
        if(start==NULL)
        {
                printf("No Book to display\n");
        }
        else
        {
         p=start;
        printf("Book No.\t\tBook Name\n");
        printf("_____\n");
        while(p!=NULL)
        {
                printf("%d\t  \t\t",p->number);
                printf("%s\n",p->name);
                p=p->next;
        }
}
}


int main()
{
        int x;
        int d_n;
   char n[20];
        do
        {
printf("--------------------------------------------------------------------------------\n");
        printf("1:ADD BOOK\n2:DELETE BOOK\n3:SEARCH BOOK\n4:ISSUE BOOK\n5:RETURN
BOOK\n6:DISPLAY BOOKS\n7:EXIT\n");
        printf("Enter Your Choice: ");
        scanf("%d",&x);
        switch(x)
        {
                case 1:printf("Enter Name of Book to be added: ");
        fgetc(stdin);
        fgets(n,20,stdin);
printf("Enter Book Number: ");
```

```
        scanf("%d",&d_n);
                addbook(n,d_n);
                    break;
                case 2:printf ("Enter the Name of Book to Delete: ");
scanf ("%s",n);
printf ("Enter Book Number: ");
scanf ("%d", &d_n);
                deletebook(n,d_n);
                    break;
                case 3:search();
                    break;
                case 4:issuebook();
                    break;
                case 5:returnbook();
                    break;
                case 6:display();
                    break;
                case 7:break;
                default:printf("Invalid Input");
                     break;
        }
        }while(x!=7);
        return 0;
}
```

FUNCTIONS:

1. void addbook():

This function asks the user for name and the number of the book to be added.

If the list is empty it adds the book as the first book else it adds the new book at the end of the last book in the list.

2. void deletebook():

This function asks the user for name and the number of the book to be deleted. It is similar to the delete at specified location function.

If the list is empty it displays “NOTHING TO DELETE”, else it keeps comparing till the match is found.

If the match is found it deletes that book, if the list is over and yet if the match is not found then it displays “BOOK TO BE DELETED IS NOT FOUND”.

3. void search():

This function asks the book number from the user of the book to be searched.

It compares the user given book number with each book present in the list and a counter ‘i’ is kept to trace the position of the desired book.

If the book to be searched is found then it display “BOOK FOUND AT POSITION ‘i’ ” if the book is not found then it displays “BOOK NOT FOUND”.

4. void issue book():

This function asks the user for the book number and the name needed and scans it.

It calls the delete function to delete the book which is issued by the user.

It asks the user to enter the issue date and scans it.

5. void return():

This function asks the user for the book number and the name that is returned and scans it.

It calls the add function to add the book which is returned by the user.

It prints the issue date of that book.

6. void display():

This function displays the book details of all the books present in the list and if the list is empty then it display “LIST IS EMPTY”.

Sample input/output :

```
--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 1
Enter Name of Book to be added: Java A Primer
Enter Book Number: 123
--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 1
Enter Name of Book to be added: Techmax
Enter Book Number: 126
--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 1
Enter Name of Book to be added: C
Enter Book Number: 128
--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 6
Book No.                Book Name
_____________________________________
123                     Java A Primer

126                     Techmax

128                     C

--------------------------------------------------------------------------------
```

```
--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 2
Enter the Name of Book to Delete: Techmax
Enter Book Number: 126
--------------------------------------------------------------------------------
```

```
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 6
Book No.                Book Name
_____________________________________
123                     Java A Primer

128                     C

--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 3
Enter Name Of the Book: C
Enter Book Number: 128
Book Found At Position 2

--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 4
Enter The Book you want to Borrow: C
Enter Book Number: 128
Enter Date:
Day: 22
Month: 10
Year: 2018
--------------------------------------------------------------------------------
```

```
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 6
Book No.                Book Name
_____________________________________
123                     Java A Primer

--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 5
Enter The Name of Book: C
Enter Book Number: 128
Date of Borrow: 22/10/2018
--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 6
Book No.                Book Name
_____________________________________
123                     Java A Primer

128                     C
--------------------------------------------------------------------------------
```

```
--------------------------------------------------------------------------------
1:ADD BOOK
2:DELETE BOOK
3:SEARCH BOOK
4:ISSUE BOOK
5:RETURN BOOK
6:DISPLAY BOOKS
7:EXIT
Enter Your Choice: 7

--------------------------------
```

Conclusion:

- The project on LIBRARY MANAGEMENT SYSTEM is for computerizing the working in a library.
- The software takes care of all the requirements of a library and is capable to provide easy and effective storage of information related to books and user.
- Hence program on “Library Management System” was implemented successfully.

References:

- College notes.
- Internet.