

Introduction

This program is used to maintain the record in the library. This program contains the name of books, Author of the book, Quantity of the books and the Cost of books. This program first shows the user the available books in the Library, after that program takes user to the borrowing section.

In borrowing section, program asks for the user first name, last name and the book that user wants to borrow. If user want to borrow more books, system use loop and again program run from the choosing books part. After the borrowing is successful, the program creates a .txt file name Borrow-username. And in that borrow.txt file. There is the detail information when the user borrow book and also shows the cost of book with author name.

After completion of borrowing, program takes user to the return section where user returns the books that he has borrowed in borrow section. In return, system asks for the first name of the borrower and last name of borrower. If the Name is incorrect the system shows name of the borrower is incorrect. After that system shows the Books that the user borrowed from the Library Management System. Also program asks user whether the return date has expired or not. If the date has expired, program ask user for the how long the return date hast expired. According to the day, program adds fine to the user. After fine is added, program creates the return.txt file where there is the detail of the user bill. In that bill, program adds the name of borrower and the date of the borrowing books also with that it also includes fine to user only if the return date has expired.

After completion of returning book, program takes user to the main menu where there is last option to exit from the program.

The objectives and goals of creating this program are:

- To organize the physically accessible of books that user wants.
- To maintain the database of the user.
- To organize, maintain the records of the books.

Algorithm for Library Management System

Step 1 : Start

Step 2 : Display available books, Go to main menu

Step 3 : Borrow Books from Library

Step 4 : Input First name of user

Step 5 : Input the last name of user

Step 6 : Choose the books according to their number

Step 7 : Do you want to borrow more books? if yes then go to step 6

Step 8 : Create Borrow.txt file

Step 9 : Go to main menu

Step 10 : Return Books from user

Step 11 : Input the first name of user

Step 12 : Input the last name of user

Step 13 : If the return date has expired? If yes

Step 14 : Input the day, how long the returned date has expired

Step 15 : Add fine

Step 16 : Create Return.txt file

Step 17 : Go to main menu

Step 18 : Exit from the program

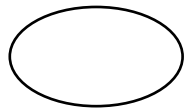
Step 19 : Stop

Flow Chart for Library Management System

Flowchart is a graphical or the pictorial representation of step by step process of solving the problem. Flowchart is used to develop the understanding of how a process is done. It is also very helpful when a user is planning a project.

Some commonly used symbols in flowchart are:

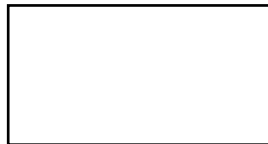
- a. Oval = The oval symbol is alternate symbols for starting and ending point.



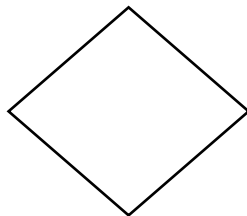
- b. Parallelogram = The parallelogram symbol is used for displaying the input and output.



- c. Rectangle = The rectangle symbol is used for the process.



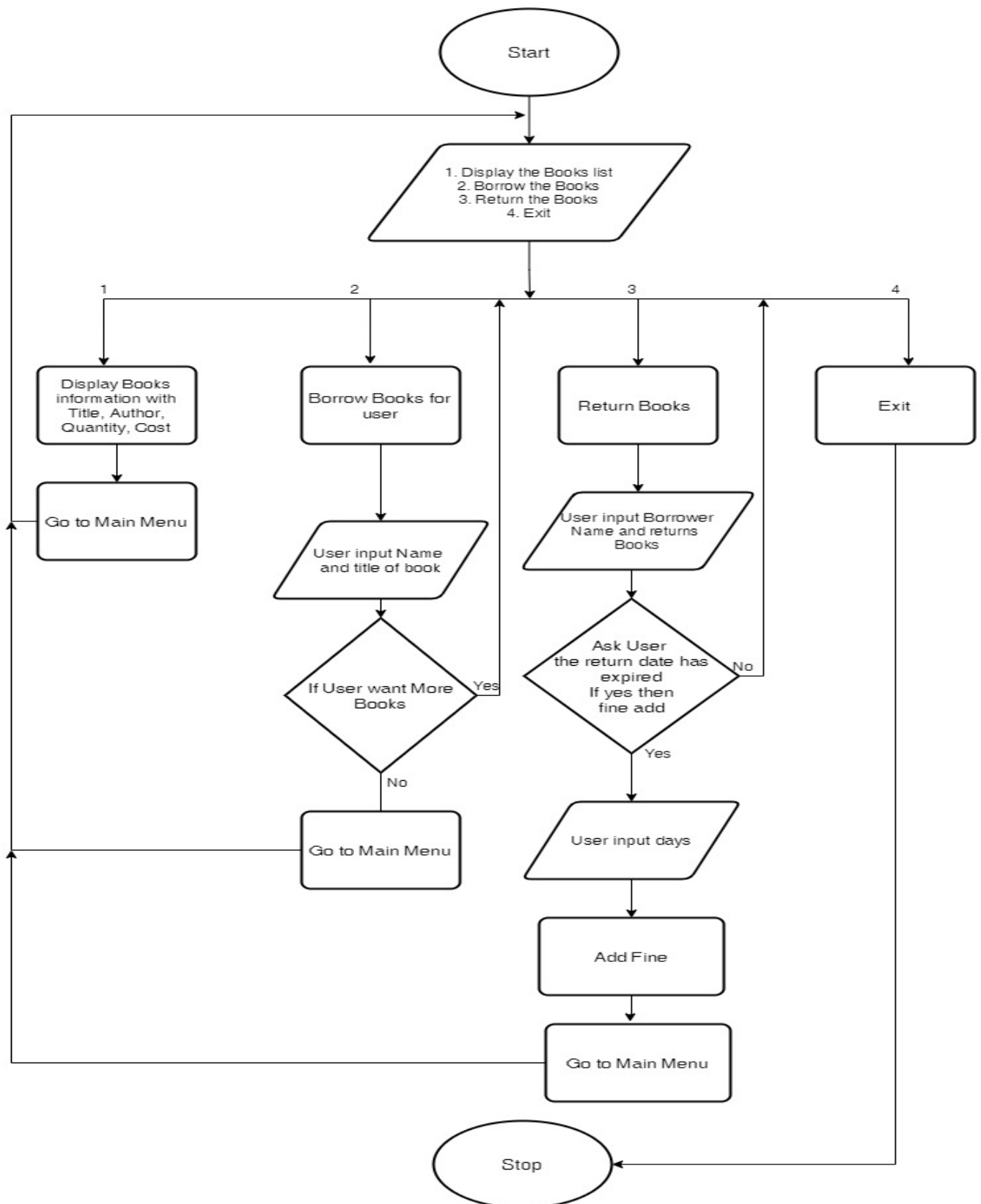
- d. Diamond = The diamond symbol is used for the decision.



- e. Direction line = The direction line shows the flow from one step to another.



Flowchart of LMS



Pseudocode

i. Date and Time (Module)

DEFINE Date function

IMPORT datetime to work with date time in module

PRINT Current Date

WRITE Current Date

DEFINE Time function

IMPORT datetime to work with date time in module

PRINT Current Time

WRITES Current Time

ii. ListSplit (Module)

DEFINE list function

DEFINE Global Variable BookName

DEFINE Global Variable AuthorName

DEFINE Global Variable Quantity

DEFINE Global Variable Cost

ADD BookName in list

ADD AuthorName in list

ADD Quantity in list

ADD Cost in list

OPEN Bookstock.txt file in read mode

STORE in f variable

READ each lines of Bookstock.txt

STORE the lines in x

USE for loop to return length of lines

ASSIGN b as 0

USE for loop for index i and split the value

USE if condition

ADD single line in BookName list

USE elif condition

ADD single line in AuthorName list

USE elif condition

ADD single line in Quantity list

USE elif condition

ADD single line in Cost list

INCREMENT b by 1

ENDIF

iii. Borrow (Module)

IMPORT DateTime and ListSplit to this Module

DEFINE BorrowBooks function

USE while loop

INPUT the first name

USE isalpha method to check the strings are in alphabet

BREAK the Loop

PRINT

USE while loop

INPUT the last name

USE isalpha method to check the strings are in alphabet

BREAK the Loop

PRINT

CREATE borrow.txt file with first name of user

OPEN borrow file in reading and writing mode

WRITE in borrow.txt file

USE While loop

PRINT

USE for loop to return length of BookName

PRINT for borrowing books

USE try block for exception handling

INPUT in a

USE try block

USE if condition when quantity is greater than 0

PRINT message

OPEN borrow file in append mode

WRITES BookName, AuthorName and Cost in f file

DECREASE the Quantity of books by 1

OPEN Bookstock.txt file in reading and writing mode

and store in f

USE for loop index 10

WRITES BookName, AuthorName, Quantity

and Cost in f file

ENDIF

ASSIGN loop as true

ASSIGN count as 1

USE While loop

INPUT user choice in string

USE if condition when user gives y as input

ADD Count by 1

PRINT message

USE for loop to return the length of book

name

PRINT for borrowing books

ASSIGN a as input

USE if condition when Quantity is

greater than 0

PRINT Books is available

message

OPEN borrow file in append

mode

WRITE Book Name,

Author Name and Cost in f file

DECREASE the Quantity of book

by 1

OPEN bookstock .txt file in

writing and reading mode

USE for loop index 10

WRITES Book Name,

Author Name, Quantity and Cost in f file

false

DECLARE success as

USE Else

DECLARE loop as false

USE break

ENDIF

USE elif user gives n as input

PRINT message with user name

ASSIGN loop as false

ASSIGN success as true

USE else

PRINT message

USE else

PRINT message

ENDIF

USE except index error block

PRINT message

USE except value error block

PRINT message

iv. Return (Module)

IMPORT ListSplit to this module

IMPORT DateTime to this module

DEFINE ReturnBooks function

 INPUT n as borrower name

 CREATE borrow .txt file with name of borrower

 USE try block

 OPEN Borrow file in read mode

 READ each lines of borrow.txt file

 STORE the lines in a

 OPEN borrow.txt file in read mode

 ASSIGN info to read lines

 PRINT

 USE except block

 PRINT incorrect borrower name

 RETURN ReturnBooks

CREATE Return.txt file with name

OPEN return file in reading and writing mode

WRITES in Return.txt file

DECLARE total t as 0

USE for loop index 10

USE if condition

OPEN return file in append mode

wWRITES in Book Name, Author Name, Cost in return.txt file

DECREASE Quantity by 1

ADD total with cost

ENDIF

PRINT Total

PRINT message

ASSIGN s to input y or n

USE if condition

PRINT message

ASSIGN day as input

DECLARE fine multiply 2 by day

OPEN return file in append mode

WRITES fine in return .txt file

ADD total with fine

ENDIF

PRINT total cost

OPEN return .txt file in append mode

WRITES Total Cost in return file

OPEN book stock .txt file in reading and writing mode

USE for loop index 10

WRITES Book Name , Author Name , Quantity and cost in book
stock.txt file

v. Final (Module)

IMPORT Return to this module

IMPORT ListSplit to this module

IMPORT DateTime to this module

IMPORT Borrow to this module

DEFINE final function

USE while loop

PRINT messages

USE try block to catch error

ASSIGN a as input number

PRINT

USE if condition when user input 1

OPEN BookStock.txt file in read mode

READ each lines of BookStock.txt file

PRINT lines of BookStock.txt file

USE elif condition when user input 2

CALL ListSplit module and call list function

CALL Borrow module and call BorrowBooks function

USE elif condition when user input 3

CALL ListSplit module and call list function

CALL Return module and call ReturnBooks function

USE elif condition when user input 4

PRINT message

USE break

USE else

PRINT message

ENDIF

USE except value error block to throw error

PRINT message

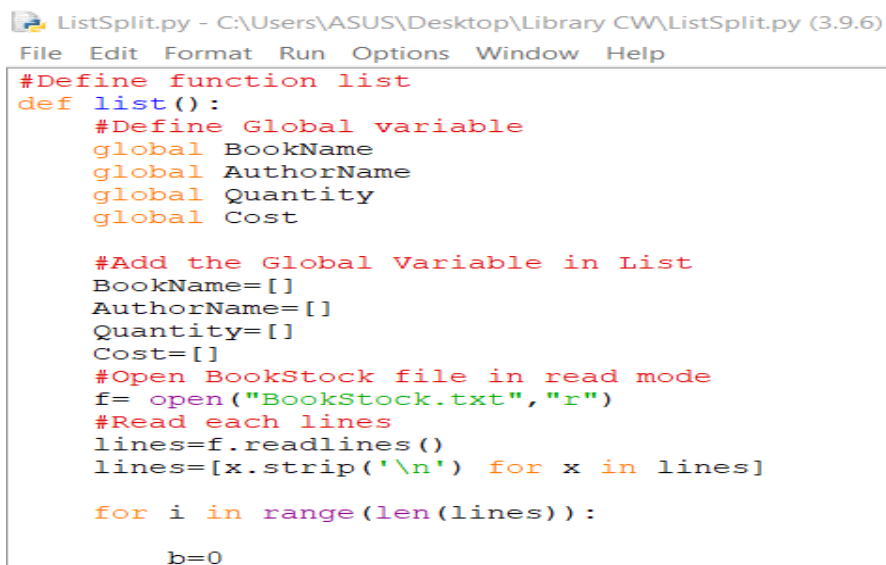
RETURN final function

Data Structures

The way to store the data in organized way and allow for efficient access and modification is data structure. Data Structure helps us for easily management, modification of data. It can be used efficiently by user. The main purpose of using data structure is to it make program very efficient, it provides reusability. Some of the data structure in python are listed below:

- List
- Tuple
- Dictionary
- Set

1. List : List is the data structure in python which is mutable i.e change their value. List is a dynamic data structure that is changeable and mutable. In this program, list is the one of the data structure that I have used in my code. List can store the multiple item in a single variable. Each element in the list can be assigned an index which helps us to access any element from the list.



```
ListSplit.py - C:\Users\ASUS\Desktop\Library CW\ListSplit.py (3.9.6)
File Edit Format Run Options Window Help
#Define function list
def list():
    #Define Global variable
    global BookName
    global AuthorName
    global Quantity
    global Cost

    #Add the Global Variable in List
    BookName=[]
    AuthorName=[]
    Quantity=[]
    Cost=[]
    #Open BookStock file in read mode
    f= open("BookStock.txt","r")
    #Read each lines
    lines=f.readlines()
    lines=[x.strip('\n') for x in lines]

    for i in range(len(lines)):
        b=0
```

In the above code, I have used list data structure for storing in the global variables.

Tuple : Tuple is also the data structure that is used to store multiple items in one variable. Tuple are not changeable. Tuples are sequences, just like list. Tuple is a collection of python objects separated with comma. Tuple is just like similar to list in term of indexing. Tuple can be represented in ().

Dictionary : Dictionary is an unordered collection of value where as list and tuple are ordered collection. Dictionary holds the key value pair where key value is unique identifier that points to associative value. Dictionary can be represented in { }.

Set : The unordered collection data type that is iterable, mutable and has no duplicate elements. Set is used to convert any iterable to sequence of iterable elements with distinct elements. Set can be represented by { }

Program

Implementation of program

The program start with the 4 option or 4 process after user visit the Library. The 4 options are as follows:

1. Enter 1, for displaying the available books in library
2. Enter 2, for borrowing the requested books
3. Enter 3, for returning the books that borrowed
4. Enter 4, to exit from the system

LMS is used maintain the record in the library. The program contains 4 process. When user enter 1, the 1st process starts and the program displays the all available books in the library, when user enter 2, 2nd process starts and it allows user to borrow the books from library. For borrowing books, program ask for user first name, last name as well as user input the number for borrowing book. If user wants to borrow more books, program again send user to input the number of books. After borrowing the books, program creates borrow.txt file which has the detail of the borrower including when he borrow the books with the cost of books.

And in 3rd process, when user enter 3 program takes user first name and last name for returning the books that user has borrowed in 2nd process. After returning process, program creates return.txt file in which the txt file shows the bill to the user. And in 4th process program take user out from the LMS by giving Thank you from borrowing from us and come again.

Show borrow process.

While borrowing the book in 2nd process, the program ask for the user first name, last name. After that program ask for to choose the book according to their number. After that if the user want to borrow more books then loop start from choosing the book

according to their number. After completion of the borrowing process, the program creates borrow.txt file where there is the detail of the user and which book did user has borrowed. As shown in the screenshot :

Run in shell

```

                                WELCOME
                                TO LIBRARY MANAGEMENT SYSTEM
                                -----X-----X-----X-----X--

Enter 1. For Displaying the avialable Books:
Enter 2. For Borrowing your requested Books:
Enter 3. For Returning the Books you Borrowed:
Enter 4. To Exit from the System:
-----


Choose a number from 1-4: 2

Enter the First Name: Pratiush
Enter the Last Name: Prasain
Please select a option below:
Enter 0 to borrow book Harry Potter
Enter 1 to borrow book Start With Why
Enter 2 to borrow book Programming with Python
Enter 3 to borrow book Rich Dad Poor Dad
Enter 4 to borrow book Letting Go
Enter 5 to borrow book Fear of Flying
Enter 6 to borrow book Little Women
Enter 7 to borrow book The Phantom Tollbooth
Enter 8 to borrow book The Heart of the Matter
Enter 9 to borrow book The Glass Hotel

Borrowing the book is successfull
Do you want to borrow more books? Press y for yes and n for no.n

Everytime on your servicePratiush
```

Borrow.txt file

 Borrow-Pratiush - Notepad

File Edit Format View Help

```

                                LIBRARY MANAGEMENT SYSTEM
                                -----X-----X-----X-----X--

                                Borrowed By: Pratiush Prasain

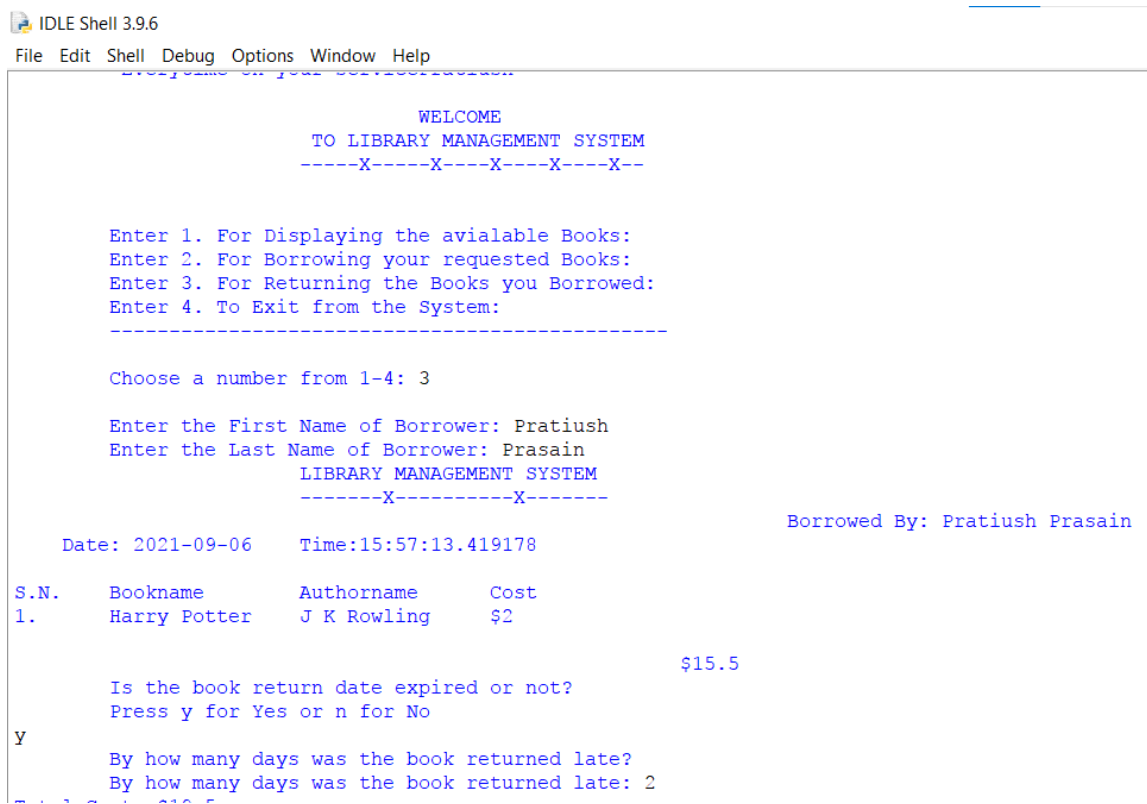
Date: 2021-09-06      Time:14:50:22.193391

S.N.      Bookname      Authorname      Cost
1.        Harry Potter  J K Rowling     $2
```

Show return process

After successfully done borrowing, 3rd step comes returning the books that user has borrowed. For returning the books, program ask for user first name and last name of borrower. After the name of borrower matches then program shows which books has been borrowed by the user. After that program ask for the return date expired or not. If user gives y as yes then it ask for the day(how long the return day has expired). After that program will add the fine. After adding the fine, programs creates the Return.txt file where there is the bill of the user as shown in the screenshots:

Run in shell



```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help

WELCOME
TO LIBRARY MANAGEMENT SYSTEM
-----X-----X-----X-----X--

Enter 1. For Displaying the avialable Books:
Enter 2. For Borrowing your requested Books:
Enter 3. For Returning the Books you Borrowed:
Enter 4. To Exit from the System:
-----

Choose a number from 1-4: 3

Enter the First Name of Borrower: Pratiush
Enter the Last Name of Borrower: Prasain
LIBRARY MANAGEMENT SYSTEM
-----X-----X-----

Date: 2021-09-06      Time:15:57:13.419178      Borrowed By: Pratiush Prasain

S.N.   Bookname      Authorname      Cost
1.     Harry Potter    J K Rowling     $2

Is the book return date expired or not?
Press y for Yes or n for No
y

By how many days was the book returned late?
By how many days was the book returned late: 2

$15.5
```

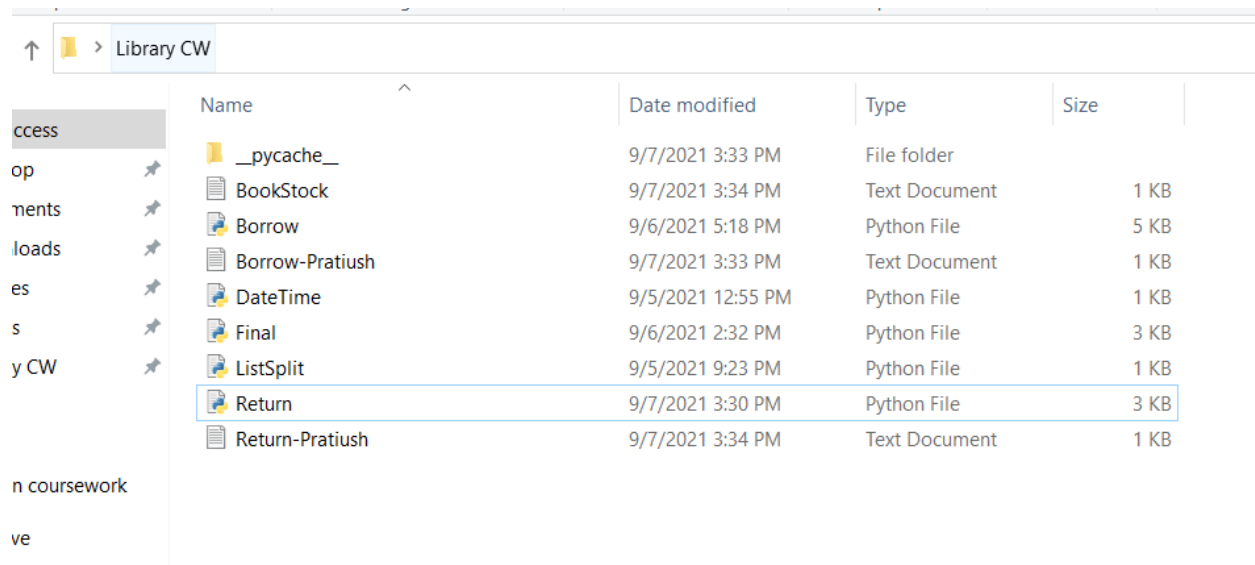
Return.txt file.

```
Return-Pratiush - Notepad
File Edit Format View Help

LIBRARY MANAGEMENT SYSTEM
-----X-----X-----
BILL OF:Pratiush
Date: 2021-09-06 Time:15:57:20.702207
Returned By: Pratiush Prasain

S.N.    BookName    AuthorName    Cost
1       Harry Potter  J K Rowling   $2
Fine: $4
```

Creation of txt file



Termination of the program selection option

```
WELCOME
TO LIBRARY MANAGEMENT SYSTEM
-----X-----X-----X-----X-----

Enter 1. For Displaying the avialable Books:
Enter 2. For Borrowing your requested Books:
Enter 3. For Returning the Books you Borrowed:
Enter 4. To Exit from the System:
-----

Choose a number from 1-4: 4

THANK YOU FOR USING LIBRARY MANAGEMENT SYSTEM
COME AGAIN!!!

>>> |
```


Test

Test 1: Show implementation of try, except, when user input invalid number

Test 1 Table

Test 1	Show implementation of try, except, when user input invalid number
Action	Enter 1. For Displaying the available Books: Enter 2. For Borrowing your requested Books: Enter 3. For Returning the Books you Borrowed: Enter 4. To Exit from the System: Choose a number from 1-4: 5 When user gives 5 as input.
Expected Result	Enter valid number from 1-4
Actual Result	Enter valid number from 1-4
Conclusion	The test is successful.

Run in Shell test 1:

```
-----
                        WELCOME
                TO LIBRARY MANAGEMENT SYSTEM
            -----X-----X-----X-----X-----X--

Enter 1. For Displaying the avialable Books:
Enter 2. For Borrowing your requested Books:
Enter 3. For Returning the Books you Borrowed:
Enter 4. To Exit from the System:
-----

Choose a number from 1-4: 5

Enter a valid number from 1-4|
```


Test 2: Selection borrow and return option

Provide Negative value as input

Provide non existed value as input

Test 2 Table

Test 2	Provide Negative value as input Provide non existed value as input
Action	Enter the First Name: Pratiush Enter the Last Name: Prasain Please select a option below: Enter 0 to borrow book Harry Potter Enter 1 to borrow book Start With Why Enter 2 to borrow book Programming with Python Enter 3 to borrow book Rich Dad Poor Dad Enter 4 to borrow book Letting Go Enter 5 to borrow book Fear of Flying Enter 6 to borrow book Little Women Enter 7 to borrow book The Phantom Tollbooth Enter 8 to borrow book The Heart of the Matter Enter 9 to borrow book The Glass Hotel 13 When user gives 13 as input.
Expected Result	Choose the books according to the number
Actual Result	Choose the books according to the number
Conclusion	The test is successful.

Run in Shell Test 2:

```
Enter a valid number from 1-4
WELCOME
TO LIBRARY MANAGEMENT SYSTEM
-----X-----X-----X-----X-----X--
```

```
Enter 1. For Displaying the avialable Books:
Enter 2. For Borrowing your requested Books:
Enter 3. For Returning the Books you Borrowed:
Enter 4. To Exit from the System:
-----
```

Choose a number from 1-4: 2

```
Enter the First Name: Pratiush
Enter the Last Name: Prasain
Please select a option below:
Enter 0 to borrow book Harry Potter
Enter 1 to borrow book Start With Why
Enter 2 to borrow book Programming with Python
Enter 3 to borrow book Rich Dad Poor Dad
Enter 4 to borrow book Letting Go
Enter 5 to borrow book Fear of Flying
Enter 6 to borrow book Little Women
Enter 7 to borrow book The Phantom Tollbooth
Enter 8 to borrow book The Heart of the Matter
Enter 9 to borrow book The Glass Hotel
```

13

```
Choose the book according to their number.
Please select a option below:
Enter 0 to borrow book Harry Potter
Enter 1 to borrow book Start With Why
Enter 2 to borrow book Programming with Python
Enter 3 to borrow book Rich Dad Poor Dad
Enter 4 to borrow book Letting Go
Enter 5 to borrow book Fear of Flying
Enter 6 to borrow book Little Women
Enter 7 to borrow book The Phantom Tollbooth
Enter 8 to borrow book The Heart of the Matter
Enter 9 to borrow book The Glass Hotel
```

Test 3: File generation of borrow

Show complete borrow process, Show output in the shell as well, Finally show the borrow note in txt file

Test 3 Table

Test 3	File generation of borrow
Action	<p>Enter 1. For Displaying the available Books: Enter 2. For Borrowing your requested Books: Enter 3. For Returning the Books you Borrowed: Enter 4. To Exit from the System:</p> <p>-----</p> <p>Choose a number from 1-4: 2 Enter the First Name: Pratiush Enter the Last Name: Prasain Please select a option below: Enter 0 to borrow book Harry Potter Enter 1 to borrow book Start With Why Enter 2 to borrow book Programming with Python Enter 3 to borrow book Rich Dad Poor Dad Enter 4 to borrow book Letting Go Enter 5 to borrow book Fear of Flying Enter 6 to borrow book Little Women Enter 7 to borrow book The Phantom Tollbooth Enter 8 to borrow book The Heart of the Matter Enter 9 to borrow book The Glass Hotel</p> <p>0</p> <p>Borrowing the book is successful Do you want to borrow more books? Press y for yes and n for no. n Everytime on your service Pratiush</p>
Expected Result	Generate borrow-User txt file
Actual Result	Generate borrow-User txt file
Conclusion	The test is successful.

Run in shell Test 3

```

                                WELCOME
                        TO LIBRARY MANAGEMENT SYSTEM
                -----X-----X-----X-----X-----

Enter 1. For Displaying the avialable Books:
Enter 2. For Borrowing your requested Books:
Enter 3. For Returning the Books you Borrowed:
Enter 4. To Exit from the System:
-----

Choose a number from 1-4: 2

Enter the First Name: Pratiush
Enter the Last Name: Prasain
Please select a option below:
Enter 0 to borrow book Harry Potter
Enter 1 to borrow book Start With Why
Enter 2 to borrow book Programming with Python
Enter 3 to borrow book Rich Dad Poor Dad
Enter 4 to borrow book Letting Go
Enter 5 to borrow book Fear of Flying
Enter 6 to borrow book Little Women
Enter 7 to borrow book The Phantom Tollbooth
Enter 8 to borrow book The Heart of the Matter
Enter 9 to borrow book The Glass Hotel

0
Borrowing the book is successfull
Do you want to borrow more books? Press y for yes and n for no.n

    Everytime on your servicePratiush
```

Borrow.txt file

Generation of text file

Borrow-Pratiush - Notepad

File Edit Format View Help

```
LIBRARY MANAGEMENT SYSTEM
-----X-----X-----
Borrowed By: Pratiush Prasain

Date: 2021-09-06    Time:14:50:22.193391

S.N.    Bookname    Authorname    Cost
1.      Harry Potter    J K Rowling    $2
```

Test 4: File generation of Return

Show complete return process, Show output in the shell as well, Finally show the return note in txt file

Test 4 Table

Test 4	File generation of borrow								
Action	<div>Enter 1. For Displaying the available Books: Enter 2. For Borrowing your requested Books: Enter 3. For Returning the Books you Borrowed: Enter 4. To Exit from the System: ----- Choose a number from 1-4: 3 Enter the First Name of Borrower: Pratiush Enter the Last Name of Borrower: Prasain LIBRARY MANAGEMENT SYSTEM -----X-----X----- Borrowed By: Pratiush Prasain Date: 2021-09-06 Time:15:57:13.419178 <table><tr><td>S.N.</td><td>Bookname</td><td>Authorname</td><td>Cost</td></tr><tr><td>1.</td><td>Harry Potter</td><td>J K Rowling</td><td>\$2</td></tr></table><div>\$15.5</div> Is the book return date expired or not? Press y for Yes or n for No y By how many days was the book returned late? By how many days was the book returned late: 2</div>	S.N.	Bookname	Authorname	Cost	1.	Harry Potter	J K Rowling	\$2
S.N.	Bookname	Authorname	Cost						
1.	Harry Potter	J K Rowling	\$2						
Expected Result	Generate Return-User txt file								
Actual Result	Generate Return-User txt file								
Conclusion	The test is successful.								

Run in Shell Test 4

```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help

WELCOME
TO LIBRARY MANAGEMENT SYSTEM
-----X-----X-----X-----X-----X-----

Enter 1. For Displaying the avialable Books:
Enter 2. For Borrowing your requested Books:
Enter 3. For Returning the Books you Borrowed:
Enter 4. To Exit from the System:
-----

Choose a number from 1-4: 3

Enter the First Name of Borrower: Pratiush
Enter the Last Name of Borrower: Prasain
LIBRARY MANAGEMENT SYSTEM
-----X-----X-----

Borrowed By: Pratiush Prasain
Date: 2021-09-06 Time:15:57:13.419178

S.N.    Bookname    Authorname    Cost
1.      Harry Potter  J K Rowling   $2

Is the book return date expired or not?
Press y for Yes or n for No
y
By how many days was the book returned late?
By how many days was the book returned late: 2
Fine: $4
```

Return .txt file generate Test 4

```
Return-Pratiush - Notepad
File Edit Format View Help

LIBRARY MANAGEMENT SYSTEM
-----X-----X-----

BILL OF:Pratiush
Returned By: Pratiush Prasain
Date: 2021-09-06 Time:15:57:20.702207

S.N.    BookName    AuthorName    Cost
1       Harry Potter  J K Rowling   $2
Fine: $4
```


Test 5: Show update in stock

Show the quantity being deducted while borrowing book

Test 5 Table

Test 5	Show the quantity being deducted while borrowing book
Action	<p>Enter 1. For Displaying the available Books: Enter 2. For Borrowing your requested Books: Enter 3. For Returning the Books you Borrowed: Enter 4. To Exit from the System:</p> <p>-----</p> <p>Choose a number from 1-4: 2 Enter the First Name: Pratiush Enter the Last Name: Prasain Please select a option below: Enter 0 to borrow book Harry Potter Enter 1 to borrow book Start With Why Enter 2 to borrow book Programming with Python Enter 3 to borrow book Rich Dad Poor Dad Enter 4 to borrow book Letting Go Enter 5 to borrow book Fear of Flying Enter 6 to borrow book Little Women Enter 7 to borrow book The Phantom Tollbooth Enter 8 to borrow book The Heart of the Matter Enter 9 to borrow book The Glass Hotel</p> <p>0</p> <p>Borrowing the book is successful Do you want to borrow more books? Press y for yes and n for no. n</p> <p>Everytime on your service Pratiush</p>
Expected Result	Decrease in the quantity of book
Actual Result	Decrease in the quantity of book
Conclusion	The test is successful.

Book Stock file before deducted

 BookStock - Notepad — □
File Edit Format View Help
Harry Potter,J K Rowling,30,\$2
Start With Why,Simon Sinek,10,\$1.5
Programming with Python,John Smith,20,\$1.5
Rich Dad Poor Dad,Robert Kayosaki,30,\$2
Letting Go,Phillip Roth,20,\$1
Fear of Flying,Erica Jong,10,\$1.5
Little Women,Louisa May Alcott,15,\$1
The Phantom Tollbooth,Norton Juster,20,\$1.5
The Heart of the Matter,Graham Greene,30,\$2
The Glass Hotel,Emily St.,40,\$1.5

Run in Shell Test 5

```
Choose a number from 1-4: 2

Enter the First Name: Pratiush
Enter the Last Name: Prasain
Please select a option below:
Enter 0 to borrow book Harry Potter
Enter 1 to borrow book Start With Why
Enter 2 to borrow book Programming with Python
Enter 3 to borrow book Rich Dad Poor Dad
Enter 4 to borrow book Letting Go
Enter 5 to borrow book Fear of Flying
Enter 6 to borrow book Little Women
Enter 7 to borrow book The Phantom Tollbooth
Enter 8 to borrow book The Heart of the Matter
Enter 9 to borrow book The Glass Hotel

0

Borrowing the book is successfull
Do you want to borrow more books? Press y for yes and n for no.y
Please select an option below:
Enter 0 to borrow book Harry Potter
Enter 1 to borrow book Start With Why
Enter 2 to borrow book Programming with Python
Enter 3 to borrow book Rich Dad Poor Dad
Enter 4 to borrow book Letting Go
Enter 5 to borrow book Fear of Flying
Enter 6 to borrow book Little Women
Enter 7 to borrow book The Phantom Tollbooth
Enter 8 to borrow book The Heart of the Matter
Enter 9 to borrow book The Glass Hotel

6

Book is available
Do you want to borrow more books? Press y for yes and n for no.n

Everytime on your servicePratiush
```

Book Stock after borrowing books

```
BookStock - Notepad
File Edit Format View Help
Harry Potter,J K Rowling,29,$2
Start With Why,Simon Sinek,10,$1.5
Programming with Python,John Smith,20,$1.5
Rich Dad Poor Dad,Robert Kayosaki,30,$2
Letting Go,Phillip Roth,20,$1
Fear of Flying,Erica Jong,10,$1.5
Little Women,Louisa May Alcott,14,$1
The Phantom Tollbooth,Norton Juster,20,$1.5
The Heart of the Matter,Graham Greene,30,$2
The Glass Hotel,Emily St.,30,$1.5
```

Conclusion

a. Evaluation of my work

The program contains 5 modules. And they are:

- DateTime module
- ListSplit module
- Borrow module
- Return module
- Final module

In DateTime module, I work to add the current date and time in the file. Datetime module helps to import or add the date and time in the borrow.txt and return.txt file. In ListSplit module, I work to display the available books in the library. In Borrow module, I work for the borrowing of the books. For borrowing, program ask for the user name and number to choose the books and if user wants more book to borrow the loop start. After that it create borrow.txt file with user name. In return module, I work for the returning the books that the user has borrowed in borrowing process. Program ask for user name. And if the return date has expired, the program says input the day how long the date has expired after that program will add fine.

In final module, it runs all the module and work in shell.

b. Reflection what I have learn from this assignment:

I have learn so many things in this assignment. Some topics while attending the lecture class has not made me so clear to do the assignment. I watch the lecture slides many times to do the program. While creating this program, I have also improved my research skill. I did quite research about how to add current date and time in the program. I use Greek of Greeks for researching. I also learn to find the errors and what types of error are they.

c. Difficulties that I encountered/faced :

While doing this coursework, I have a lot of difficulties. At first, I didn't understand the questions properly. After that while doing coding, I always find the errors. And I didn't have any idea to do it. Most of the time I found run time error.

d. How I overcame the difficulties :

While doing the coursework, I didn't understand the questions properly. Teacher discuss about the coursework in the lecture class and make us clear about the questions and that's how I overcome with that problem. Also there are errors while doing it. But somehow I fixed it myself. After doing all the coursework, I gave it to the teacher for the review and they also informed me to do the missing part in algorithm, flowchart. Also in the report section. To overcome with that they made a session and discussed about it.

Appendix:

a. DateTime module

```
def Date():
```

```
    import datetime
```

```
    today=datetime.datetime.today
```

```
    return str(today().date())
```

```
def Time():
```

```
    import datetime
```

```
    today=datetime.datetime.today
```

```
    return str(today().time())
```

b. ListSplit module

```
def list():
```

```
    global BookName
```

```
    global AuthorName
```

```
    global Quantity
```

```
    global Cost
```

```
    BookName=[]
```

```
    AuthorName=[]
```

```
    Quantity=[]
```

```
    Cost=[]
```

```
f= open("BookStock.txt","r")

lines=f.readlines()

lines=[x.strip('\n') for x in lines]

for i in range(len(lines))

    b=0

    for j in lines[i].split(','):

        if(b==0):

            BookName.append(j)

        elif(b==1):

            AuthorName.append(j)

        elif(b==2):

            Quantity.append(j)

        elif(b==3):

            Cost.append(j.strip("$"))

    b+=1
```

c. Borrow module

```
import DateTime
```

```
import ListSplit
```

```
def BorrowBooks():
```

```
success=False
```

```
while(True):
```

```
FirstName=input("\tEnter the First Name: ")
```

```
if FirstName.isalpha():
```

break

```
print("\tGive the first name in string")
```

```
while(True):
```

```
LastName=input("\tEnter the Last Name: ")
```

```
if LastName.isalpha():
```

break

```
print("\tGive the last name in string")
```

```
Borrow="Borrow-"+FirstName+".txt"
```

```
f= open(Borrow,"w+")
```

```
f.write("\t\t\tLIBRARY MANAGEMENT SYSTEM \n")
```

```
f.write("\t\t\t-----X-----X-----" "\n")
```

```
f.write("\t\t\t\t\t\t\t Borrowed By: " + FirstName+" "+LastName+"\n")
```

```
f.write("    Date: " + DateTime.Date()+"    Time:"+ DateTime.Time()+"\n\n")
```

```
f.write("S.N. \tBookname \tAuthorname\tCost \n" )
```



```

while success==False:

    print("\tPlease select a option below:")#Print

    for i in range(len(ListSplit.BookName)):

        print("\tEnter", i, "to borrow book", ListSplit.BookName[i])

        try:

            a=int(input())

            try:

                if(int(ListSplit.Quantity[a])>0):

                    print("\tBorrowing the book is successfull")

                    f= open(Borrow,"a")

                    f.write("1.\t"+
ListSplit.BookName[a]+\t"+ListSplit.AuthorName[a]+\t$"+ListSplit.Cost[a]+\n")

                    ListSplit.Quantity[a]=int(ListSplit.Quantity[a])-1

                    f= open("BookStock.txt","w+")

                    for i in range(10):

                        f.write(ListSplit.BookName[i]+", "+ListSplit.AuthorName[i]+", "+str(ListSplit.Quantity[i])+", "
+ListSplit.Cost[i]+\n")

                    loop=True

                    count=1

                    while loop==True:

                        User_choice=str(input("\tDo you want to borrow more books? Press y for
yes and n for no.))

```

```

if(User_choice=="y"):

    count=count+1

    print("\tPlease select an option below:")

    for i in range(len(ListSplit.BookName)):

        print("\tEnter", i, "to borrow book", ListSplit.BookName[i])

    a=int(input())

    if(int(ListSplit.Quantity[a]>0):

        print("\tBook is available")

        with open(Borrow,"a") as f:

            f.write(str(count)

+"t"+ListSplit.BookName[a]+"t"+ListSplit.AuthorName[a]+"t$"+ListSplit.Cost[a]+"n")


            ListSplit.Quantity[a]=int(ListSplit.Quantity[a])-1

            f= open("BookStock.txt","w+")

            for i in range(10):

                f.write(ListSplit.BookName[i]+","+ListSplit.AuthorName[i]+","+str(ListSplit.Quantity[i])+","

+"$"+ListSplit.Cost[i]+"n")

                success=False

            else:

                loop=False

                break

        elif (User_choice=="n"):

```

```
        print ("\n\t Everytime on your service" + FirstName)

        print("")

        loop=False

        success=True

    else:

        print("\tPlease choose as instructed")


    else:

        print("\tBook is not available")

        BorrowBooks()

        success=False

except IndexError:

    print("")

    print("\tChoose the book according to their number.")

except ValueError:

    print("")

    print("\t Choose as suggested.")
```

d. Return module

```
import ListSplit

import DateTime

def ReturnBooks():

    FirstName=input("\nEnter the First Name of Borrower: ")

    LastName=input("\nEnter the Last Name of Borrower: ")

    t="Borrow-"+FirstName+".txt"


    try:

        f= open(t,"r")

        lines=f.readlines()#Read line

        lines=[a.strip("$") for a in lines]


        f= open(t,"r")#Open t file in read mode

        info=f.read()

        print(info)

    except:

        print("\nThe borrower name is incorrect")

    Return="Return-"+FirstName+".txt"

    f= open(Return,"w+")


    f.write("\t\t\t\t\tLIBRARY MANAGEMENT SYSTEM \n")

    f.write("\t\t\t\t\t-----X-----X-----" "\n")
```

```
f.write("\t\t\t\tBILL OF:" +FirstName+"")
```

```
f.write("          Returned By: "+ FirstName+" "+LastName+ "\n")
```

```
f.write("    Date: " + DateTime.Date()+ "    Time:"+ DateTime.Time()+ "\n\n")
```

```
f.write("S.N.\tBookName \tAuthorName \tCost\n")
```

```
t=0.0
```

```
for i in range(10):
```

```
    if ListSplit.BookName[i] in info:
```

```
        f= open(Return,"a")
```

```
f.write(str(i+1)+"\t"+ListSplit.BookName[i]+\t"+ListSplit.AuthorName[i]+\t$"+ListSplit.Co  
st[i]+\n")
```

```
    ListSplit.Quantity[i]=int(ListSplit.Quantity[i])+1
```

```
    t+=float(ListSplit.Cost[i])
```

```
print("\t\t\t\t\t\t\t"+ "$"+str(t))
```

```
print("\tIs the book return date expired or not?")#print
```

```
print("\tPress y for Yes or n for No")
```

```
s=input()
```

```
if(s=="y"):
```

```
    print("\tBy how many days was the book returned late?")
```

```
    day=int(input())
```

```
    fine=2*day
```

```
f= open(Return,"a")
```

```
f.write("\t\t\tFine: $" + str(fine)+"\n")
```

```
t=t+fine
```

```
print("Total Cost: " + "$"+str(t))
```

```
f= open(Return,"a")
```

```
f.write("\n\n\t\t\tTotal Cost: $" + str(t))
```

```
f =open("BookStock.txt","w+")
```

```
for i in range(10):
```

```
    #Write in f file
```

```
f.write(ListSplit.BookName[i]+"," +ListSplit.AuthorName[i]+"," +str(ListSplit.Quantity[i])+"," +  
+"$"+ListSplit.Cost[i]+"\\n")
```

e. Final module

```
import Return
```

```
import ListSplit
```

```
import DateTime
```

```
import Borrow
```

```
def Final():
```

```
    while(True):
```

```
        print("\t\t\t\t\t WELCOME")
```

```
        print("\t\t\t\t\t TO LIBRARY MANAGEMENT SYSTEM" )
```

```
        print("\t\t\t\t\t-----X-----X----X----X----X--" "\n\n")
```

```
        print("\tEnter 1. For Displaying the avialable Books: ")
```

```
        print("\tEnter 2. For Borrowing your requested Books: ")
```

```
        print("\tEnter 3. For Returning the Books you Borrowed: ")
```

```
        print("\tEnter 4. To Exit from the System: ")
```

```
        print("\t-----")
```

```
    try:
```

```
        a=int(input("\n\tChoose a number from 1-4: "))
```

```
        print()
```

```
if(a==1):
```

```
f= open("BookStock.txt","r")
```

```
lines=f.read()
```

```
print(lines)
```

```
print ()
```

```
elif(a==2):
```

ListSplit.list()

Borrow.BorrowBooks()

```
elif(a==3):
```

ListSplit.list()

Return.ReturnBooks()

```
elif(a==4):
```

```
print("\t\t\t THANK YOU FOR USING LIBRARY MANAGEMENT SYSTEM\n
\t\t\t COME AGAIN!!!")
```

break

```
else:
```

```
print("\tEnter a valid number from 1-4")
```

```
except ValueError:
```

```
print("\tPlease input as suggested.")
```

Final()