

Library Management System Using Python

Report by: Sayush Khadka

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1. Introduction:

1.1 About the project:

In today's day, the world is based on technology. In everything we do includes technology, be it a small help or the whole task itself. In almost every field we can notice the involvement of some management system through coding or a whole software. The big shopping malls use this management system to manage their goods, provide a bill to the customer and make it easy and convenient for both the staff and the customers. The banks have their management system to keep a record of the transactions and data, and to regulate those transactions.

Similarly, this project or the program is designed to operate a Library Management System. The program is developed in Python.

Python is a high-level programming language that is supposed to be simple to read and use. Because it is open source, it is free to use even for commercial purposes. Python is available for Mac, Windows, and Unix, as well as virtual machines for Java and.NET. (Christensson, 2010)

So, the project is based on a Library Management System where the user can borrow the book of their choice which is available. The program also allows the user to borrow multiple books. The user can return the book as well. This system also has a feature that generates a bill for borrow and also no fine bill for returning the book on time and a fine bill if the user returns the book after 10 days. This system is a major assist to replace the old techniques of storing, recording, and updating in a book or a paper.

1.2 Goals and Objectives:

- i) **Functioning system:** The main goal of this coursework was to create a fully functioning library management system using functions (built-in and user-defined functions), arguments, and variables.
- ii) **User friendly:** This program consists of various sections where a user can input all the activities involved within a library from handling books, borrowing & returning them, updating the time period of the books borrowed
- iii) **Borrow and return:** Firstly, the user needs to enter their details. Then he/ she needs to select the area they are going for, whether they want to borrow a book or return it or pay for the ones they took.
- iv) **Multiple borrows:** This program is designed in a multi-functioning way as the user can work with multiple books at a time.
- v) **Real-life situation:** Mathematical calculations are also accurate with python so generating bills, updating time, collecting fines can be done precisely. Generating bills, opening, reading files, and writing the details can also be done with this program.
- vi) **Easy and convenient:** The main goal and objective of this program are to utilize the simple syntax method involved in python to create a highly productive, multi-functioning library management system.

2. Discussion and analysis:

2.1 Algorithm:

Step 1: START

Step 2: Open and read the file (book_list.txt)

Step 3: Display the record of the books in the Library Management System

Step 4: Provide the option to the user:

To display the records: ENTER 1

To borrow a book: ENTER 2

To return a book: ENTER 3

To exit: ENTER 4

Step 5: Ask the user to select an option from (1,2,3,4).

Step 6: If entered number is alphabet, print "ERROR!!!Only numbers (1-4) accepted."
and ask the user to select an option from (1,2,3,4) again.

Step 7: If the entered number is not 1 or 2 or 3 or 4, print "ERROR!!!Only numbers (1-4)
and ask the user to select an option from (1,2,3,4) again.

Step 8: If entered number = 1

Display the records in the Library Management System.

Step 9: If entered number = 2 (To borrow a book)

Take input, enter the name (Customer name)

Take input, enter the book ID

Step 10: If the entered book ID is valid,

Check if the particular book is available.

If the book ID is not valid (when alphabet is entered)

Print "Enter a valid ID from the record."

If the book ID is not valid (when invalid number is entered)

Print "Error!!!No book with such book ID."

And take input "If you want to borrow another book 'Y' else type 'N':"

Step 11: If the book is available, the book is issued and the book of that book ID is reduced and the record is updated.

Again,

Take input "If you want to borrow another book type 'Y' else type 'N':"

If Y is entered then,

Take input, enter the book ID.

Go to Step 10.

Either followed by Step 11(if the book is available)

Or followed by Step 12.(if the book is not available)

Repeat till user selects Y.

If N is entered then,

Print "Thank you for borrowing the books. Happy reading :)."

Step 12: If the book is not available, print and take input, "Out of stock. Please enter the book ID of another book you want to borrow:"

Ask the user to enter another book ID.

Go to Step 10.

Either followed by Step 11(if the book is available)

Or followed by Step 12. (if the book is not available)

Step 13: Create a new text file (for bill, and the books borrowed). Each file has a unique file name and is located in the same directory where particular python project file is located.

Step 14: Go to step 5.

Step 15: Go to step 6 or step 7.

Step 16: If the entered number = 3 (To return a book)

Take input, enter the name (Customer name)

Take input, enter the book ID

Step 17: If the book ID is valid,

Take input, "For how many days has been the book borrowed???"

The book is returned and the book of that book ID is added and the record is updated.

If the book ID is not valid (when alphabet is entered)

Print "Enter a valid ID from the record."

If the book ID is not valid (when invalid number is entered)

Print" Error!!!No book with such book ID."

Step 18: If the book is returned till 10 days, fine is not applied.

Create a new text file (for no fine bill, and the book returned). Each file has a unique file name and is located in the same directory where particular python project file is located.

Step 19: If the book is not returned till 10 days, fine is not applied of worth

$((\text{book_no_of_day}) - 10) * 1$ which is $((\text{book taken for number of days}) - 10) * 1$.

Create a new text file (for book fine bill, and the book returned). Each file has a unique file name and is located in the same directory where particular python project file is located.

Step 18: Go to step 5.

Step 19: If the entered number = 4 (To exit the program)

Print "You have chosen to exit the program. Thank you!!!"

Step 20: END

2.2 Flowchart:

Note: The flowchart has been made using “diagrams.net”. (Anon., n.d.)

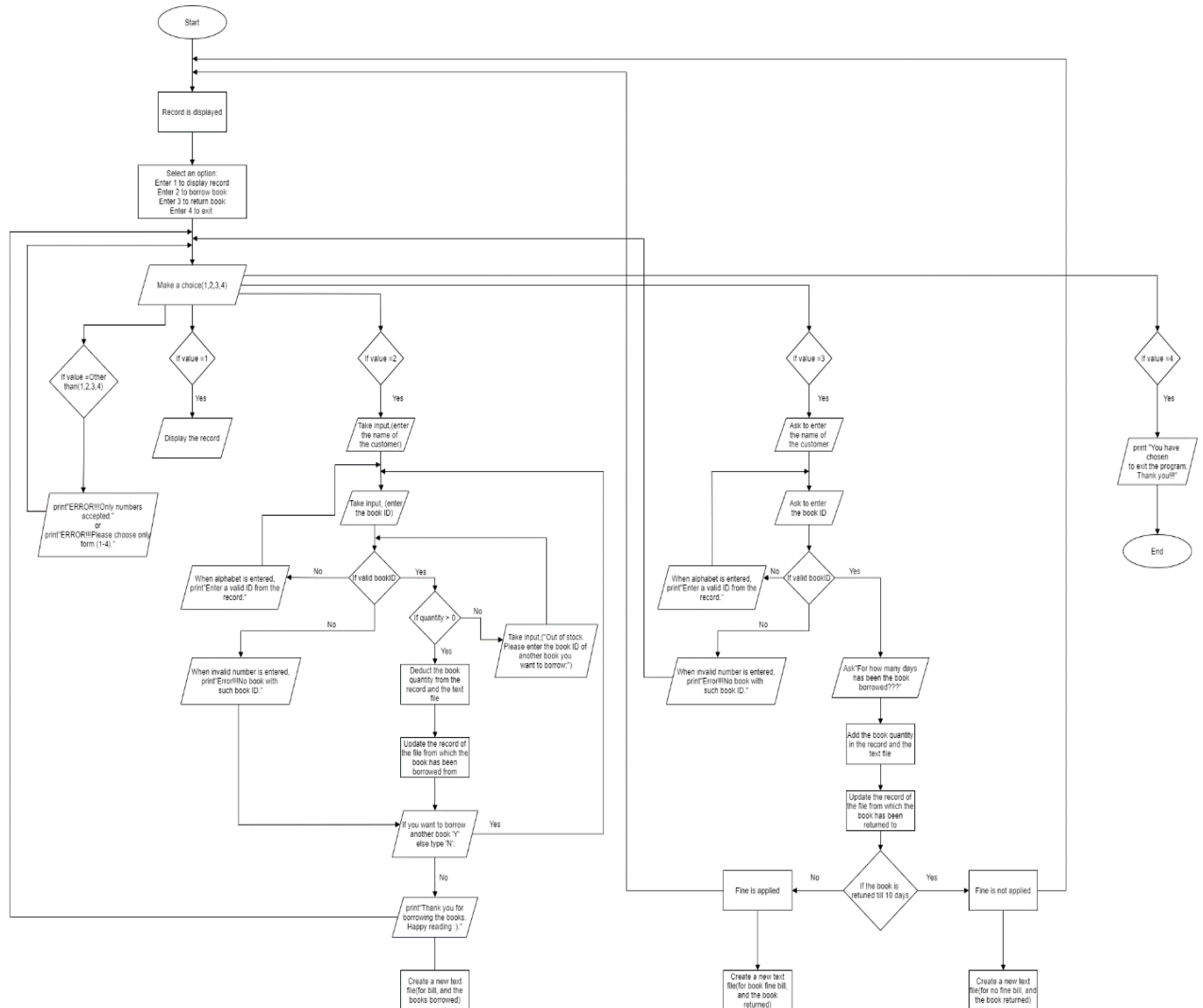


Figure 1 Library Management System Flowchart (as a whole)

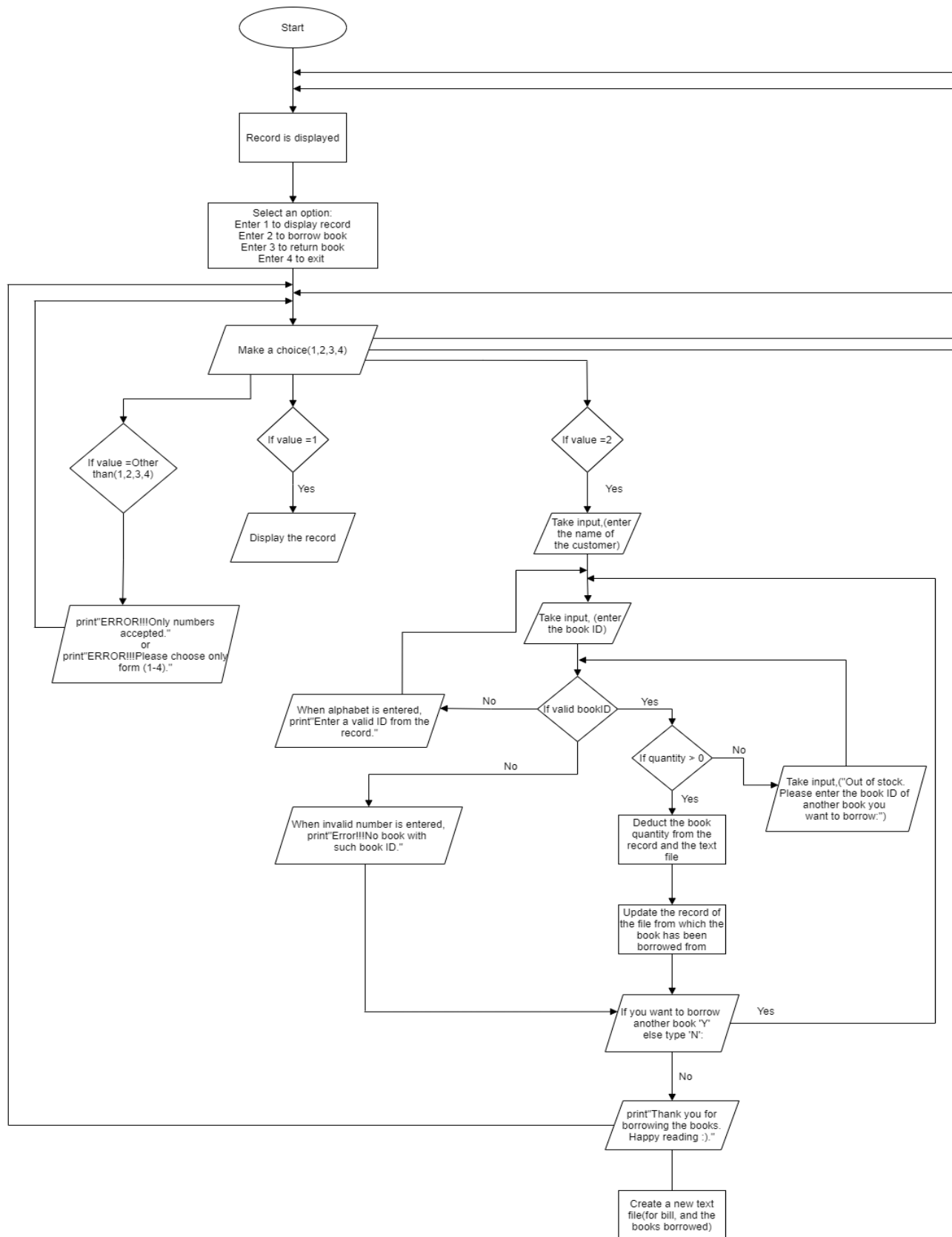


Figure 2 Library Management System Flowchart (Part1)

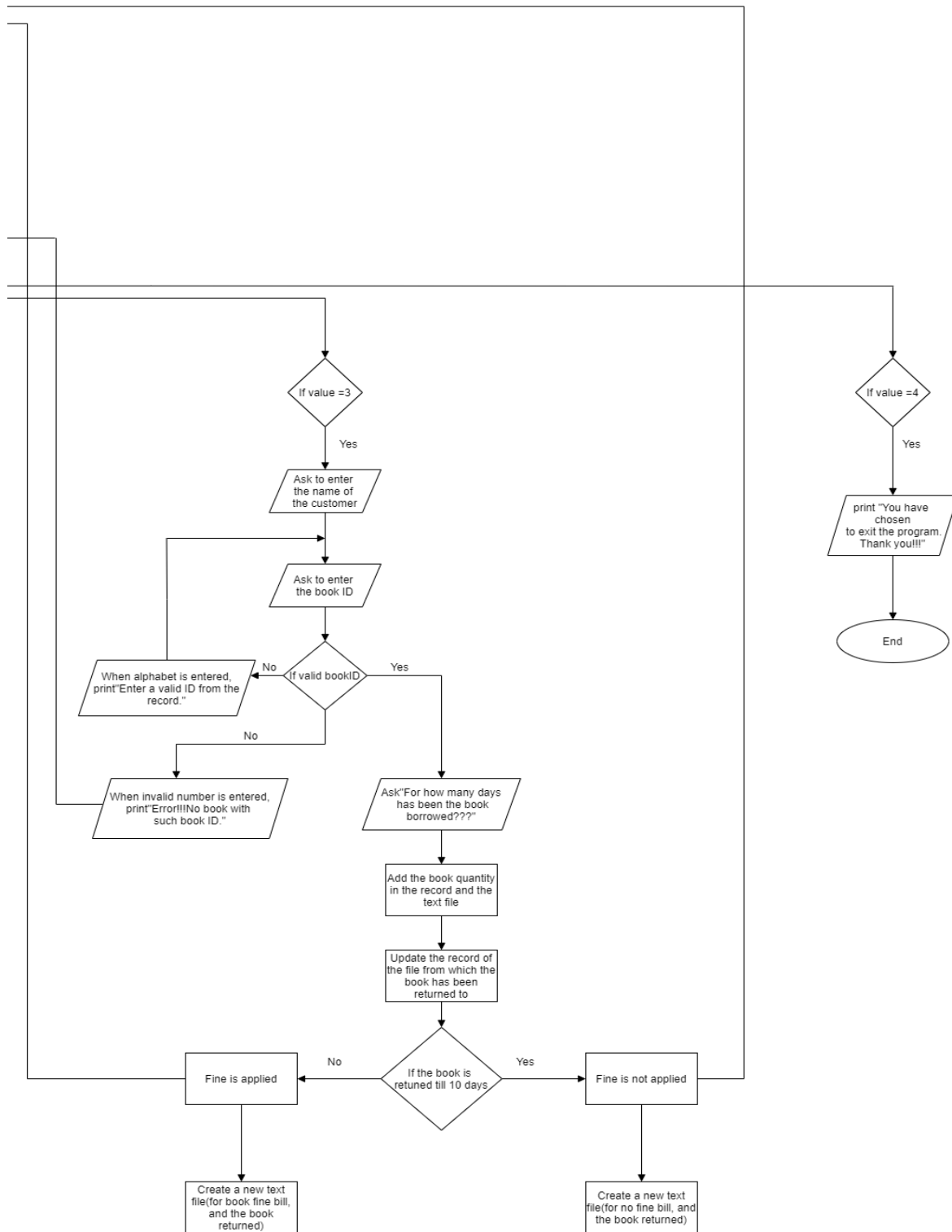


Figure 3 Library Management System Flowchart (Part 2)

2.3 Pseudo Code

a) Pseudo Code for main.py

IMPORT functions

SET book_record TO functions.Library_list()

functions.book_record_display(book_record)

SET book_name TO ""

SET book_total_cost TO 0

SET enter_number TO 0

SET valid_y TO True

WHILE enter_number != 4:

 OUTPUT("\nSelect an option:")

SAYUSH KHADKA

OUTPUT("\nTo display the records : ENTER 1")

OUTPUT("To borrow a book : ENTER 2 ")

OUTPUT("To RETURN a book : ENTER 3")

OUTPUT("To exit : ENTER 4")

WHILE valid_y EQUALS True:

TRY:

SET enter_number TO int(INPUT("\nMake a choice(1,2,3,4) : "))

OUTPUT()

EXCEPT:

OUTPUT("\nERROR!!!Only numbers accepted.")

if(enter_number EQUALS 1):

```
functions.book_record_display(book_record)
```

```
elif(enter_number EQUALS 2):
```

```
SET name TO INPUT("\nEnter the name(Customer name): ")
```

```
SET cost_book,book_name TO  
functions.book_borrow_continued(book_record,functions.book_record_display,book_tot  
al_cost,book_name)
```

```
functions.book_bill(cost_book,book_name,name)
```

```
elif(enter_number EQUALS 3):
```

```
SET name TO INPUT("\nEnter the name(Customer name): ")
```

```
functions.book_RETURN(book_record, name, functions.book_record_display)
```

```
elif(enter_number EQUALS 4):
```

```
    OUTPUT("\nYou have chosen to exit the program.\nThank you!!!")
```

```
    break
```

```
ELSE:
```

```
    OUTPUT("ERROR!!!Please choose only form (1-4).")
```

b) Pseudo Code for functions.py

```
IMPORT datetime
```

```
DEFINE FUNCTION Library_list():
```

```
    SET file TO open("book_list.txt","r")
```

```
    SET list_one TO []
```

```
    SET list_two TO []
```

```
    FOR line IN file:
```

```
        SET line TO line.replace("\n", "")
```

```
        list_one.append(line.split(", "))
```

```
    FOR i IN range(len(list_one)):
```

```
        FOR j IN range(len(list_one[i])):
```

```
            list_two.append(list_one[i][j])
```

```
    RETURN list_two
```

```
OUTPUT("\n\t\t\t\t\tLibrary Management System\n")
```

```
OUTPUT("Learning never stops.")
```

```
DEFINE FUNCTION book_record_display(book_record):
```

```
    OUTPUT("-----  
\nBook ID Book Name          Author          Book Price    Quantity\n-----  
-----")
```

```
    OUTPUT(" ",book_record[0],"      ",book_record[1],"      ",book_record[2],"  
",book_record[3],"      ",book_record[4])
```

```
    OUTPUT(" ",book_record[5],"      ",book_record[6],"      ",book_record[7],"  
",book_record[8],"      ",book_record[9])
```

```
    OUTPUT(" ",book_record[10],"      ",book_record[11],"      ",book_record[12],"  
",book_record[13],"      ",book_record[14])
```

```
    OUTPUT(" ",book_record[15],"      ",book_record[16],"      ",book_record[17],"  
",book_record[18],"      ",book_record[19])
```

```
    OUTPUT(" ",book_record[20],"      ",book_record[21],"      ",book_record[22],"  
",book_record[23],"      ",book_record[24])
```

```
    OUTPUT(" ",book_record[25],"    ",book_record[26],"    ",book_record[27],"
",book_record[28],"    ",book_record[29])
```

```
    OUTPUT(" ",book_record[30],"    ",book_record[31],"    ",book_record[32],"
",book_record[33],"    ",book_record[34])
```

```
    OUTPUT(" ",book_record[35],"    ",book_record[36],"    ",book_record[37],"
",book_record[38],"    ",book_record[39])
```

```
    OUTPUT(" ",book_record[40],"    ",book_record[41],"    ",book_record[42],"
",book_record[43],"    ",book_record[44])
```

```
    OUTPUT(" ",book_record[45],"    ",book_record[46],"    ",book_record[47],"
",book_record[48],"    ",book_record[49])
```

```
DEFINE FUNCTION book_available(book_record,book_quantity,book_ID):
```

```
    SET book_quantity1 TO book_record[4]
```

```
    SET book_quantity2 TO book_record[9]
```

```
    SET book_quantity3 TO book_record[14]
```

```
    SET book_quantity4 TO book_record[19]
```

```
    SET book_quantity5 TO book_record[24]
```


SET book_quantity6 TO book_record[29]

SET book_quantity7 TO book_record[34]

SET book_quantity8 TO book_record[39]

SET book_quantity9 TO book_record[44]

SET book_quantity10 TO book_record[49]

SET file TO open("book_list.txt","w")

IF book_ID EQUALS 1:

SET book_quantity1 TO int(book_record[4])-1

file.write("1,The Alchemist,Paulo Coelho,\$5,"+str(book_quantity1)+"\n2,Song of
Solomon,Toni Morrison,\$10,"+book_quantity2+

"\n3,Gilead,Marilynne
Robinson,\$15,"+book_quantity3+"\n4,Elevation,Stephen King,\$15,"+book_quantity4+

"\n5,Ghost Wall,Sarah Moss,\$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,\$14,"+book_quantity6+

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 2:
```

```
SET book_quantity2 TO int(book_record[9])-1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+str(book_quantity2)+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 3:
```

```
SET book_quantity3 TO int(book_record[14])-1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+str(book_quantity3)+"\n4,Elevation,Stephen  
King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 4:
```

```
SET book_quantity4 TO int(book_record[19])-1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen  
King,$15,"+str(book_quantity4)+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 5:
```

```
SET book_quantity5 TO int(book_record[24])-1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+str(book_quantity5)+"\n6,War and  
Peace,Leo Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 6:
```

```
SET book_quantity6 TO int(book_record[29])-1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+str(book_quantity6)+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 7:
```

```
SET book_quantity7 TO int(book_record[34])-1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+str(book_quantity7)+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 8:
```

```
SET book_quantity8 TO int(book_record[39])-1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+str(book_quantity8)+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 9:
```

```
SET book_quantity9 TO int(book_record[44])-1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+str(book_quantity9)+"\n10,On  
the Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 10:
```

```
SET book_quantity10 TO int(book_record[49])-1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+str(book_quantity10)+"")
```

```
file.close()
```

```
SET book_quantity_remaining TO book_quantity - 1
```

```
FOR i IN range(len(book_record)):
```


FOR j IN range(len(book_record[i])):

IF book_ID EQUALS 1:

SET book_record[4] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 2:

SET book_record[9] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 3:

SET book_record[14] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 4:

SET book_record[19] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 5:

SET book_record[24] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 6:

SET book_record[29] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 7:

SET book_record[34] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 8:

SET book_record[39] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 9:

SET book_record[44] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 10:

SET book_record[49] TO str(book_quantity_remaining)

```
DEFINE FUNCTION book_counts(book_record,book_ID):
```

```
    SET book_name TO ""
```

```
    IF book_ID EQUALS 1:
```

```
        SET book_name TO book_record[1]
```

```
    ELSEIF book_ID EQUALS 2:
```

```
        SET book_name TO book_record[6]
```

```
    ELSEIF book_ID EQUALS 3:
```

```
        SET book_name TO book_record[11]
```

```
    ELSEIF book_ID EQUALS 4:
```

```
        SET book_name TO book_record[16]
```

ELSEIF book_ID EQUALS 5:

SET book_name TO book_record[21]

ELSEIF book_ID EQUALS 6:

SET book_name TO book_record[26]

ELSEIF book_ID EQUALS 7:

SET book_name TO book_record[31]

ELSEIF book_ID EQUALS 8:

SET book_name TO book_record[36]

ELSEIF book_ID EQUALS 9:

SET book_name TO book_record[41]

ELSEIF book_ID EQUALS 10:

SET book_name TO book_record[46]

RETURN book_name

DEFINE FUNCTION book_price(book_record,book_ID):

IF book_ID EQUALS 1:

SET book_price TO book_record[3]

SET book_price TO book_price.replace("\$","")

ELSEIF book_ID EQUALS 2:

SET book_price TO book_record[8]

SET book_price TO book_price.replace("\$", "")

ELSEIF book_ID EQUALS 3:

SET book_price TO book_record[13]

SET book_price TO book_price.replace("\$", "")

ELSEIF book_ID EQUALS 4:

SET book_price TO book_record[18]

SET book_price TO book_price.replace("\$", "")

ELSEIF book_ID EQUALS 5:

SET book_price TO book_record[23]

SET book_price TO book_price.replace("\$", "")

ELSEIF book_ID EQUALS 6:

SET book_price TO book_record[28]

SET book_price TO book_price.replace("\$", "")

ELSEIF book_ID EQUALS 7:

SET book_price TO book_record[33]

SET book_price TO book_price.replace("\$", "")

ELSEIF book_ID EQUALS 8:

SET book_price TO book_record[38]

SET book_price TO book_price.replace("\$", "")

ELSEIF book_ID EQUALS 9:

SET book_price TO book_record[43]

SET book_price TO book_price.replace("\$", "")

ELSEIF book_ID EQUALS 10:

SET book_price TO book_record[48]

SET book_price TO book_price.replace("\$", "")

RETURN book_price

DEFINE FUNCTION book_borrow(book_record):

SET price_of_book TO 0

SET book_Name TO ""

SET flag TO True

SET valid_y TO True

SET valid_n TO True

WHILE valid_y EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nEnter the book ID: "))

break

EXCEPT:

OUTPUT("Enter a valid ID from the record.")

WHILE flag EQUALS True:

IF book_ID EQUALS 1:

SET book_quantity TO int(book_record[4])

IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

book_record_display(book_record)

SET price_of_book TO book_price(book_record,book_ID)

SET book_Name TO book_counts(book_record,book_ID)

break

ELSE:

WHILE valid_n EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of
another book you want to borrow:"))

break

EXCEPT:

OUTPUT("Enter a valid ID from the record.")

ELSEIF book_ID EQUALS 2:

SET book_quantity TO int(book_record[9])

IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

book_record_display(book_record)

SET price_of_book TO book_price(book_record,book_ID)

SET book_Name TO book_counts(book_record,book_ID)

break

ELSE:

WHILE valid_n EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of
another book you want to borrow:"))

break

EXCEPT:

OUTPUT("Enter a valid ID from the record.")

ELSEIF book_ID EQUALS 3:

SET book_quantity TO int(book_record[14])

IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

book_record_display(book_record)

SET price_of_book TO book_price(book_record,book_ID)

SET book_Name TO book_counts(book_record,book_ID)

break

ELSE:

WHILE valid_n EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of
another book you want to borrow:"))

break

EXCEPT:

OUTPUT("Enter a valid ID from the record.")

ELSEIF book_ID EQUALS 4:

SET book_quantity TO int(book_record[19])

IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

book_record_display(book_record)

SET price_of_book TO book_price(book_record,book_ID)

SET book_Name TO book_counts(book_record,book_ID)

break

ELSE:

WHILE valid_n EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of another book you want to borrow:"))

break

EXCEPT:

OUTPUT("Enter a valid ID from the record.")

ELSEIF book_ID EQUALS 5:

SET book_quantity TO int(book_record[24])

IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

book_record_display(book_record)

SET price_of_book TO book_price(book_record,book_ID)

SET book_Name TO book_counts(book_record,book_ID)

break

ELSE:

WHILE valid_n EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of
another book you want to borrow:"))

break

EXCEPT:

OUTPUT("Enter a valid ID from the record.")

ELSEIF book_ID EQUALS 6:

SET book_quantity TO int(book_record[29])

IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

```
book_record_display(book_record)
```

```
SET price_of_book TO book_price(book_record,book_ID)
```

```
SET book_Name TO book_counts(book_record,book_ID)
```

```
break
```

```
ELSE:
```

```
WHILE valid_n EQUALS True:
```

```
TRY:
```

```
    SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of  
another book you want to borrow:"))
```

```
    break
```

```
EXCEPT:
```

```
    OUTPUT("Enter a valid ID from the record.")
```

```
ELSEIF book_ID EQUALS 7:
```

```
    SET book_quantity TO int(book_record[34])
```


IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

book_record_display(book_record)

SET price_of_book TO book_price(book_record,book_ID)

SET book_Name TO book_counts(book_record,book_ID)

break

ELSE:

WHILE valid_n EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of
another book you want to borrow:"))

break

EXCEPT:

pOUTPUT("Enter a valid ID from the record.")

ELSEIF book_ID EQUALS 8:

SET book_quantity TO int(book_record[39])

IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

book_record_display(book_record)

SET price_of_book TO book_price(book_record,book_ID)

SET book_Name TO book_counts(book_record,book_ID)

break

ELSE:

WHILE valid_n EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of
another book you want to borrow:"))

break

EXCEPT:

OUTPUT("Enter a valid ID from the record.")

ELSEIF book_ID EQUALS 9:

SET book_quantity TO int(book_record[44])

IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

book_record_display(book_record)

SET price_of_book TO book_price(book_record,book_ID)

SET book_Name TO book_counts(book_record,book_ID)

break

ELSE:

WHILE valid_n EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of
another book you want to borrow:"))

break

EXCEPT:

OUTPUT("Enter a valid ID from the record.")

ELSEIF book_ID EQUALS 10:

SET book_quantity TO int(book_record[49])

IF book_quantity > 0:

book_record_displayAvailable()

book_available(book_record,book_quantity,book_ID)

book_record_display(book_record)

SET price_of_book TO book_price(book_record,book_ID)

SET book_Name TO book_counts(book_record,book_ID)

break

ELSE:

WHILE valid_n EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nOut of stock.Please enter the book ID of
another book you want to borrow:"))

break

EXCEPT:

OUTPUT("Enter a valid ID from the record.")

ELSE:

OUTPUT("\nError!!!No book with such book ID.")

break

RETURN price_of_book,book_Name

```
DEFINE                                                    FUNCTION
book_borrow_continued(book_record,book_record_display,book_total_cost,book_name
):
```

SET flag TO True

SET book_cost,book_Name TO book_borrow(book_record)

book_total_cost += int(book_cost)

book_name += book_Name+"\n"

WHILE flag EQUALS True:

SET Yes_No TO INPUT("\nIf you want to borrow another book 'Y' else type 'N':")

IF (Yes_No.upper() EQUALS "Y"):

```
SET book_cost,book_Name TO book_borrow(book_record)
```

```
book_total_cost += int(book_cost)
```

```
book_name += "\t\t\t\t "+book_Name+"\n"
```

```
ELSEIF (Yes_No.upper() EQUALS "N"):
```

```
OUTPUT("\nThank you FOR borrowing the books. Happy reading :).\n\n")
```

```
break
```

```
ELSE:
```

```
break
```

```
RETURN book_total_cost,book_name
```

```
DEFINE FUNCTION book_bill(cost_book,book_name,name):
```

SAYUSH KHADKA

```
SET bill_date_time TO datetime.datetime.now().replace(microsecond=0)
```

```
SET hour TO str((datetime.datetime.now().hour))
```

```
SET minute TO str(datetime.datetime.now().minute)
```

```
SET second TO str(datetime.datetime.now().second)
```

```
SET unique_file_number TO hour+minute+second
```

```
SET file TO open("b_"+name+"_"+unique_file_number+".txt","w")
```

```
file.write("-----LIBRARY MANAGEMENT SYSTEM-----  
-----")
```

```
file.write("\nBILL FOR BORROW:")
```

```
file.write("\n\n-----  
-----")
```

```
file.write("\nCustomer name \t\t\t: "+name)
```

```
file.write("\n-----  
-----")
```

```
file.write("\nDate and Time \t\t\t: "+str(bill_date_time))
```



```

file.write("\n-----")
-----")

file.write("\nName of the borrowed book \t:" + book_name)

file.write("-----")
-----")

file.write("\nTotal Cost \t\t\t: $" + str(cost_book))

file.write("\n-----")
-----")

file.write("\n\nHope you have a good time reading the book.")

file.close()

```

```

DEFINE FUNCTION book_record_displayAvailable():

```

```

    OUTPUT("\nGlad to know.The book is available.")

```

```
DEFINE FUNCTION book_add(book_record, book_quantity, book_ID):
```

```
    SET book_quantity1 TO book_record[4]
```

```
    SET book_quantity2 TO book_record[9]
```

```
    SET book_quantity3 TO book_record[14]
```

```
    SET book_quantity4 TO book_record[19]
```

```
    SET book_quantity5 TO book_record[24]
```

```
    SET book_quantity6 TO book_record[29]
```

```
    SET book_quantity7 TO book_record[34]
```

```
    SET book_quantity8 TO book_record[39]
```

```
    SET book_quantity9 TO book_record[44]
```

```
    SET book_quantity10 TO book_record[49]
```

```
    SET file TO open("book_list.txt", "w")
```

```
    IF book_ID EQUALS 1:
```

```
SET book_quantity1 TO int(book_record[4])+1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+str(book_quantity1)+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 2:
```

```
SET book_quantity2 TO int(book_record[9])+1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+str(book_quantity2)+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

ELSEIF book_ID EQUALS 3:

```
SET book_quantity3 TO int(book_record[14])+1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+str(book_quantity3)+"\n4,Elevation,Stephen  
King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

ELSEIF book_ID EQUALS 4:

SET book_quantity4 TO int(book_record[19])+1

file.write("1,The Alchemist,Paulo Coelho,\$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,\$10,"+book_quantity2+

"\n3,Gilead,Marilynne
Robinson,\$15,"+book_quantity3+"\n4,Elevation,Stephen
King,\$15,"+str(book_quantity4)+

"\n5,Ghost Wall,Sarah Moss,\$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,\$14,"+book_quantity6+

"\n7,East of Eden,John Steinbeck,\$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,\$11,"+book_quantity8+

"\n9,The Kite Runner,Khaled Hosseini,\$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,\$10,"+book_quantity10+"")

ELSEIF book_ID EQUALS 5:

SET book_quantity5 TO int(book_record[24])+1

file.write("1,The Alchemist,Paulo Coelho,\$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,\$10,"+book_quantity2+

"\n3,Gilead,Marilynne
Robinson,\$15,"+book_quantity3+"\n4,Elevation,Stephen King,\$15,"+book_quantity4+

```
"\n5,Ghost Wall,Sarah Moss,$4,"+str(book_quantity5)+"\n6,War and  
Peace,Leo Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

ELSEIF book_ID EQUALS 6:

```
SET book_quantity6 TO int(book_record[29])+1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+str(book_quantity6)+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 7:
```

```
SET book_quantity7 TO int(book_record[34])+1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+str(book_quantity7)+"\n8,Mortal Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 8:
```

```
SET book_quantity8 TO int(book_record[39])+1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+str(book_quantity8)+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 9:
```

```
SET book_quantity9 TO int(book_record[44])+1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```



```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+str(book_quantity9)+"\n10,On  
the Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
ELSEIF book_ID EQUALS 10:
```

```
SET book_quantity10 TO int(book_record[49])+1
```

```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of  
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
"\n3,Gilead,Marilynne  
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo  
Tolstoy,$14,"+book_quantity6+
```

```
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal  
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the  
Road,Jack Kerouac,$10,"+str(book_quantity10)+"")
```

```
file.close()
```

```
SET book_quantity_remaining TO book_quantity + 1
```

```
FOR i IN range(len(book_record)):
```

```
    FOR j IN range(len(book_record[i])):
```

```
        IF book_ID EQUALS 1:
```

```
            SET book_record[4] TO str(book_quantity_remaining)
```

```
        ELSEIF book_ID EQUALS 2:
```

```
            SET book_record[9] TO str(book_quantity_remaining)
```

```
        ELSEIF book_ID EQUALS 3:
```

```
            SET book_record[14] TO str(book_quantity_remaining)
```

ELSEIF book_ID EQUALS 4:

SET book_record[19] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 5:

SET book_record[24] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 6:

SET book_record[29] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 7:

SET book_record[34] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 8:

SET book_record[39] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 9:

SET book_record[44] TO str(book_quantity_remaining)

ELSEIF book_ID EQUALS 10:

SET book_record[49] TO str(book_quantity_remaining)

DEFINE FUNCTION book_RETURN(book_record, name, book_record_display):

SET flag TO True

SET valid_y TO True

SET valid_n TO True

WHILE valid_y EQUALS True:

TRY:

SET book_ID TO int(INPUT("\nEnter the book ID: "))

break

EXCEPT:

OUTPUT("\nEnter a valid ID from the record.")

WHILE flag EQUALS True:

IF book_ID EQUALS 1:

WHILE valid_n EQUALS True:

TRY:

SET book_no_of_day TO int(INPUT("\nFor how many days has been the
book borrowed??? "))

break

EXCEPT:

OUTPUT("\nEnter a valid day.")

book_fine(book_no_of_day, name, book_record, book_ID)

SET book_quantity TO int(book_record[4])

book_add(book_record, book_quantity, book_ID)

book_record_display(book_record)

break

ELSEIF book_ID EQUALS 2:

WHILE valid_n EQUALS True:

TRY:

```
SET book_no_of_day TO int(INPUT("\nFor how many days has been the  
book borrowed??? "))
```

```
break
```

EXCEPT:

```
OUTPUT("\nEnter a valid day.")
```

```
book_fine(book_no_of_day, name, book_record, book_ID)
```

```
SET book_quantity TO int(book_record[9])
```

```
book_add(book_record, book_quantity, book_ID)
```

```
book_record_display(book_record)
```

```
break
```

ELSEIF book_ID EQUALS 3:

WHILE valid_n EQUALS True:

TRY:

SET book_no_of_day TO int(INPUT("\nFor how many days has been the
book borrowed??? "))

break

EXCEPT:

OUTPUT("\nEnter a valid day.")

book_fine(book_no_of_day, name, book_record, book_ID)

SET book_quantity TO int(book_record[14])

book_add(book_record, book_quantity, book_ID)


```
book_record_display(book_record)
```

```
break
```

```
ELSEIF book_ID EQUALS 4:
```

```
WHILE valid_n EQUALS True:
```

```
TRY:
```

```
    SET book_no_of_day TO int(INPUT("\nFor how many days has been the  
book borrowed??? "))
```

```
    break
```

```
EXCEPT:
```

```
    OUTPUT("\nEnter a valid day.")
```

```
book_fine(book_no_of_day, name, book_record, book_ID)
```

```
SET book_quantity TO int(book_record[19])
```

```
book_add(book_record, book_quantity, book_ID)
```

```
book_record_display(book_record)
```

```
break
```

```
ELSEIF book_ID EQUALS 5:
```

```
WHILE valid_n EQUALS True:
```

```
TRY:
```

```
    SET book_no_of_day TO int(INPUT("\nFor how many days has been the  
book borrowed??? "))
```

```
    break
```

EXCEPT:

OUTPUT("\nEnter a valid day.")

book_fine(book_no_of_day, name, book_record, book_ID)

SET book_quantity TO int(book_record[24])

book_add(book_record, book_quantity, book_ID)

book_record_display(book_record)

break

ELSEIF book_ID EQUALS 6:

WHILE valid_n EQUALS True:

TRY:

```
        SET book_no_of_day TO int(INPUT("\nFor how many days has been the  
book borrowed??? "))
```

```
        break
```

```
    EXCEPT:
```

```
        OUTPUT("\nEnter a valid day.")
```

```
book_fine(book_no_of_day, name, book_record, book_ID)
```

```
SET book_quantity TO int(book_record[29])
```

```
book_add(book_record, book_quantity, book_ID)
```

```
book_record_display(book_record)
```

```
break
```

```
ELSEIF book_ID EQUALS 7:
```

WHILE valid_n EQUALS True:

TRY:

SET book_no_of_day TO int(INPUT("\nFor how many days has been the
book borrowed??? "))

break

EXCEPT:

OUTPUT("\nEnter a valid day.")

book_fine(book_no_of_day, name, book_record, book_ID)

SET book_quantity TO int(book_record[34])

book_add(book_record, book_quantity, book_ID)

book_record_display(book_record)

break

ELSEIF book_ID EQUALS 8:

WHILE valid_n EQUALS True:

TRY:

SET book_no_of_day TO int(INPUT("\nFor how many days has been the
book borrowed??? "))

break

EXCEPT:

OUTPUT("\nEnter a valid day.")

book_fine(book_no_of_day, name, book_record, book_ID)

SET book_quantity TO int(book_record[39])

```
book_add(book_record, book_quantity, book_ID)
```

```
book_record_display(book_record)
```

```
break
```

```
ELSEIF book_ID EQUALS 9:
```

```
WHILE valid_n EQUALS True:
```

```
TRY:
```

```
    SET book_no_of_day TO int(INPUT("\nFor how many days has been the  
book borrowed??? "))
```

```
    break
```

```
EXCEPT:
```

```
    OUTPUT("\nEnter a valid day.")
```

book_fine(book_no_of_day, name, book_record, book_ID)

SET book_quantity TO int(book_record[44])

book_add(book_record, book_quantity, book_ID)

book_record_display(book_record)

break

ELSEIF book_ID EQUALS 10:

WHILE valid_n EQUALS True:

TRY:

SET book_no_of_day TO int(INPUT("\nFor how many days has been the
book borrowed??? "))

break

EXCEPT:

OUTPUT("\nEnter a valid day.")

book_fine(book_no_of_day, name, book_record, book_ID)

SET book_quantity TO int(book_record[49])

book_add(book_record, book_quantity, book_ID)

book_record_display(book_record)

break

ELSE:

OUTPUT("Error!!!No book with such book ID.")

break

```
DEFINE FUNCTION book_fine(book_no_of_day, name, book_record, book_ID):
```

```
    IF int(book_no_of_day) > 10:
```

```
        book_fine_bill(name, book_record, book_ID, book_no_of_day)
```

```
    ELSE:
```

```
        book_no_fine_bill(name, book_record, book_ID)
```

```
DEFINE FUNCTION book_fine_bill(name, book_record, book_ID, book_no_of_day):
```

```
    SET name_of_book TO book_counts(book_record, book_ID)
```

```
    SET book_fine_amount TO (int(book_no_of_day) - 10) * 1
```

```
    SET bill_date_time TO datetime.datetime.now().replace(microsecond=0)
```

```
SET hour TO str((datetime.datetime.now().hour))
```

```
SET minute TO str(datetime.datetime.now().minute)
```

```
SET second TO str(datetime.datetime.now().second)
```

```
SET unique_file_number TO hour+minute+second
```

```
SET file TO open("r_"+name+"_ "+unique_file_number+".txt", "w")
```

```
file.write("-----LIBRARY MANAGEMENT SYSTEM-----  
-----")
```

```
file.write("\nBILL FOR FINE:")
```

```
file.write("\n\n-----  
-----")
```

```
file.write("\nCustomer name \t\t\t: "+name)
```

```
file.write("\n-----  
-----")
```

```

file.write("\nDate and Time   \t\t\t: "+str(bill_date_time))

file.write("\n-----")
-----")

file.write("\nName of the borrowed book   \t:" +name_of_book)

file.write("\n-----")
-----")

file.write("\nFine amount   \t\t\t: $" +str(book_fine_amount))

file.write("\n-----")
-----")

file.write("\n\nHope you had a good time reading the book.")

file.close()

```

```

DEFINE FUNCTION book_no_fine_bill(name, book_record, book_ID):

SET name_of_book TO book_counts(book_record, book_ID)

SET bill_date_time TO datetime.datetime.now().replace(microsecond=0)

```

```
SET hour TO str((datetime.datetime.now().hour))
```

```
SET minute TO str(datetime.datetime.now().minute)
```

```
SET second TO str(datetime.datetime.now().second)
```

```
SET unique_file_number TO hour+minute+second
```

```
SET file TO open("r_"+name+"_ "+unique_file_number+".txt", "w")
```

```
file.write("-----LIBRARY MANAGEMENT SYSTEM-----  
-----")
```

```
file.write("\nNO FINE:")
```

```
file.write("\n\n-----  
-----")
```

```
file.write("\nCustomer name \t\t\t: "+name)
```

```
file.write("\n-----  
-----")
```

```
file.write("\nDate and Time \t\t\t: "+str(bill_date_time))
```

```
file.write("\n-----  
-----")
```

```
file.write("\nName of the borrowed book \t:" +name_of_book)
```

```
file.write("\n-----  
-----")
```

```
file.write("\nNO FINE :D. The book was RETURNed on time.")
```

```
file.write("\n-----  
-----")
```

```
file.write("\n\nHope you had a good time reading the book.")
```

```
file.close()
```

2.4 Data structures:

There are generally 2 types of data structure in python. They are:

a) Primitive(basic) data structure:

- i) Integer
- ii) String
- iii) Float
- iv) Boolean

i) Integer:

Integer data type has been used in the project to take integer input and store integer values from the user. For example, it is `input()` takes string input and by using `int(input())` we can type cast the input to integer. This integer value can be implemented later in the program when we work with numerical (integer or numbers) values.

```
try:
    enter_number = int(input("\nMake a choice(1,2,3,4) : "))
    print()
```

Figure 4 Integer (Data Structure)

ii) String:

String can be termed as set of characters. String includes number of characters. String includes everything with “spaces” to “symbols”. String is put inside (”) double inverted commas.

```
#title
print("\n\t\t\t\t\tLibrary Management System\n")

print("Learning never stops.")
```

Figure 5 String (Data Structure)

```
#number of books(book count)
def book_counts(book_record,book_ID):
    book_name = "" #book name to empty string
```

Figure 6 Assign empty string

iii) Float:

In programs float is used to store decimal values. For example, if we have to store 5.5 in a variable. The data type of the variable must be float.

iv) Boolean:

Boolean is a logical type of data structure or data type. Boolean data type only has two values (true or false). These Boolean values are often used in condition checking and loop.


```

valid_y = True
while enter_number != 4:
    #Options provided to the user to choose carry out their work

    print("\nSelect an option:")
    print("\nTo display the records : ENTER 1")
    print("To borrow a book      : ENTER 2 ")
    print("To return a book       : ENTER 3")
    print("To exit                : ENTER 4")

    while valid_y == True:

        try:
            enter_number = int(input("\nMake a choice(1,2,3,4) : "))
            print()

        except:
            print("\nERROR!!!Only numbers accepted.") #must choose from (1-4) (no string)

        #to display the records
        if(enter_number == 1):

            functions.book_record_display(book_record)

        #to borrow the book
        elif(enter_number == 2):

```

Figure 7 Boolean (Data Structure)

b) Non-primitive data structure:

- i) List
- ii) Set
- iii) Tuple
- iv) Dictionaries

i) List:

The list data type is a non-primitive data type for storing values. Collective or multiple items can be stored in a list. In the Library Management System program or project list has been used to store number of the books, name of the books, author of the books, quantity of the books and the cost of the books. List allows users to add and remove the values as well.

```
def Library_list():
    file = open("book_list.txt","r") #open and r mode for file
    list_one = [] #empty list
    list_two = [] #empty list
    for line in file:
        line = line.replace("\n","")
        list_one.append(line.split(",")) #to split string
    for i in range(len(list_one)):
        for j in range(len(list_one[i])):
            list_two.append(list_one[i][j])
    return list_two

#title
print("\n\t\t\t\t\tLibrary Management System\n")

print("Learning never stops.")

#to display the records in the Library Management System
def book_record_display(book_record):
    print("-----\nBook ID Book Name Author")
    print(" ",book_record[0]," ",book_record[1]," ",book_record[2]," ",book_record[3]," ",book_record[4])
    print(" ",book_record[5]," ",book_record[6]," ",book_record[7]," ",book_record[8]," ",book_record[9])
    print(" ",book_record[10]," ",book_record[11]," ",book_record[12]," ",book_record[13]," ",book_record[14])
    print(" ",book_record[15]," ",book_record[16]," ",book_record[17]," ",book_record[18]," ",book_record[19])
    print(" ",book_record[20]," ",book_record[21]," ",book_record[22]," ",book_record[23]," ",book_record[24])
    print(" ",book_record[25]," ",book_record[26]," ",book_record[27]," ",book_record[28]," ",book_record[29])
    print(" ",book_record[30]," ",book_record[31]," ",book_record[32]," ",book_record[33]," ",book_record[34])
    print(" ",book_record[35]," ",book_record[36]," ",book_record[37]," ",book_record[38]," ",book_record[39])
    print(" ",book_record[40]," ",book_record[41]," ",book_record[42]," ",book_record[43]," ",book_record[44])
    print(" ",book_record[45]," ",book_record[46]," ",book_record[47]," ",book_record[48]," ",book_record[49])
```

Figure 8 List (Data Structure)

ii) Set:

Set is another type of non-primitive data structure. The items in the set are unique, which means the items are not repeated in a set. The items are unordered in a set.

For example:

```
a_set = {"mouse", "keyboard", "CPU", "monitor", "keyboard"}  
print(a_set)
```

Output = {'monitor', 'mouse', 'keyboard', 'CPU'}

iii) Tuple:

Tuple is another type of data structure that allows user to store multiple items in a single variable. The items are stored in order. Tuples cannot be modified or changed.

For example:

```
a_tuple = ("mouse", "keyboard", "CPU", "keyboard")  
print(a_tuple)
```

Output = ('mouse', 'keyboard', 'CPU', 'keyboard')

iv) Dictionaries:

Dictionaries are Python's version of an associative array, which is more often known as a data structure. The key-value pairs make up a dictionary. Each key-value pair corresponds to a certain value. (Mealus, n.d.)

For example:

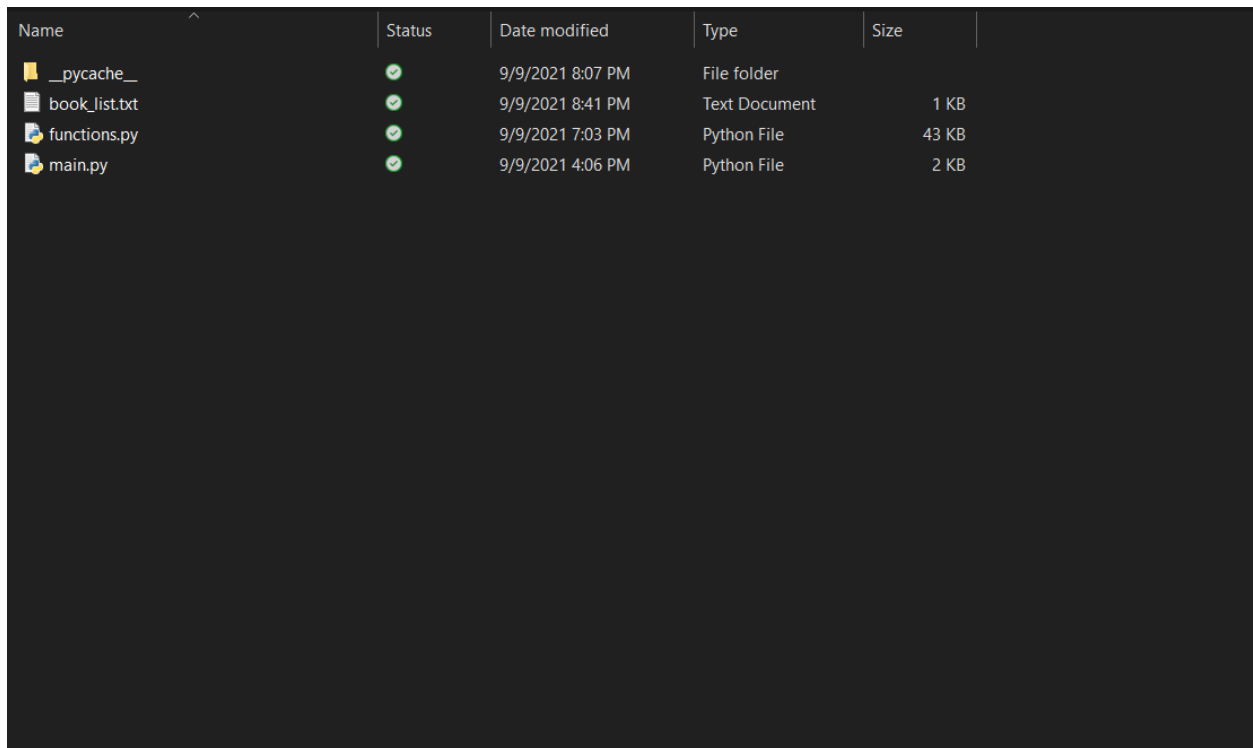
```
a_dict = {  
    "Input device": "Keyboard",  
    "Processor": "CPU",  
    "Output": "Monitor"  
}  
print(a_dict)
```

```
Output = {'Input device': 'Keyboard', 'Processor': 'CPU', 'Output':  
'Monitor'}
```

3. Program

The program or the project is based on a Library Management System where the user can borrow the book of their choice which is available. The program also allows the user to borrow multiple books. The user can return the book as well. This system also has a feature that generates a bill for borrow and also no fine bill for returning the book on time and a fine bill if the user returns the book after 10 days.

3.1 When the user runs the program

A screenshot of a file explorer window with a dark theme. It displays a table of files and folders in a project directory. The table has five columns: Name, Status, Date modified, Type, and Size. The files listed are __pycache__ (a folder), book_list.txt (a text document), functions.py (a Python file), and main.py (a Python file). All files have a green checkmark in the Status column, indicating they are present or successful. The dates and times of modification are listed in the Date modified column, and the file sizes are in the Size column.

Name	Status	Date modified	Type	Size
__pycache__	✓	9/9/2021 8:07 PM	File folder	
book_list.txt	✓	9/9/2021 8:41 PM	Text Document	1 KB
functions.py	✓	9/9/2021 7:03 PM	Python File	43 KB
main.py	✓	9/9/2021 4:06 PM	Python File	2 KB

Figure 9 Project Folder


 book_list.txt - Notepad
File Edit Format View Help
1,The Alchemist,Paulo Coelho,\$5,4
2,Song of Solomon,Toni Morrison,\$10,3
3,Gilead,Marilynne Robinson,\$15,6
4,Elevation,Stephen King,\$15,7
5,Ghost Wall,Sarah Moss,\$4,25
6,War and Peace,Leo Tolstoy,\$14,9
7,East of Eden,John Steinbeck,\$9,7
8,Mortal Engines,Philip Reeve,\$11,6
9,The Kite Runner,Khaled Hosseini,\$13,9
10,On the Road,Jack Kerouac,\$10,14

Figure 10 The book record in text file (book_list.txt)

```

File Edit Format Run Options Window Help
Run Module F5 program
import func... Run... Customized Shift+F5
book_record = Check Module Alt+X
#callig book Python Shell
functions.book_record_display(book_record)

book_name = "" #book_name to empty string
book_total_cost = 0 #book_total_cost set to 0
enter_number = 0 #enter_number set to 0

valid_y = True

while enter_number != 4:
    #Options provided to the user to choose carry out their work

    print("\nSelect an option:")
    print("\nTo display the records : ENTER 1")
    print("\nTo borrow a book : ENTER 2 ")
    print("\nTo return a book : ENTER 3")
    print("\nTo exit : ENTER 4")

    while valid_y == True:

        try:
            enter_number = int(input("\nMake a choice(1,2,3,4) : "))
            print()

        except:
            print("\nERROR!!!Only numbers accepted.") #must choose from (1-4) (no string)

        #to display the records
        if(enter_number == 1):

            functions.book_record_display(book_record)

        #to borrow the book
        elif(enter_number == 2):

            name = input("\nEnter the name(Customer name): ")
            cost_book,book_name = functions.book_borrow_continued(book_record,functions.book_record_display,book_total_cost,book_name)
            functions.book_bill(cost_book,book_name,name)

```

Figure 11 main.py is opened and the program is run by clicking (F5 or from Run option)

```

IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

Library Management System

Learning never stops.

-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 7
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : |

```

Figure 12 The program in Shell when run

3.2 When the user enters 1 (To display the records)

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.

-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1       The Alchemist             Paulo Coelho          $5          4
2       Song of Solomon           Toni Morrison         $10         3
3       Gilead                    Marilynne Robinson    $15         6
4       Elevation                 Stephen King          $15         7
5       Ghost Wall                Sarah Moss            $4          25
6       War and Peace             Leo Tolstoy          $14         9
7       East of Eden              John Steinbeck        $9          7
8       Mortal Engines            Philip Reeve          $11         6
9       The Kite Runner           Khaled Hosseini       $13         9
10      On the Road                Jack Kerouac          $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 1

-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1       The Alchemist             Paulo Coelho          $5          4
2       Song of Solomon           Toni Morrison         $10         3
3       Gilead                    Marilynne Robinson    $15         6
4       Elevation                 Stephen King          $15         7
5       Ghost Wall                Sarah Moss            $4          25
6       War and Peace             Leo Tolstoy          $14         9
7       East of Eden              John Steinbeck        $9          7
8       Mortal Engines            Philip Reeve          $11         6
9       The Kite Runner           Khaled Hosseini       $13         9
10      On the Road                Jack Kerouac          $10         14

Make a choice(1,2,3,4) : |
```

Figure 13 Enter 1 (To display the records)

3.3 When the user enters 2 (To borrow a book (This is single borrow case))

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.

-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1       The Alchemist       Paulo Coelho        $5          4
2       Song of Solomon     Toni Morrison       $10         3
3       Gilead              Marilynne Robinson  $15         6
4       Elevation          Stephen King        $15         7
5       Ghost Wall         Sarah Moss          $4          25
6       War and Peace       Leo Tolstoy         $14         9
7       East of Eden       John Steinbeck      $9          7
8       Mortal Engines     Philip Reeve        $11         6
9       The Kite Runner    Khaled Hosseini    $13         9
10      On the Road         Jack Kerouac        $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book      : ENTER 3
To exit               : ENTER 4

Make a choice(1,2,3,4) : 1

-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1       The Alchemist       Paulo Coelho        $5          4
2       Song of Solomon     Toni Morrison       $10         3
3       Gilead              Marilynne Robinson  $15         6
4       Elevation          Stephen King        $15         7
5       Ghost Wall         Sarah Moss          $4          25
6       War and Peace       Leo Tolstoy         $14         9
7       East of Eden       John Steinbeck      $9          7
8       Mortal Engines     Philip Reeve        $11         6
9       The Kite Runner    Khaled Hosseini    $13         9
10      On the Road         Jack Kerouac        $10         14

Make a choice(1,2,3,4) : 2
```

Figure 14 Option 2 is selected

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name          Author              Book Price    Quantity
-----
1       The Alchemist       Paulo Coelho       $5            4
2       Song of Solomon     Toni Morrison      $10           3
3       Gilead              Marilynne Robinson $15           6
4       Elevation           Stephen King        $15           7
5       Ghost Wall          Sarah Moss          $4            25
6       War and Peace       Leo Tolstoy        $14           9
7       East of Eden        John Steinbeck     $9            7
8       Mortal Engines      Philip Reeve       $11           6
9       The Kite Runner     Khaled Hosseini    $13           9
10      On the Road         Jack Kerouac       $10           14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 1

-----
Book ID  Book Name          Author              Book Price    Quantity
-----
1       The Alchemist       Paulo Coelho       $5            4
2       Song of Solomon     Toni Morrison      $10           3
3       Gilead              Marilynne Robinson $15           6
4       Elevation           Stephen King        $15           7
5       Ghost Wall          Sarah Moss          $4            25
6       War and Peace       Leo Tolstoy        $14           9
7       East of Eden        John Steinbeck     $9            7
8       Mortal Engines      Philip Reeve       $11           6
9       The Kite Runner     Khaled Hosseini    $13           9
10      On the Road         Jack Kerouac       $10           14

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): |

```

Figure 15 Option 2 is entered

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name      Author              Book Price  Quantity
-----
  1      The Alchemist   Paulo Coelho        $5          4
  2      Song of Solomon Toni Morrison        $10         3
  3      Gilead          Marilynne Robinson  $15         6
  4      Elevation       Stephen King         $15         7
  5      Ghost Wall      Sarah Moss           $4          25
  6      War and Peace    Leo Tolstoy         $14         9
  7      East of Eden    John Steinbeck       $9          7
  8      Mortal Engines  Philip Reeve         $11         6
  9      The Kite Runner  Khaled Hosseini     $13         9
 10      On the Road     Jack Kerouac        $10        14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 1

-----
Book ID  Book Name      Author              Book Price  Quantity
-----
  1      The Alchemist   Paulo Coelho        $5          4
  2      Song of Solomon Toni Morrison        $10         3
  3      Gilead          Marilynne Robinson  $15         6
  4      Elevation       Stephen King         $15         7
  5      Ghost Wall      Sarah Moss           $4          25
  6      War and Peace    Leo Tolstoy         $14         9
  7      East of Eden    John Steinbeck       $9          7
  8      Mortal Engines  Philip Reeve         $11         6
  9      The Kite Runner  Khaled Hosseini     $13         9
 10      On the Road     Jack Kerouac        $10        14

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka

```

Figure 16 Customer name is written

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

Library Management System

Learning never stops.

-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 7
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 1

-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 7
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka

Enter the book ID:
```

Figure 17 Customer name is entered as Sayush Khadka

```

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

Library Management System

Learning never stops.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 7
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 1

-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 7
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka

Enter the book ID: 7

```

Figure 18 Book ID is written

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

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 1

-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1      The Alchemist        Paulo Coelho        $5          4
2      Song of Solomon      Toni Morrison       $10         3
3      Gilead               Marilynne Robinson  $15         6
4      Elevation           Stephen King        $15         7
5      Ghost Wall          Sarah Moss          $4          25
6      War and Peace        Leo Tolstoy         $14         9
7      East of Eden         John Steinbeck      $9          7
8      Mortal Engines       Philip Reeve        $11         6
9      The Kite Runner       Khaled Hosseini    $13         9
10     On the Road           Jack Kerouac        $10        14

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka

Enter the book ID: 7

Glad to know.The book is available.

-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1      The Alchemist        Paulo Coelho        $5          4
2      Song of Solomon      Toni Morrison       $10         3
3      Gilead               Marilynne Robinson  $15         6
4      Elevation           Stephen King        $15         7
5      Ghost Wall          Sarah Moss          $4          25
6      War and Peace        Leo Tolstoy         $14         9
7      East of Eden         John Steinbeck      $9          6
8      Mortal Engines       Philip Reeve        $11         6
9      The Kite Runner       Khaled Hosseini    $13         9
10     On the Road           Jack Kerouac        $10        14

If you want to borrow another book 'Y' else type 'N':
```

Figure 19 Book ID 7 is entered and the output is shown in the picture above

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
To borrow a book : ENTER 3
To exit : ENTER 4
Make a choice(1,2,3,4) : 1

-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1      The Alchemist        Paulo Coelho        $5          4
2      Song of Solomon      Toni Morrison       $10         3
3      Gilead               Marilynne Robinson  $15         6
4      Elevation            Stephen King        $15         7
5      Ghost Wall           Sarah Moss          $4          25
6      War and Peace        Leo Tolstoy         $14         9
7      East of Eden         John Steinbeck      $9          7
8      Mortal Engines       Philip Reeve        $11         6
9      The Kite Runner      Khaled Hosseini     $13         9
10     On the Road           Jack Kerouac        $10         14

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka

Enter the book ID: 7

Glad to know.The book is available.

-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1      The Alchemist        Paulo Coelho        $5          4
2      Song of Solomon      Toni Morrison       $10         3
3      Gilead               Marilynne Robinson  $15         6
4      Elevation            Stephen King        $15         7
5      Ghost Wall           Sarah Moss          $4          25
6      War and Peace        Leo Tolstoy         $14         9
7      East of Eden         John Steinbeck      $9          6
8      Mortal Engines       Philip Reeve        $11         6
9      The Kite Runner      Khaled Hosseini     $13         9
10     On the Road           Jack Kerouac        $10         14

If you want to borrow another book 'Y' else type 'N':n

Thank you for borrowing the books. Happy reading :).

Make a choice(1,2,3,4) : |

```

Figure 20 Option "n" entered as the user only wanted to borrow a single book

Name	Status	Date modified	Type	Size
__pycache__	✓	9/9/2021 8:07 PM	File folder	
b_Sayush Khadka_204953.txt	✓	9/9/2021 8:49 PM	Text Document	1 KB
book_list.txt	✓	9/9/2021 8:49 PM	Text Document	1 KB
functions.py	✓	9/9/2021 7:03 PM	Python File	43 KB
main.py	✓	9/9/2021 4:06 PM	Python File	2 KB

Figure 21 A new file name "b_Sayush Khadka_204953" is created in the same folder as of the program folder

Name	Status	Date modified	Type	Size
__pycache__	✓	9/9/2021 8:07 PM	File folder	
b_Sayush Khadka_204953.txt	✓	9/9/2021 8:49 PM	Text Document	1 KB
book_list.txt	✓	9/9/2021 8:49 PM	Text Document	1 KB
functions.py	✓	9/9/2021 7:03 PM	Python File	43 KB
main.py	✓	9/9/2021 4:06 PM	Python File	2 KB

b_Sayush Khadka_204953.txt - Notepad

File Edit Format View Help

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

BILL FOR BORROW:

Customer name : Sayush Khadka

Date and Time : 2021-09-09 20:49:53

Name of the borrowed book : East of Eden

Total Cost : \$9

Hope you have a good time reading the book.

Ln 1, Col 1
100%
Windows (CRLF)
UTF-8

Figure 22 Bill of the borrowed book. Bill is written in b_Sayush Khadka_204953 file

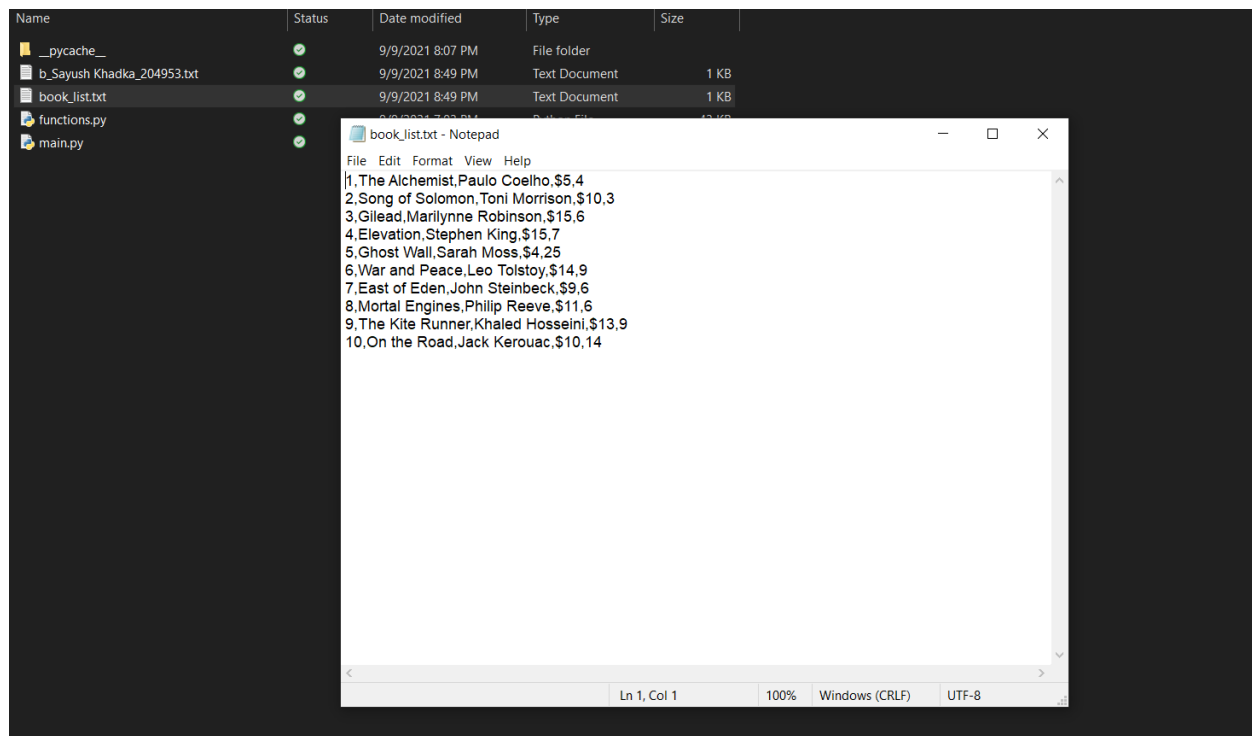


Figure 23 The quantity of borrowed book (book ID 7) has decreased in book_list.txt

3.4 When the user enters 2 (To borrow a book (This is multiple borrow case))

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1        The Alchemist             Paulo Coelho          $5          4
2        Song of Solomon           Toni Morrison         $10         3
3        Gilead                   Marilynne Robinson    $15         6
4        Elevation                 Stephen King          $15         7
5        Ghost Wall               Sarah Moss            $4          25
6        War and Peace             Leo Tolstoy           $14         9
7        East of Eden              John Steinbeck        $9          6
8        Mortal Engines            Philip Reeve           $11         6
9        The Kite Runner           Khaled Hosseini       $13         9
10       On the Road               Jack Kerouac          $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 2
```

Figure 24 Option 2 is selected (Multiple borrow case)

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1       The Alchemist             Paulo Coelho          $5          4
2       Song of Solomon           Toni Morrison         $10         3
3       Gilead                    Marilynne Robinson    $15         6
4       Elevation                 Stephen King          $15         7
5       Ghost Wall                Sarah Moss            $4          25
6       War and Peace             Leo Tolstoy          $14         9
7       East of Eden              John Steinbeck        $9          6
8       Mortal Engines            Philip Reeve          $11         6
9       The Kite Runner           Khaled Hosseini      $13         9
10      On the Road                Jack Kerouac          $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name):
```

Figure 25 Option 2 is entered (Multiple borrow case)

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price    Quantity
-----
1        The Alchemist             Paulo Coelho         $5            4
2        Song of Solomon          Toni Morrison        $10           3
3        Gilead                   Marilynne Robinson   $15           6
4        Elevation                Stephen King          $15           7
5        Ghost Wall               Sarah Moss           $4            25
6        War and Peace             Leo Tolstoy          $14           9
7        East of Eden             John Steinbeck        $9            6
8        Mortal Engines           Philip Reeve          $11           6
9        The Kite Runner          Khaled Hosseini      $13           9
10       On the Road              Jack Kerouac         $10           14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit               : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

```

Figure 26 Customer name is written (Multiple borrow case)

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name      Author              Book Price  Quantity
-----
1       The Alchemist   Paulo Coelho       $5          4
2       Song of Solomon Toni Morrison      $10         3
3       Gilead         Marilynne Robinson $15         6
4       Elevation     Stephen King       $15         7
5       Ghost Wall     Sarah Moss         $4          25
6       War and Peace  Leo Tolstoy       $14         9
7       East of Eden   John Steinbeck    $9          6
8       Mortal Engines Philip Reeve       $11         6
9       The Kite Runner Khaled Hosseini   $13         9
10      On the Road     Jack Kerouac      $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID:

```

Figure 27 Customer name is entered as Sayush Khadka 2 (Multiple borrow case)

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

Library Management System

Learning never stops.
-----
Book ID  Book Name      Author      Book Price  Quantity
-----
1      The Alchemist    Paulo Coelho    $5          4
2      Song of Solomon   Toni Morrison   $10         3
3      Gilead            Marilynne Robinson $15         6
4      Elevation         Stephen King    $15         7
5      Ghost Wall        Sarah Moss      $4          25
6      War and Peace     Leo Tolstoy     $14         9
7      East of Eden      John Steinbeck  $9          6
8      Mortal Engines    Philip Reeve    $11         6
9      The Kite Runner   Khaled Hosseini $13         9
10     On the Road       Jack Kerouac    $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID: 3

Glad to know.The book is available.
-----
Book ID  Book Name      Author      Book Price  Quantity
-----
1      The Alchemist    Paulo Coelho    $5          4
2      Song of Solomon   Toni Morrison   $10         3
3      Gilead            Marilynne Robinson $15         5
4      Elevation         Stephen King    $15         7
5      Ghost Wall        Sarah Moss      $4          25
6      War and Peace     Leo Tolstoy     $14         9
7      East of Eden      John Steinbeck  $9          6
8      Mortal Engines    Philip Reeve    $11         6
9      The Kite Runner   Khaled Hosseini $13         9
10     On the Road       Jack Kerouac    $10         14

If you want to borrow another book 'Y' else type 'N':
```

Figure 28 Book ID 3 is entered and the output is shown in the picture above (Multiple borrow case)

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Learning never stops.
-----
Book ID  Book Name          Author          Book Price    Quantity
-----
1      The Alchemist        Paulo Coelho    $5            4
2      Song of Solomon       Toni Morrison   $10           3
3      Gilead                Marilynne Robinson $15           6
4      Elevation            Stephen King    $15           7
5      Ghost Wall           Sarah Moss      $4            25
6      War and Peace         Leo Tolstoy     $14           9
7      East of Eden          John Steinbeck  $9            6
8      Mortal Engines        Philip Reeve    $11           6
9      The Kite Runner       Khaled Hosseini $13           9
10     On the Road           Jack Kerouac    $10           14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit               : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID: 3

Glad to know.The book is available.
-----
Book ID  Book Name          Author          Book Price    Quantity
-----
1      The Alchemist        Paulo Coelho    $5            4
2      Song of Solomon       Toni Morrison   $10           3
3      Gilead                Marilynne Robinson $15           5
4      Elevation            Stephen King    $15           7
5      Ghost Wall           Sarah Moss      $4            25
6      War and Peace         Leo Tolstoy     $14           9
7      East of Eden          John Steinbeck  $9            6
8      Mortal Engines        Philip Reeve    $11           6
9      The Kite Runner       Khaled Hosseini $13           9
10     On the Road           Jack Kerouac    $10           14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID:

```

Figure 29 "y" is entered to borrow another book

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

To display the records : ENTER 1
To borrow a book      : ENTER 2
To return a book      : ENTER 3
To exit               : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID: 3

Glad to know.The book is available.

-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1        The Alchemist      Paulo Coelho        $5          4
2        Song of Solomon   Toni Morrison       $10         3
3        Gilead            Marilynne Robinson  $15         5
4        Elevation        Stephen King        $15         7
5        Ghost Wall       Sarah Moss          $4          25
6        War and Peace     Leo Tolstoy         $14         9
7        East of Eden     John Steinbeck      $9          6
8        Mortal Engines   Philip Reeve        $11         6
9        The Kite Runner  Khaled Hosseini     $13         9
10       On the Road       Jack Kerouac        $10         14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: 6

Glad to know.The book is available.

-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1        The Alchemist      Paulo Coelho        $5          4
2        Song of Solomon   Toni Morrison       $10         3
3        Gilead            Marilynne Robinson  $15         5
4        Elevation        Stephen King        $15         7
5        Ghost Wall       Sarah Moss          $4          25
6        War and Peace     Leo Tolstoy         $14         8
7        East of Eden     John Steinbeck      $9          6
8        Mortal Engines   Philip Reeve        $11         6
9        The Kite Runner  Khaled Hosseini     $13         9
10       On the Road       Jack Kerouac        $10         14

If you want to borrow another book 'Y' else type 'N':|
```

Figure 30 Book ID 6 is entered and the output is shown in the picture above (Multiple borrow case)


```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID: 3

Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: 6

Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: |

```

Figure 31 "y" is entered to borrow another book again

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
3      Gilead      Marilynne Robinson      $15      5
4      Elevation  Stephen King      $15      7
5      Ghost Wall Sarah Moss      $4      25
6      War and Peace Leo Tolstoy      $14      9
7      East of Eden John Steinbeck      $9      6
8      Mortal Engines Philip Reeve      $11      6
9      The Kite Runner Khaled Hosseini      $13      9
10     On the Road Jack Kerouac      $10      14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: 6

Glad to know.The book is available.
-----
Book ID  Book Name      Author      Book Price      Quantity
-----
1      The Alchemist      Paulo Coelho      $5      4
2      Song of Solomon      Toni Morrison      $10      3
3      Gilead      Marilynne Robinson      $15      5
4      Elevation  Stephen King      $15      7
5      Ghost Wall Sarah Moss      $4      25
6      War and Peace Leo Tolstoy      $14      8
7      East of Eden John Steinbeck      $9      6
8      Mortal Engines Philip Reeve      $11      6
9      The Kite Runner Khaled Hosseini      $13      9
10     On the Road Jack Kerouac      $10      14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: 9

Glad to know.The book is available.
-----
Book ID  Book Name      Author      Book Price      Quantity
-----
1      The Alchemist      Paulo Coelho      $5      4
2      Song of Solomon      Toni Morrison      $10      3
3      Gilead      Marilynne Robinson      $15      5
4      Elevation  Stephen King      $15      7
5      Ghost Wall Sarah Moss      $4      25
6      War and Peace Leo Tolstoy      $14      8
7      East of Eden John Steinbeck      $9      6
8      Mortal Engines Philip Reeve      $11      6
9      The Kite Runner Khaled Hosseini      $13      8
10     On the Road Jack Kerouac      $10      14

If you want to borrow another book 'Y' else type 'N':|

```

Figure 32 Book ID 9 is entered and the output is shown in the picture above (Multiple borrow case)

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
10 On the Road Jack Kerouac $10 14
If you want to borrow another book 'Y' else type 'N':y
Enter the book ID: 6
Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14
If you want to borrow another book 'Y' else type 'N':y
Enter the book ID: 9
Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14
If you want to borrow another book 'Y' else type 'N':n
Thank you for borrowing the books. Happy reading :).
Make a choice(1,2,3,4) : |

```

Figure 33 Option "n" entered by the user after borrowing multiple books

Name	Status	Date modified	Type	Size
__pycache__	✓	9/9/2021 8:07 PM	File folder	
b_Sayush Khadka 2_211649.txt	✓	9/9/2021 9:16 PM	Text Document	1 KB
b_Sayush Khadka_204953.txt	✓	9/9/2021 8:49 PM	Text Document	1 KB
book_list.txt	✓	9/9/2021 9:16 PM	Text Document	1 KB
functions.py	✓	9/9/2021 7:03 PM	Python File	43 KB
main.py	✓	9/9/2021 4:06 PM	Python File	2 KB

Figure 34 A new file name "b_Sayush Khadka 2_211649" is created in the same folder as of the program folder

Name	Status	Date modified	Type	Size
__pycache__	✓	9/9/2021 8:07 PM	File folder	
b_Sayush Khadka 2_211649.txt	✓	9/9/2021 9:16 PM	Text Document	1 KB
b_Sayush Khadka_204953.txt	✓			
book_list.txt	✓			
functions.py	✓			
main.py	✓			

b_Sayush Khadka 2_211649.txt - Notepad
File Edit Format View Help

```

LIBRARY MANAGEMENT SYSTEM-----
BILL FOR BORROW:

-----
Customer name                : Sayush Khadka 2
-----
Date and Time                : 2021-09-09 21:16:49
-----
Name of the borrowed book    : Gilead
                             : War and Peace
                             : The Kite Runner
-----
Total Cost                   : $42
-----

Hope you have a good time reading the book.

```

Ln 1, Col 1
100%
Windows (CRLF)
UTF-8

Figure 35 Bill of the borrowed book. Bill is written in b_Sayush Khadka 2_211649 file

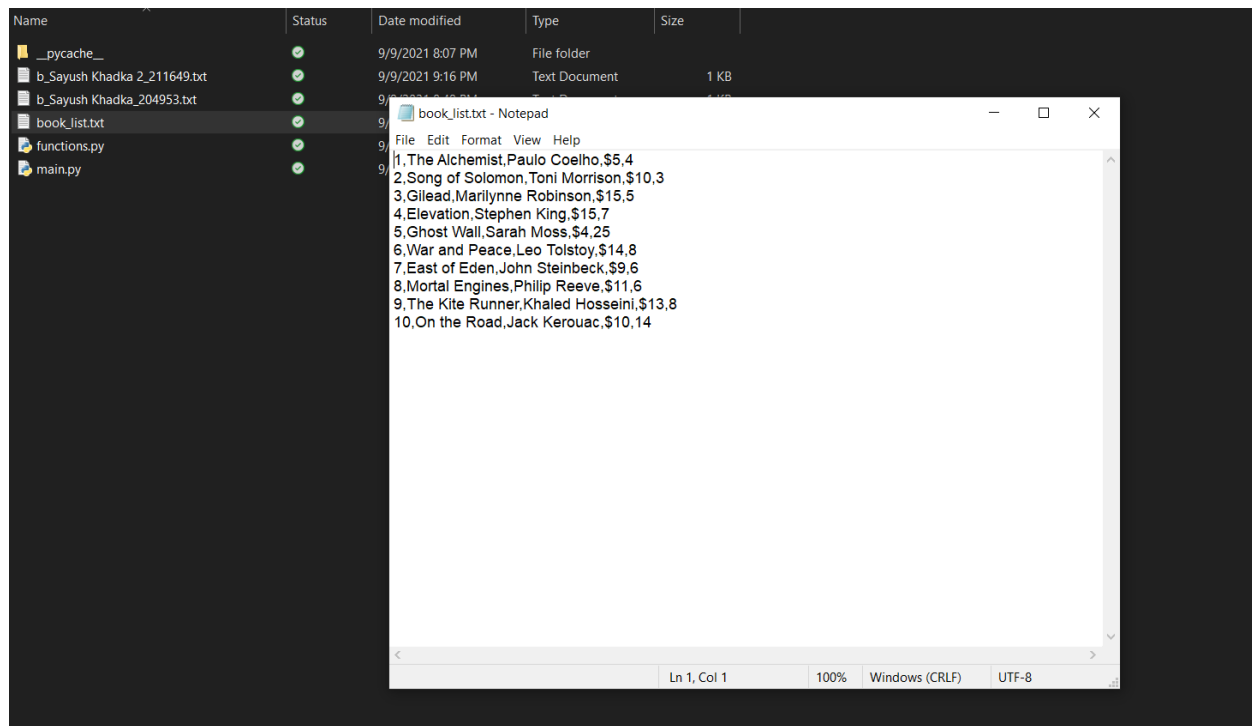


Figure 36 The quantity of borrowed book (book ID 3,6 and 9) has decreased in book_list.txt

3.5 When the user enters 3 (No fine bill case)

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1       The Alchemist             Paulo Coelho         $5          4
2       Song of Solomon           Toni Morrison        $10         3
3       Gilead                    Marilynne Robinson   $15         5
4       Elevation                 Stephen King          $15         7
5       Ghost Wall                Sarah Moss            $4          25
6       War and Peace             Leo Tolstoy          $14         8
7       East of Eden              John Steinbeck        $9          6
8       Mortal Engines            Philip Reeve          $11         6
9       The Kite Runner           Khaled Hosseini      $13         8
10      On the Road               Jack Kerouac         $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 3|
```

Figure 37 Option 3 is selected (No fine bill case)

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1        The Alchemist             Paulo Coelho          $5          4
2        Song of Solomon           Toni Morrison         $10         3
3        Gilead                    Marilynne Robinson    $15         5
4        Elevation                 Stephen King          $15         7
5        Ghost Wall                Sarah Moss            $4          25
6        War and Peace             Leo Tolstoy          $14         8
7        East of Eden              John Steinbeck        $9          6
8        Mortal Engines            Philip Reeve          $11         6
9        The Kite Runner           Khaled Hosseini      $13         8
10       On the Road               Jack Kerouac          $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name):

```

Figure 38 Option 3 is entered

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1         The Alchemist            Paulo Coelho          $5           4
2         Song of Solomon          Toni Morrison         $10          3
3         Gilead                   Marilynne Robinson    $15          5
4         Elevation                Stephen King           $15          7
5         Ghost Wall               Sarah Moss             $4          25
6         War and Peace            Leo Tolstoy           $14          8
7         East of Eden             John Steinbeck         $9           6
8         Mortal Engines           Philip Reeve           $11          6
9         The Kite Runner          Khaled Hosseini       $13          8
10        On the Road              Jack Kerouac           $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 3

Enter the book ID: |
```

Figure 39 Customer name is entered as Sayush Khadka 3


```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price    Quantity
-----
1         The Alchemist            Paulo Coelho        $5            4
2         Song of Solomon          Toni Morrison       $10           3
3         Gilead                   Marilynne Robinson  $15           5
4         Elevation                Stephen King        $15           7
5         Ghost Wall               Sarah Moss          $4            25
6         War and Peace            Leo Tolstoy         $14           8
7         East of Eden             John Steinbeck      $9            6
8         Mortal Engines           Philip Reeve        $11           6
9         The Kite Runner          Khaled Hosseini    $13           8
10        On the Road              Jack Kerouac        $10           14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 3

Enter the book ID: 3

For how many days has been the book borrowed??? |
```

Figure 40 Book ID 3 is entered and the output is shown in the picture above

```

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

Library Management System

Learning never stops.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 3

Enter the book ID: 3

For how many days has been the book borrowed??? 7
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Make a choice(1,2,3,4) :

```

Figure 41 The book has been borrowed for 7(User Input) days and returned

Name	Status	Date modified	Type	Size
__pycache__	✓	9/9/2021 8:07 PM	File folder	
b_Sayush Khadka 2_211649.txt	✓	9/9/2021 9:16 PM	Text Document	1 KB
b_Sayush Khadka_204953.txt	✓	9/9/2021 8:49 PM	Text Document	1 KB
book_list.txt	✓	9/9/2021 9:23 PM	Text Document	1 KB
functions.py	✓	9/9/2021 7:03 PM	Python File	43 KB
main.py	✓	9/9/2021 4:06 PM	Python File	2 KB
r_Sayush Khadka 3_21235.txt	✓	9/9/2021 9:23 PM	Text Document	1 KB

Figure 42 A new file name " r_Sayush Khadka 3_21235 " is created in the same folder as of the program folder

Name	Status	Date modified	Type	Size
__pycache__	✓	9/9/2021 8:07 PM	File folder	
b_Sayush Khadka 2_211649.txt	✓	9/9/2021 9:16 PM	Text Document	1 KB
b_Sayush Khadka_204953.txt	✓			
book_list.txt	✓			
functions.py	✓			
main.py	✓			
r_Sayush Khadka 3_21235.txt	✓			

r_Sayush Khadka 3_21235.txt - Notepad

File Edit Format View Help

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

NO FINE:

Customer name : Sayush Khadka 3

Date and Time : 2021-09-09 21:23:05

Name of the borrowed book :Gilead

NO FINE :D. The book was returned on time.

Hope you had a good time reading the book.

Ln 1, Col 1 100% Windows (CRLF) UTF-8

Figure 43 Bill of the returned book. Bill is written in r_Sayush Khadka 3_21235 file (This is a no fine bill)

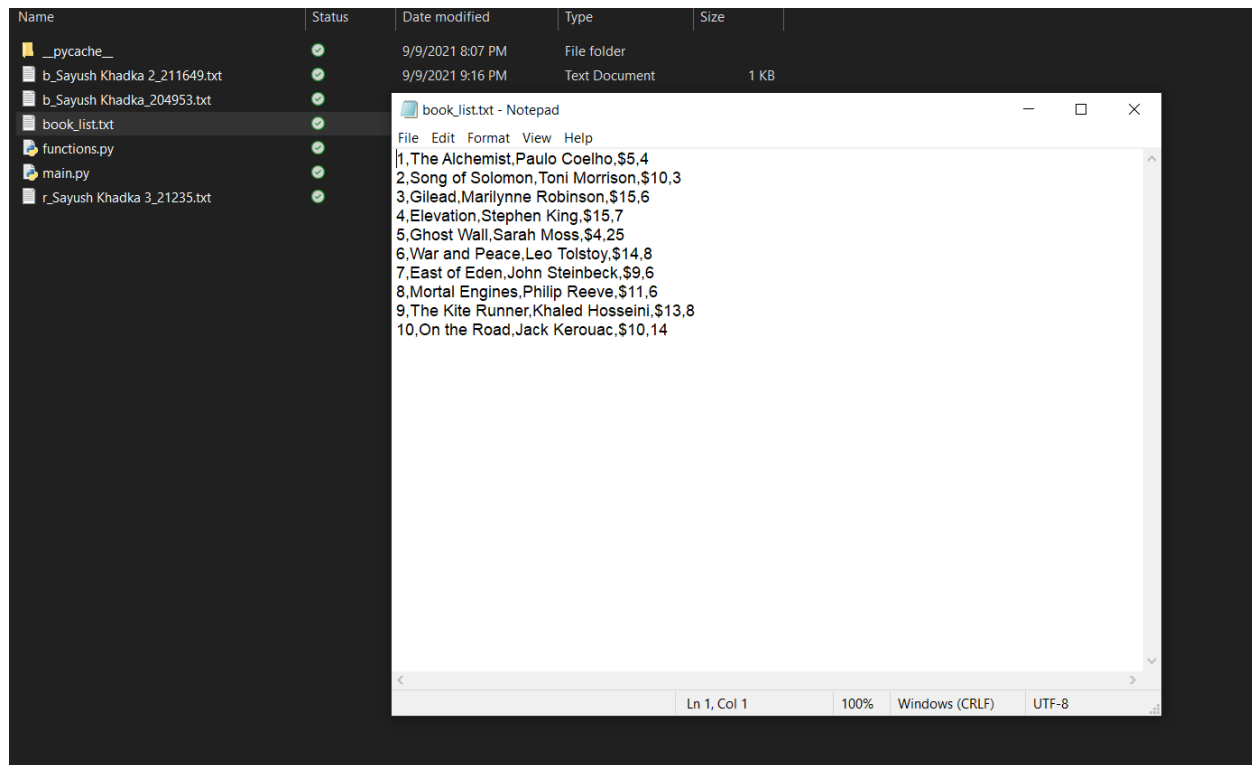


Figure 44 The quantity of returned book (book ID 3) has increased in book_list.txt

3.6 When the user enters 3 (Fine bill case)

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price    Quantity
-----
1        The Alchemist             Paulo Coelho         $5            4
2        Song of Solomon          Toni Morrison        $10           3
3        Gilead                   Marilynne Robinson   $15           6
4        Elevation                Stephen King          $15           7
5        Ghost Wall               Sarah Moss            $4            25
6        War and Peace             Leo Tolstoy          $14           8
7        East of Eden              John Steinbeck        $9            6
8        Mortal Engines            Philip Reeve          $11           6
9        The Kite Runner           Khaled Hosseini       $13           8
10       On the Road               Jack Kerouac          $10           14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name):
```

Figure 45 Option 3 is entered (Fine bill case)

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price    Quantity
-----
1        The Alchemist             Paulo Coelho         $5            4
2        Song of Solomon          Toni Morrison        $10           3
3        Gilead                   Marilynne Robinson   $15           6
4        Elevation                Stephen King          $15           7
5        Ghost Wall               Sarah Moss           $4            25
6        War and Peace            Leo Tolstoy          $14           8
7        East of Eden             John Steinbeck       $9            6
8        Mortal Engines           Philip Reeve         $11           6
9        The Kite Runner          Khaled Hosseini     $13           8
10       On the Road              Jack Kerouac         $10           14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 4

Enter the book ID:
```

Figure 46 Customer name is entered as Sayush Khadka 4

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1         The Alchemist            Paulo Coelho         $5          4
2         Song of Solomon          Toni Morrison        $10         3
3         Gilead                   Marilynnne Robinson $15         6
4         Elevation                Stephen King          $15         7
5         Ghost Wall               Sarah Moss            $4          25
6         War and Peace            Leo Tolstoy          $14         8
7         East of Eden             John Steinbeck        $9          6
8         Mortal Engines           Philip Reeve          $11         6
9         The Kite Runner          Khaled Hosseini      $13         8
10        On the Road              Jack Kerouac          $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 4

Enter the book ID: 2

For how many days has been the book borrowed??? |
```

Figure 47 Book ID 2 is entered and the output is shown in the picture above

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

Library Management System

Learning never stops.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 4

Enter the book ID: 2

For how many days has been the book borrowed??? 19
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 4
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Make a choice(1,2,3,4) : |
```

Figure 48 The book has been borrowed for 19(User Input) days and returned

Name	Status	Date modified	Type	Size
__pycache__	✓	9/9/2021 8:07 PM	File folder	
b_Sayush Khadka 2_211649.txt	✓	9/9/2021 9:16 PM	Text Document	1 KB
b_Sayush Khadka_204953.txt	✓	9/9/2021 8:49 PM	Text Document	1 KB
book_list.txt	✓	9/9/2021 9:28 PM	Text Document	1 KB
functions.py	✓	9/9/2021 7:03 PM	Python File	43 KB
main.py	✓	9/9/2021 4:06 PM	Python File	2 KB
r_Sayush Khadka 3_21235.txt	✓	9/9/2021 9:23 PM	Text Document	1 KB
r_Sayush Khadka 4_212835.txt	✓	9/9/2021 9:28 PM	Text Document	1 KB

Figure 49 A new file name " r_Sayush Khadka 4_212835 " is created in the same folder as of the program folder

Name	Status	Date modified	Type	Size
__pycache__	✓	9/9/2021 8:07 PM	File folder	
b_Sayush Khadka 2_211649.txt	✓	9/9/2021 9:16 PM	Text Document	1 KB
b_Sayush Khadka_204953.txt	✓			
book_list.txt	✓			
functions.py	✓			
main.py	✓			
r_Sayush Khadka 3_21235.txt	✓			
r_Sayush Khadka 4_212835.txt	✓			

r_Sayush Khadka 4_212835.txt - Notepad

File Edit Format View Help

LIBRARY MANAGEMENT SYSTEM

BILL FOR FINE:

Customer name : Sayush Khadka 4

Date and Time : 2021-09-09 21:28:35

Name of the borrowed book :Song of Solomon

Fine amount : \$9

Hope you had a good time reading the book.

Ln 1, Col 1 100% Windows (CRLF) UTF-8

Figure 50 Bill of the returned book. Bill is written in r_Sayush Khadka 4_212835 file (This is bill for fine)

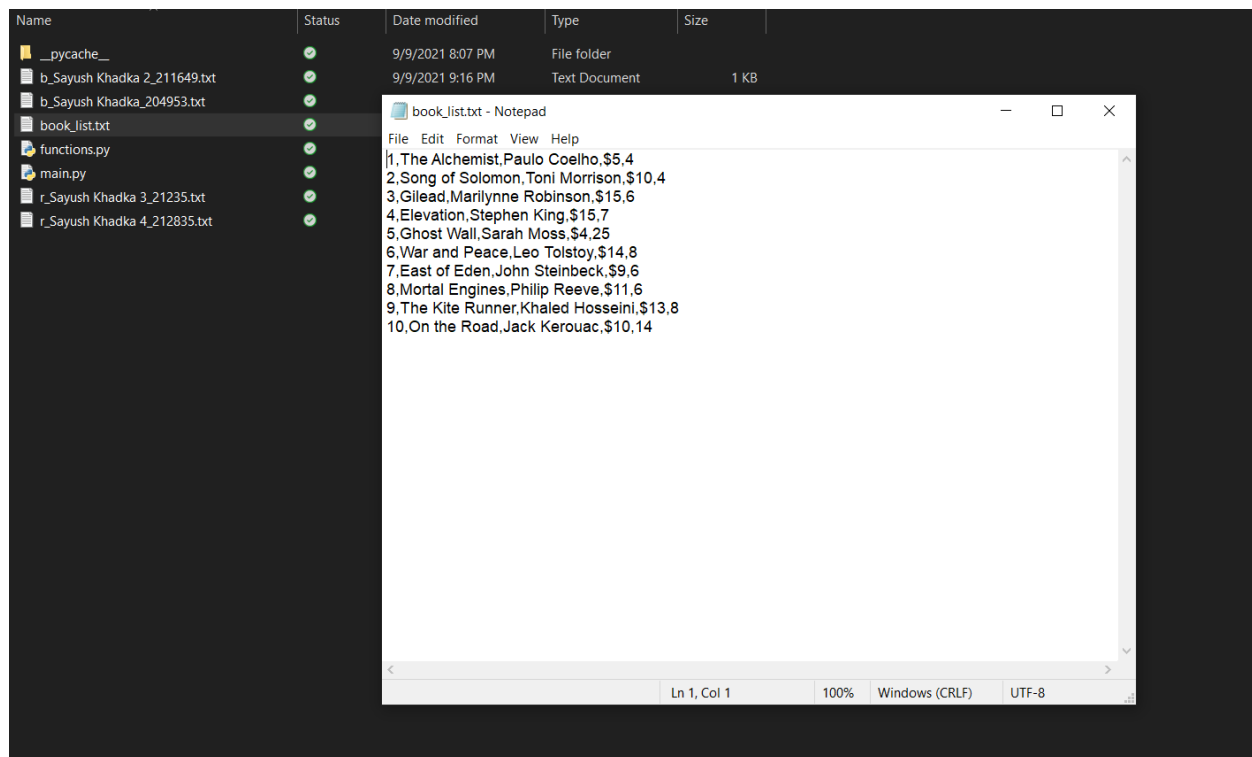


Figure 51 The quantity of returned book (book ID 2) has increased in book_list.txt

3.7 When the user enters 4 (To terminate the program)

```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name          Author              Book Price    Quantity
-----
1       The Alchemist        Paulo Coelho       $5            4
2       Song of Solomon      Toni Morrison      $10           4
3       Gilead                Marilynne Robinson $15           6
4       Elevation            Stephen King       $15           7
5       Ghost Wall           Sarah Moss         $4            25
6       War and Peace         Leo Tolstoy        $14           8
7       East of Eden          John Steinbeck     $9            6
8       Mortal Engines        Philip Reeve       $11           6
9       The Kite Runner       Khaled Hosseini   $13           8
10      On the Road            Jack Kerouac       $10           14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 4

You have chosen to exit the program.
Thank you!!!
>>>
```

Figure 52 Option 4 was entered. Therefore, the program got terminated

4. Testing

4.1 Test 1: To show implementation of try, except (Invalid number entered)

Test No: 1	
Objective:	To show implementation of try, except (Invalid number entered).
Action:	<ul style="list-style-type: none">An invalid number is given as input (Number which is not from 1-10) while borrowing book.
Expected result:	<ul style="list-style-type: none">An error message would appear with message as Error!!!No book with such book ID.It would ask the user (to enter) "If you want to borrow another book 'Y' else type 'N':"
Actual result:	<ul style="list-style-type: none">An error message appeared with message as Error!!!No book with such book ID.It asked the user (to enter) "If you want to borrow another book 'Y' else type 'N':"
Conclusion:	Test successful.

--	--

Table 1 To show implementation of try, except (Invalid number entered).

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price    Quantity
-----
1       The Alchemist             Paulo Coelho        $5            4
2       Song of Solomon          Toni Morrison       $10           4
3       Gilead                   Marilynne Robinson  $15           6
4       Elevation                Stephen King        $15           7
5       Ghost Wall               Sarah Moss          $4            25
6       War and Peace            Leo Tolstoy         $14           8
7       East of Eden             John Steinbeck      $9            6
8       Mortal Engines           Philip Reeve        $11           6
9       The Kite Runner          Khaled Hosseini    $13           8
10      On the Road               Jack Kerouac        $10           14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush khadka

Enter the book ID: 15

Error!!!No book with such book ID.

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: -3

Error!!!No book with such book ID.

If you want to borrow another book 'Y' else type 'N':|

```

Figure 53 To show implementation of try, except (Invalid number entered).

4.2.a Test 2(a): To provide negative value as input at selection of borrow and return option

Test No:	2a
Objective:	To provide negative value as input at selection of borrow and return option.
Action:	<ul style="list-style-type: none">A negative value is given as input (Number which is not 1,2,3,4) when the program asks to select an option from (1,2,3,4).
Expected result:	<ul style="list-style-type: none">An error message would appear with message as “ERROR!!!Please choose only form (1-4).”It would ask the user to “Make a choice(1,2,3,4) :”
Actual result:	<ul style="list-style-type: none">An error message appeared with message as “ERROR!!!Please choose only form (1-4).”It asked the user to “Make a choice(1,2,3,4) :”
Conclusion:	Test successful.

Table 2 To provide negative value as input at selection of borrow and return option.

```

Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

Library Management System

Learning never stops.
-----
Book ID  Book Name          Author          Book Price      Quantity
-----
1       The Alchemist        Paulo Coelho    $5              4
2       Song of Solomon      Toni Morrison   $10             4
3       Gilead               Marilynne Robinson $15            6
4       Elevation            Stephen King    $15            7
5       Ghost Wall           Sarah Moss      $4             25
6       War and Peace         Leo Tolstoy     $14            8
7       East of Eden          John Steinbeck  $9             6
8       Mortal Engines        Philip Reeve    $11            6
9       The Kite Runner       Khaled Hosseini $13            8
10      On the Road           Jack Kerouac    $10            14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : -5

ERROR!!!Please choose only form (1-4).

Make a choice(1,2,3,4) : |

```

Figure 54 To provide negative value as input at selection of borrow and return option.

4.2.b Test 2(b): To provide non-existed value as input at selection of borrow and return option

Test No: 2b	
Objective:	To provide non-existed value as input at selection of borrow and return option.
Action:	<ul style="list-style-type: none">• A letter is given as input (Number which is not (1,2,3,4) when the program asks to select an option from (1,2,3,4).
Expected result:	<ul style="list-style-type: none">• An error message would appear with message as “ERROR!!!Only numbers accepted.” “ERROR!!!Please choose only form (1-4).”• It would ask the user to “Make a choice(1,2,3,4) :”
Actual result:	<ul style="list-style-type: none">• An error message appeared with message as “ERROR!!!Only numbers accepted.”

	<p>“ERROR!!!Please choose only form (1-4).”</p> <ul style="list-style-type: none"> • It asked the user to “Make a choice(1,2,3,4) :”
Conclusion:	Test successful.

Table 3 To provide non-existed value as input at selection of borrow and return option.

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1       The Alchemist             Paulo Coelho         $5          4
2       Song of Solomon           Toni Morrison        $10         4
3       Gilead                    Marilynne Robinson   $15         6
4       Elevation                 Stephen King         $15         7
5       Ghost Wall                Sarah Moss           $4          25
6       War and Peace             Leo Tolstoy          $14         8
7       East of Eden              John Steinbeck       $9          6
8       Mortal Engines            Philip Reeve         $11         6
9       The Kite Runner           Khaled Hosseini     $13         8
10      On the Road                Jack Kerouac         $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) :  a

ERROR!!!Only numbers accepted.
ERROR!!!Please choose only form (1-4).

Make a choice(1,2,3,4) :  b

ERROR!!!Only numbers accepted.
ERROR!!!Please choose only form (1-4).

Make a choice(1,2,3,4) :
```

Figure 55 To provide non-existed value as input at selection of borrow and return option.

**4.3.a Test 3(a): To show the proper working of the complete borrow process
(For single book)**

Test:	3a
Objective:	To show the proper working of the complete borrow process (For single book).
Action:	<ul style="list-style-type: none"> • Run the program • 2 is entered when asked to selected option from (1-4). • Name of the customer is entered as Sayush Khadka • The book ID is entered as 7. • “n” is entered when asked “If you want to borrow another book 'Y' else type 'N':”
Expected result:	<ul style="list-style-type: none"> • The complete borrow process would be completed without any errors. (For single book) • Borrow note would be shown in a text file. (For single book)
Actual result:	<ul style="list-style-type: none"> • The complete borrow process completed without any errors. (For single book) • Borrow note showed in a text file. (For single book)
Conclusion:	Test successful.

Table 4 To show the proper working of the complete borrow process (For single book)

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
To borrow a book : ENTER 3
To exit : ENTER 4
Make a choice(1,2,3,4) : 1
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 7
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14
-----
Make a choice(1,2,3,4) : 2
Enter the name(Customer name): Sayush Khadka
Enter the book ID: 7
Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14
-----
If you want to borrow another book 'Y' else type 'N':n
Thank you for borrowing the books. Happy reading :).
Make a choice(1,2,3,4) : |

```

Figure 56 To show the proper working of the complete borrow process (For single book)

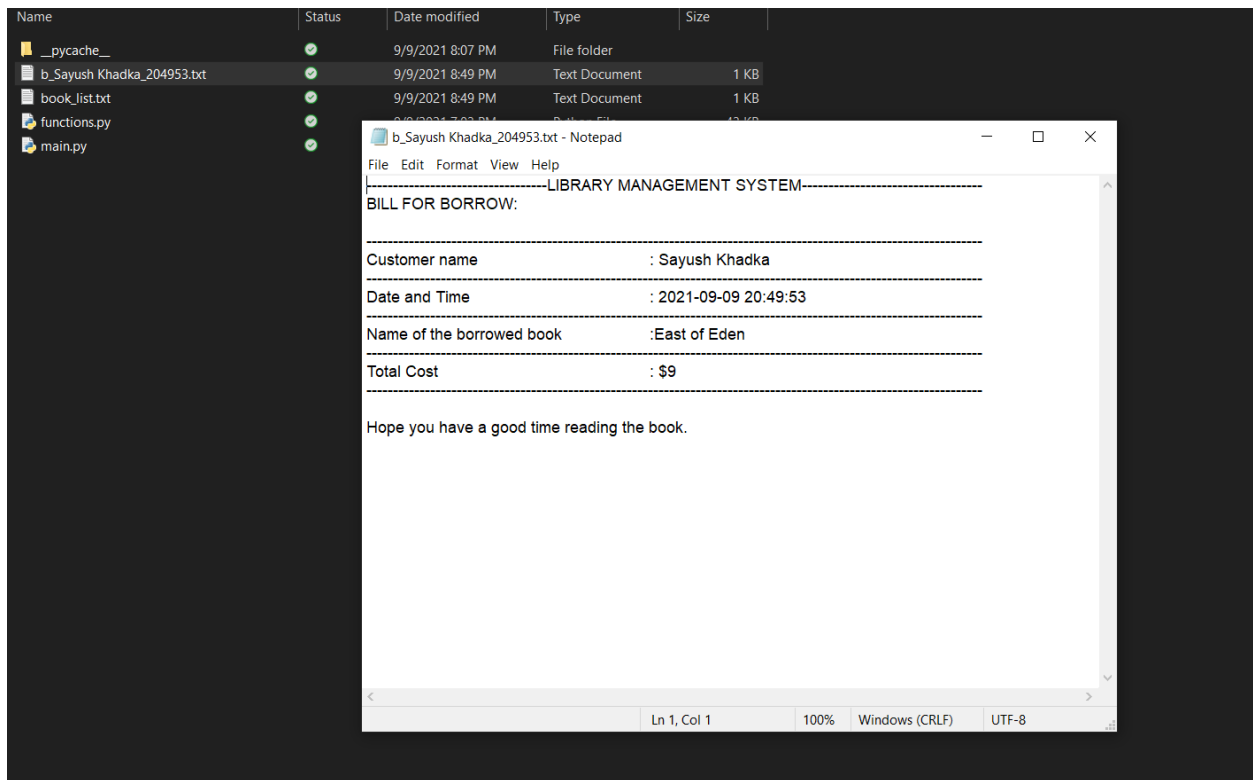


Figure 57 Borrow note in txt file (For single book)

**4.3.b Test (3b): To show the proper working of the complete borrow process
(For multiple books)**

Test:	3b
Objective:	To show the proper working of the complete borrow process (For multiple books).
Action:	<ul style="list-style-type: none"> • Run the program • 2 is entered when asked to selected option from (1-4). • Name of the customer is entered as Sayush Khadka 2. • The book ID is entered as 3. • “y” is entered when asked “If you want to borrow another book 'Y' else type 'N':” • Again, the book ID is entered. The book ID is entered as 6. • “y” is entered when asked “If you want to borrow another book 'Y' else type 'N':” • Again, the book ID is entered. The book ID is entered as 9. • “n” is entered when asked “If you want to borrow another book 'Y' else type 'N':”
Expected result:	<ul style="list-style-type: none"> • The complete borrow process would be completed without any errors. (For multiple books). • Borrow note would be shown in a text file. (For multiple books).
Actual result:	<ul style="list-style-type: none"> • The complete borrow process completed without any errors. (For multiple books). • Borrow note showed in a text file. (For multiple books).

Conclusion:	Test successful.
-------------	------------------

Table 5 To show the proper working of the complete borrow process (For multiple books).

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\lillo\OneDrive\Desktop\pycw\main.py =====

                        Library Management System

Learning never stops.
-----
Book ID  Book Name                Author                Book Price  Quantity
-----
1       The Alchemist              Paulo Coelho          $5          4
2       Song of Solomon            Toni Morrison          $10         3
3       Gilead                     Marilynne Robinson     $15         6
4       Elevation                  Stephen King           $15         7
5       Ghost Wall                 Sarah Moss             $4          25
6       War and Peace              Leo Tolstoy           $14         9
7       East of Eden               John Steinbeck         $9          6
8       Mortal Engines             Philip Reeve           $11         6
9       The Kite Runner            Khaled Hosseini       $13         9
10      On the Road                 Jack Kerouac          $10         14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 2
```

Figure 58 (Test)2 is entered when asked to selected option from (1-4).


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

Library Management System

Learning never stops.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID: 3

Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

If you want to borrow another book 'Y' else type 'N':
```

Figure 59 (Test)Name of the customer is entered as Sayush Khadka 2 and the book ID is entered as 3.

```

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

Learning never stops.
-----
Book ID  Book Name          Author              Book Price    Quantity
-----
1       The Alchemist        Paulo Coelho        $5            4
2       Song of Solomon      Toni Morrison       $10           3
3       Gilead                 Marilynne Robinson  $15           6
4       Elevation            Stephen King        $15           7
5       Ghost Wall            Sarah Moss          $4            25
6       War and Peace         Leo Tolstoy         $14           9
7       East of Eden          John Steinbeck      $9            6
8       Mortal Engines       Philip Reeve        $11           6
9       The Kite Runner       Khaled Hosseini     $13           9
10      On the Road             Jack Kerouac        $10           14

Select an option:

To display the records : ENTER 1
To borrow a book       : ENTER 2
To return a book       : ENTER 3
To exit                : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID: 3

Glad to know.The book is available.
-----
Book ID  Book Name          Author              Book Price    Quantity
-----
1       The Alchemist        Paulo Coelho        $5            4
2       Song of Solomon      Toni Morrison       $10           3
3       Gilead                 Marilynne Robinson  $15           5
4       Elevation            Stephen King        $15           7
5       Ghost Wall            Sarah Moss          $4            25
6       War and Peace         Leo Tolstoy         $14           9
7       East of Eden          John Steinbeck      $9            6
8       Mortal Engines       Philip Reeve        $11           6
9       The Kite Runner       Khaled Hosseini     $13           9
10      On the Road             Jack Kerouac        $10           14

If you want to borrow another book 'Y' else type 'N':y
Enter the book ID:

```

Figure 60 “y” is entered when asked “If you want to borrow another book ‘Y’ else type ‘N’:”

```

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

To display the records : ENTER 1
To borrow a book      : ENTER 2
To return a book      : ENTER 3
To exit               : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID: 3

Glad to know.The book is available.
-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1      The Alchemist        Paulo Coelho        $5          4
2      Song of Solomon       Toni Morrison       $10         3
3      Gilead                 Marilynne Robinson  $15         5
4      Elevation              Stephen King        $15         7
5      Ghost Wall             Sarah Moss          $4          25
6      War and Peace          Leo Tolstoy        $14         9
7      East of Eden           John Steinbeck      $9          6
8      Mortal Engines         Philip Reeve        $11         6
9      The Kite Runner        Khaled Hosseini    $13         9
10     On the Road             Jack Kerouac        $10         14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: 6

Glad to know.The book is available.
-----
Book ID  Book Name          Author              Book Price  Quantity
-----
1      The Alchemist        Paulo Coelho        $5          4
2      Song of Solomon       Toni Morrison       $10         3
3      Gilead                 Marilynne Robinson  $15         5
4      Elevation              Stephen King        $15         7
5      Ghost Wall             Sarah Moss          $4          25
6      War and Peace          Leo Tolstoy        $14         8
7      East of Eden           John Steinbeck      $9          6
8      Mortal Engines         Philip Reeve        $11         6
9      The Kite Runner        Khaled Hosseini    $13         9
10     On the Road             Jack Kerouac        $10         14

If you want to borrow another book 'Y' else type 'N':|

```

Figure 61 (Test)Again, the book ID is entered. The book ID is entered as 6.

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID: 3

Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: 6

Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: |

```

Figure 62 “y” is entered when asked “If you want to borrow another book 'Y' else type 'N':”

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
3      Gilead      Marilynne Robinson      $15      5
4      Elevation  Stephen King           $15      7
5      Ghost Wall Sarah Moss             $4       25
6      War and Peace Leo Tolstoy           $14      9
7      East of Eden John Steinbeck         $9       6
8      Mortal Engines Philip Reeve           $11      6
9      The Kite Runner Khaled Hosseini       $13      9
10     On the Road Jack Kerouac           $10     14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: 6

Glad to know.The book is available.
-----
Book ID  Book Name      Author              Book Price      Quantity
-----
1      The Alchemist    Paulo Coelho       $5              4
2      Song of Solomon Toni Morrison       $10             3
3      Gilead           Marilynne Robinson $15             5
4      Elevation        Stephen King        $15             7
5      Ghost Wall        Sarah Moss          $4              25
6      War and Peace     Leo Tolstoy        $14             8
7      East of Eden      John Steinbeck     $9              6
8      Mortal Engines    Philip Reeve       $11             6
9      The Kite Runner   Khaled Hosseini    $13             9
10     On the Road       Jack Kerouac       $10            14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: 9

Glad to know.The book is available.
-----
Book ID  Book Name      Author              Book Price      Quantity
-----
1      The Alchemist    Paulo Coelho       $5              4
2      Song of Solomon Toni Morrison       $10             3
3      Gilead           Marilynne Robinson $15             5
4      Elevation        Stephen King        $15             7
5      Ghost Wall        Sarah Moss          $4              25
6      War and Peace     Leo Tolstoy        $14             8
7      East of Eden      John Steinbeck     $9              6
8      Mortal Engines    Philip Reeve       $11             6
9      The Kite Runner   Khaled Hosseini    $13             8
10     On the Road       Jack Kerouac       $10            14

If you want to borrow another book 'Y' else type 'N':|

```

Figure 63 Again, the book ID is entered. The book ID is entered as 9.

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
10 On the Road Jack Kerouac $10 14
If you want to borrow another book 'Y' else type 'N':y
Enter the book ID: 6
Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14
If you want to borrow another book 'Y' else type 'N':y
Enter the book ID: 9
Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14
If you want to borrow another book 'Y' else type 'N':n
Thank you for borrowing the books. Happy reading :).
Make a choice(1,2,3,4) : |

```

Figure 64 “n” is entered when asked “If you want to borrow another book 'Y' else type 'N':”

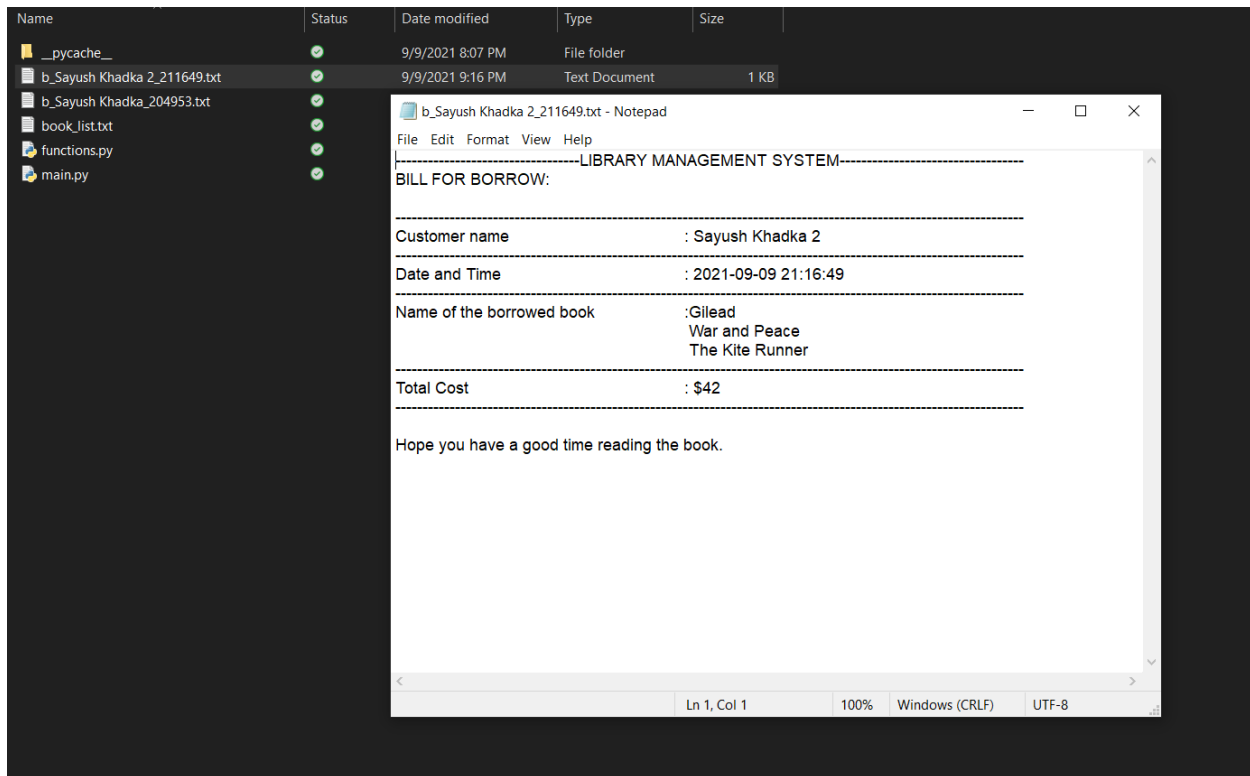


Figure 65 Borrow note in txt file (For multiple books)

**4.4.a Test 4(a): To show the proper working of the complete return process
(No fine bill)**

Test: 4 a	
Objective:	To show the proper working of the complete return process (No fine bill)
Action:	<ul style="list-style-type: none"> • Run the program • 3 is entered when asked to selected option from (1-4). • Name of the customer is entered as Sayush Khadka 3 • The book ID is entered as 3. • “7” is entered when asked “For how many days has been the book borrowed???”
Expected result:	<ul style="list-style-type: none"> • The complete return process would be completed without any errors. (For no fine bill) • Return note would be shown in a text file. (For no fine bill)
Actual result:	<ul style="list-style-type: none"> • The complete return process completed without any errors. (For no fine bill) • Return note showed in a text file. (For no fine bill)
Conclusion:	Test successful.

Table 6 To show the proper working of the complete return process (No fine bill)


```

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

Library Management System

Learning never stops.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 3

Enter the book ID: 3

For how many days has been the book borrowed??? 7
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Make a choice(1,2,3,4) :

```

Figure 66 To show the proper working of the complete return process (No fine bill)

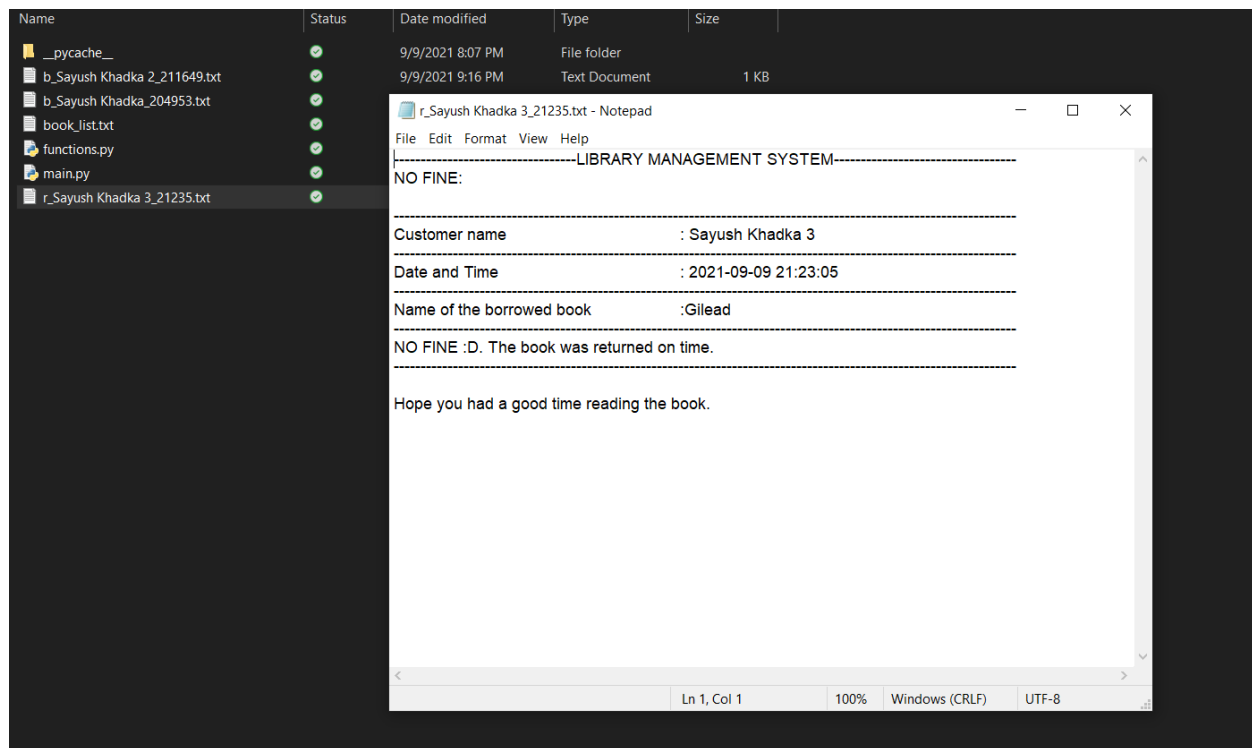


Figure 67 Return note showed in a text file. (For no fine bill)

4.4.b Test 4(b): To show the proper working of the complete return process (For fine bill)

Test: 4 b	
Objective:	To show the proper working of the complete return process (For fine bill)
Action:	<ul style="list-style-type: none"> • Run the program • 3 is entered when asked to selected option from (1-4). • Name of the customer is entered as Sayush Khadka 4 • The book ID is entered as 2. • “19” is entered when asked “For how many days has been the book borrowed???”
Expected result:	<ul style="list-style-type: none"> • The complete return process would be completed without any errors. (For fine bill) • Return note would be shown in a text file. (For fine bill)
Actual result:	<ul style="list-style-type: none"> • The complete return process completed without any errors. (For fine bill) • Return note showed in a text file. (For fine bill)
Conclusion:	Test successful.

Table 7 To show the proper working of the complete return process (For fine bill)

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

Library Management System

Learning never stops.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 4

Enter the book ID: 2

For how many days has been the book borrowed??? 19
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 4
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Make a choice(1,2,3,4) : |
```

Figure 68 To show the proper working of the complete return process (For fine bill)

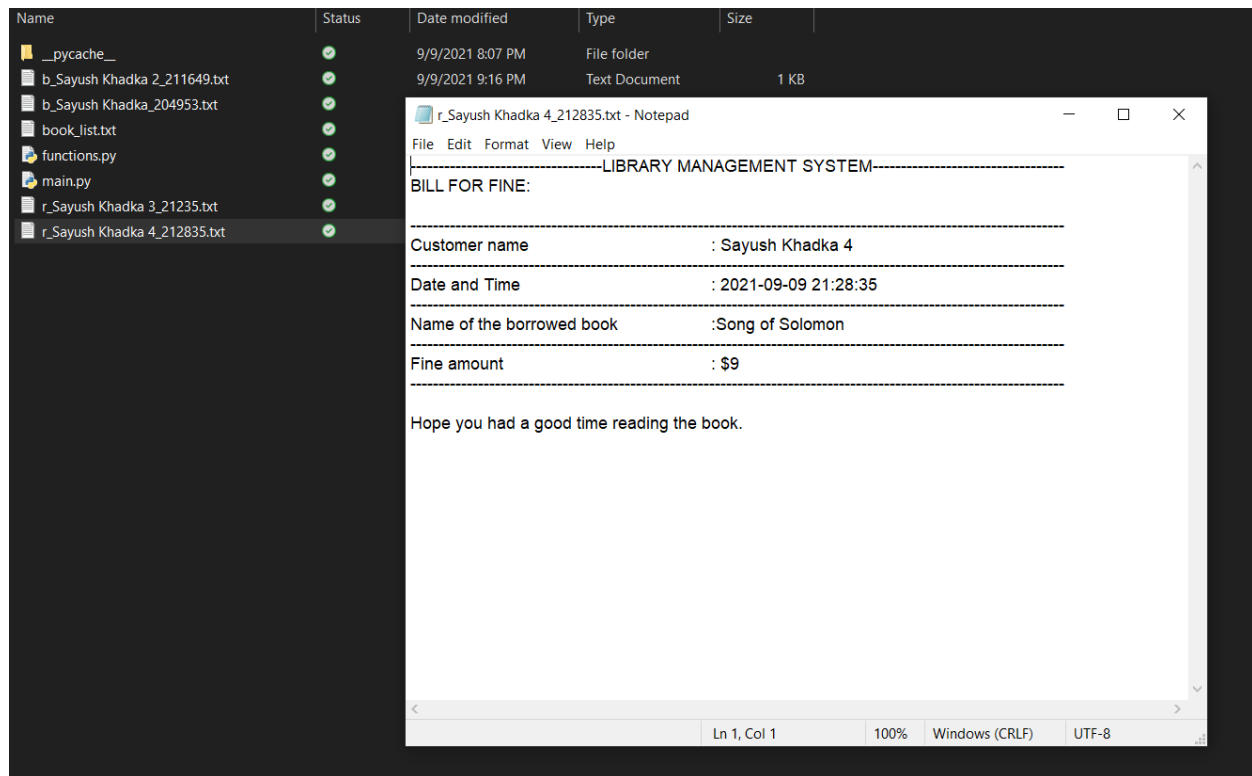



Figure 69 Return note showed in a text file. (For fine bill)

4.5 Test 5: To check the update in the stock after borrowing

Test: 3a	
Objective:	To check the update in the stock after borrowing.
Action:	<ul style="list-style-type: none">• The single book borrow process is performed.• The multiple books borrow process is performed.• The no fine bill return book process is performed.• The fine bill return book process is performed.
Expected result:	<ul style="list-style-type: none">• When the book borrow process is completed, the quantity or the stock of the book would decrease.• When the book return process is completed, the quantity or the stock of the book would increase.
Actual result:	<ul style="list-style-type: none">• When the book borrow process completed, the quantity or the stock of the book decreased.• When the book return process completed, the quantity or the stock of the book increased.
Conclusion:	Test successful.

Table 8 To check the update in the stock after borrowing.

 book_list.txt - Notepad

File Edit Format View Help

```
1,The Alchemist,Paulo Coelho,$5,4
2,Song of Solomon,Toni Morrison,$10,3
3,Gilead,Marilynne Robinson,$15,6
4,Elevation,Stephen King,$15,7
5,Ghost Wall,Sarah Moss,$4,25
6,War and Peace,Leo Tolstoy,$14,9
7,East of Eden,John Steinbeck,$9,7
8,Mortal Engines,Philip Reeve,$11,6
9,The Kite Runner,Khaled Hosseini,$13,9
10,On the Road,Jack Kerouac,$10,14
```

Figure 70 Stock at the start

```
*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
To borrow a book : ENTER 3
To exit : ENTER 4
Make a choice(1,2,3,4) : 1

-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 7
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka
Enter the book ID: 7
Glad to know.The book is available.

-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

If you want to borrow another book 'Y' else type 'N':n
Thank you for borrowing the books. Happy reading :).

Make a choice(1,2,3,4) : |
```

Figure 71 The single book borrow process is performed.

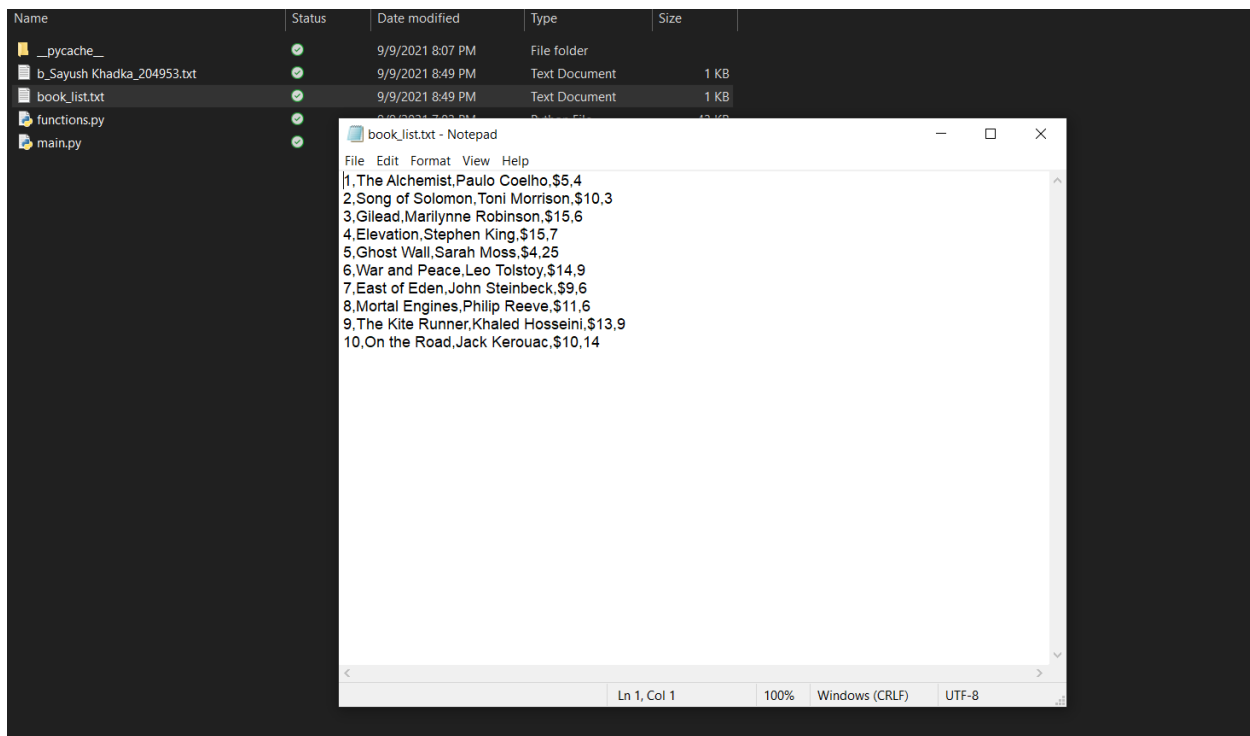


Figure 72 Stock after the single book borrow process is performed. (Decrease in the quantity of the book borrowed)

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 2

Enter the name(Customer name): Sayush Khadka 2

Enter the book ID: 3

Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 9
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: 6

Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14

If you want to borrow another book 'Y' else type 'N':y

Enter the book ID: |

```

Figure 73 The multiple books borrow process is performed.

```

*IDLE Shell 3.9.6*
File Edit Shell Debug Options Window Help
10 On the Road Jack Kerouac $10 14
If you want to borrow another book 'Y' else type 'N':y
Enter the book ID: 6
Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 9
10 On the Road Jack Kerouac $10 14
If you want to borrow another book 'Y' else type 'N':y
Enter the book ID: 9
Glad to know.The book is available.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14
If you want to borrow another book 'Y' else type 'N':n
Thank you for borrowing the books. Happy reading :).
Make a choice(1,2,3,4) : |

```

Figure 74 The multiple books borrow process is performed. (Continued)

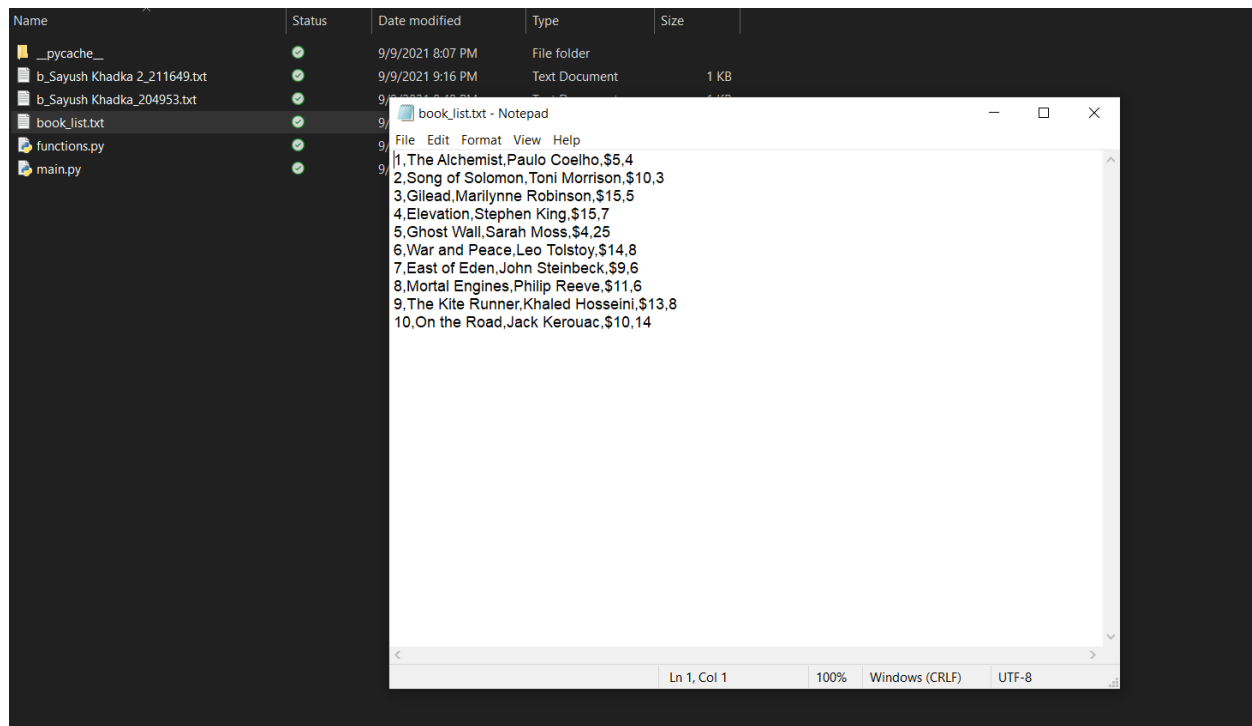


Figure 75 Stock after the multiple books borrow process is performed. (Decrease in the quantity of the books borrowed)

```

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

Library Management System

Learning never stops.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 5
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 3

Enter the book ID: 3

For how many days has been the book borrowed??? 7
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Make a choice(1,2,3,4) :

```

Figure 76 The no fine bill return book process is performed.

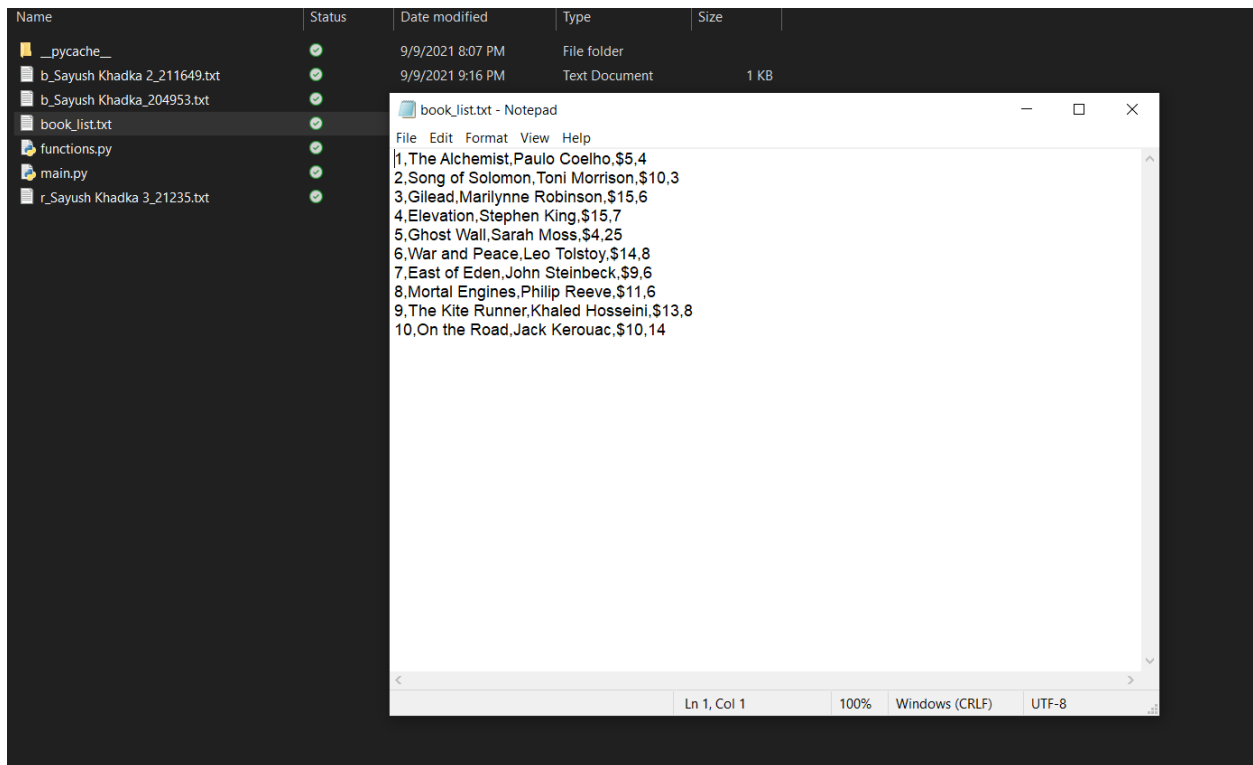


Figure 77 Stock after no fine bill return book process is performed (Increase in the quantity of book returned)

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

Library Management System

Learning never stops.
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 3
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Select an option:

To display the records : ENTER 1
To borrow a book : ENTER 2
To return a book : ENTER 3
To exit : ENTER 4

Make a choice(1,2,3,4) : 3

Enter the name(Customer name): Sayush Khadka 4

Enter the book ID: 2

For how many days has been the book borrowed??? 19
-----
Book ID Book Name Author Book Price Quantity
-----
1 The Alchemist Paulo Coelho $5 4
2 Song of Solomon Toni Morrison $10 4
3 Gilead Marilynne Robinson $15 6
4 Elevation Stephen King $15 7
5 Ghost Wall Sarah Moss $4 25
6 War and Peace Leo Tolstoy $14 8
7 East of Eden John Steinbeck $9 6
8 Mortal Engines Philip Reeve $11 6
9 The Kite Runner Khaled Hosseini $13 8
10 On the Road Jack Kerouac $10 14

Make a choice(1,2,3,4) : |
```

Figure 78 The fine bill return book process is performed.

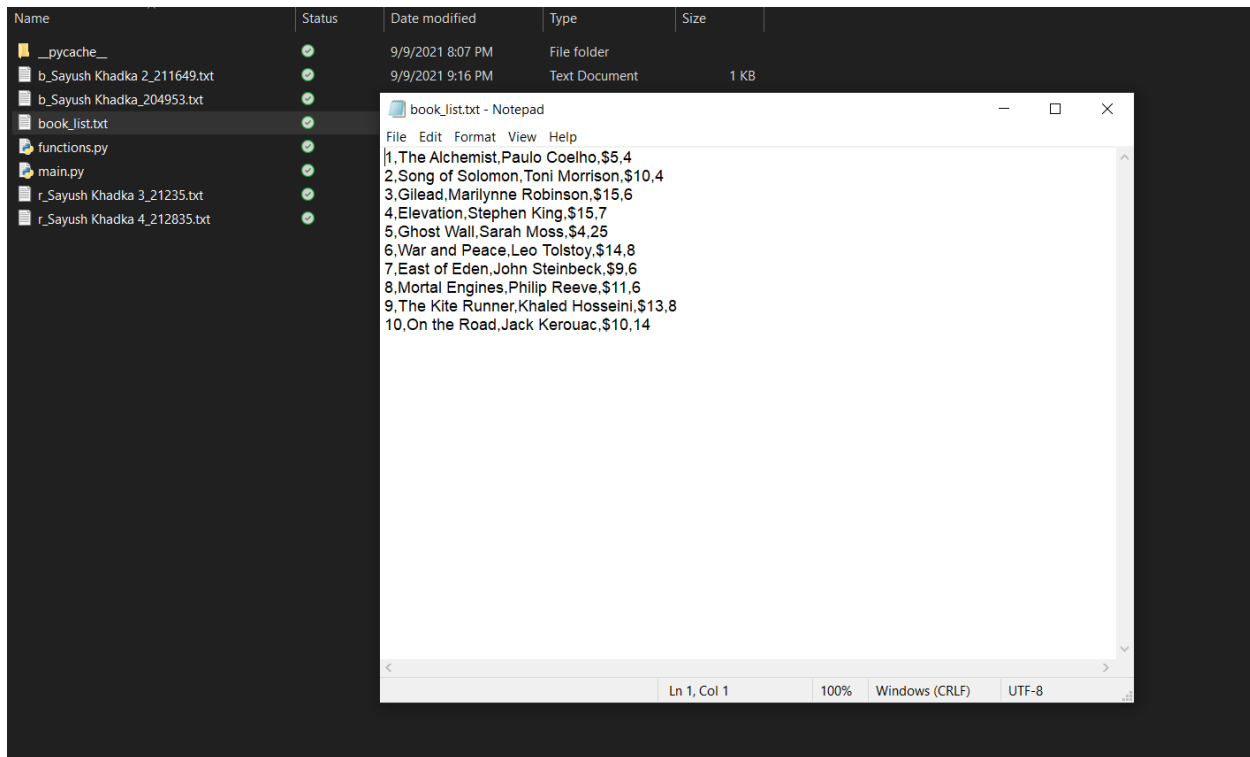


Figure 79 Stock after fine bill return book process is performed (Increase in the quantity of book returned)

5. Conclusion:

Working with this coursework especially by using python was very intriguing and productive. Creating an inventory management system but on a smaller scale was a challenge but informative to work with. It is a digital representation of a real-world library. This program is a multi-functioning program with almost all the activities involved within a library included in it. From borrowing the books and returning them whenever they'd like as long as it doesn't cross the return deadline to updating all the transactions done in the library, charging fines, etc. this program is coded in simple language for its complete accuracy of the records. This is the reason a library management system is a necessity to understand the coding world better. The importance of such a system becomes even more evident when we take the ever-increasing number of books, articles, and papers into account with the real world.

The coursework enlightened me about the versatility of the Python programming language. Working with the simple programming language method helped me explore the areas python can be used for. The library management system is the standardized version of coding using python that includes all the aspects like parameters, variables, functions, loop, mathematical quotations, etc. Through this project, I was able to understand the IDLE (Integrated Development and Learning Environment) in Python and help utilize the application and system to its full potential. It made me realize the number of tasks involved in a library and made me understand how everything is managed and accounted for in a library daily. Creating such type of program for libraries and similar types of places would be a convenient, cheaper, and accurate way to manage everything in proper order as well.

Doing this project gave me many ideas on how I can create a management system, make it better by adding more standard functions and utilize my skills in the right place. Executing my ideas through coding and visualizing them through the reports has made me more polished and fluent in MS Word and other applications that could be used to complete this project.

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Appendix:

i) For main.py

```
import functions
```

```
book_record = functions.Library_list()
```

```
functions.book_record_display(book_record)
```

```
book_name = ""
```

```
book_total_cost = 0
```

```
enter_number = 0
```

```
valid_y = True
```

```
while enter_number != 4:
```

```
    print("\nSelect an option:")
```

```
    print("\nTo display the records : ENTER 1")
```

```
    print("To borrow a book      : ENTER 2 ")
```

```
    print("To return a book      : ENTER 3")
```

```
    print("To exit                : ENTER 4")
```

```
while valid_y == True:
```

```
    try:
```

```
        enter_number = int(input("\nMake a choice(1,2,3,4) : "))
```

```
        print()
```

```
    except:
```

```
        print("\nERROR!!!Only numbers accepted.")
```

```

if(enter_number == 1):

    functions.book_record_display(book_record)

elif(enter_number == 2):

    name = input("\nEnter the name(Customer name): ")
    cost_book,book_name =
functions.book_borrow_continued(book_record,functions.book_record_display,book_tot
al_cost,book_name)
    functions.book_bill(cost_book,book_name,name)

elif(enter_number == 3):

    name = input("\nEnter the name(Customer name): ")
    functions.book_return(book_record, name, functions.book_record_display)

elif(enter_number == 4):
    print("\nYou have chosen to exit the program.\nThank you!!!")
    break

else:
    print("ERROR!!!!Please choose only form (1-4).")

```

ii) For functions.py

```
import datetime
```

```
def Library_list():
```

```
    file = open("book_list.txt", "r")
```

```
    list_one = []
```

```
    list_two = []
```

```
    for line in file:
```

```
        line = line.replace("\n", "")
```

```
        list_one.append(line.split(", "))
```

```
    for i in range(len(list_one)):
```

```
        for j in range(len(list_one[i])):
```

```
            list_two.append(list_one[i][j])
```

```
    return list_two
```

```
print("\n\t\t\t\t\tLibrary Management System\n")
```

```
print("Learning never stops.")
```

```
def book_record_display(book_record):
```

```
    print("-----\nBook ID
```

```
Book Name          Author          Book Price    Quantity\n-----
```

```
-----")
```

```
    print(" ", book_record[0], " ", book_record[1], " ", book_record[2], "
```

```
", book_record[3], " ", book_record[4])
```

```
    print(" ", book_record[5], " ", book_record[6], " ", book_record[7], "
```

```
", book_record[8], " ", book_record[9])
```

```

        print(" ",book_record[10],"      ",book_record[11],"          ",book_record[12],"
",book_record[13],"          ",book_record[14])
        print(" ",book_record[15],"      ",book_record[16],"          ",book_record[17],"
",book_record[18],"          ",book_record[19])
        print(" ",book_record[20],"      ",book_record[21],"          ",book_record[22],"
",book_record[23],"          ",book_record[24])
        print(" ",book_record[25],"      ",book_record[26],"          ",book_record[27],"
",book_record[28],"          ",book_record[29])
        print(" ",book_record[30],"      ",book_record[31],"          ",book_record[32],"
",book_record[33],"          ",book_record[34])
        print(" ",book_record[35],"      ",book_record[36],"          ",book_record[37],"
",book_record[38],"          ",book_record[39])
        print(" ",book_record[40],"      ",book_record[41],"          ",book_record[42],"
",book_record[43],"          ",book_record[44])
        print(" ",book_record[45],"      ",book_record[46],"          ",book_record[47],"
",book_record[48],"          ",book_record[49])

```

'''for book_record_displaying available books'''

```
def book_available(book_record,book_quantity,book_ID):
```

```

    book_quantity1 = book_record[4]
    book_quantity2 = book_record[9]
    book_quantity3 = book_record[14]
    book_quantity4 = book_record[19]
    book_quantity5 = book_record[24]
    book_quantity6 = book_record[29]
    book_quantity7 = book_record[34]
    book_quantity8 = book_record[39]
    book_quantity9 = book_record[44]
    book_quantity10 = book_record[49]

```

```

file = open("book_list.txt", "w")

if book_ID == 1:
    book_quantity1 = int(book_record[4])-1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+str(book_quantity1)+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
"\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

elif book_ID == 2:
    book_quantity2 = int(book_record[9])-1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+str(book_quantity2)+
"\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

elif book_ID == 3:
    book_quantity3 = int(book_record[14])-1

```

```

        file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
        "\n3,Gilead,Marilynne
Robinson,$15,"+str(book_quantity3)+"\n4,Elevation,Stephen
King,$15,"+book_quantity4+
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

```

```

elif book_ID == 4:
    book_quantity4 = int(book_record[19])-1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
        "\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen
King,$15,"+str(book_quantity4)+
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

```

```

elif book_ID == 5:
    book_quantity5 = int(book_record[24])-1

```



```
file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
"\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
"\n5,Ghost Wall,Sarah Moss,$4,"+str(book_quantity5)+"\n6,War and
Peace,Leo Tolstoy,$14,"+book_quantity6+
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
elif book_ID == 6:
    book_quantity6 = int(book_record[29])-1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
"\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+str(book_quantity6)+
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
elif book_ID == 7:
    book_quantity7 = int(book_record[34])-1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
"\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
        "\n7,East of Eden,John Steinbeck,$9,"+str(book_quantity7)+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
elif book_ID == 8:
```

```
    book_quantity8 = int(book_record[39])-1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
        "\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+str(book_quantity8)+
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
elif book_ID == 9:
```

```
    book_quantity9 = int(book_record[44])-1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
        "\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+str(book_quantity9)+"\n10,On the Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
elif book_ID == 10:
```

```
    book_quantity10 = int(book_record[49])-1
```

```
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
        "\n3,Gilead,Marilynne
```

```
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo Tolstoy,$14,"+book_quantity6+
```

```
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal Engines,Philip Reeve,$11,"+book_quantity8+
```

```
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the Road,Jack Kerouac,$10,"+str(book_quantity10)+"")
```

```
file.close()
```

```
book_quantity_remaining = book_quantity - 1
```

```
for i in range(len(book_record)):
```

```
    for j in range(len(book_record[i])):
```

```
        if book_ID == 1:
```

```
            book_record[4] = str(book_quantity_remaining)
```

```
        elif book_ID == 2:
```

```
            book_record[9] = str(book_quantity_remaining)
```

```
        elif book_ID == 3:
```

```
            book_record[14] = str(book_quantity_remaining)
```

```
elif book_ID == 4:  
    book_record[19] = str(book_quantity_remaining)
```

```
elif book_ID == 5:  
    book_record[24] = str(book_quantity_remaining)
```

```
elif book_ID == 6:  
    book_record[29] = str(book_quantity_remaining)
```

```
elif book_ID == 7:  
    book_record[34] = str(book_quantity_remaining)
```

```
elif book_ID == 8:  
    book_record[39] = str(book_quantity_remaining)
```

```
elif book_ID == 9:  
    book_record[44] = str(book_quantity_remaining)
```

```
elif book_ID == 10:  
    book_record[49] = str(book_quantity_remaining)
```

```
def book_counts(book_record,book_ID):
```

```
    book_name = ""
```

```
    if book_ID == 1:  
        book_name = book_record[1]
```

```
    elif book_ID == 2:
```

```
    book_name = book_record[6]

elif book_ID == 3:
    book_name = book_record[11]

elif book_ID == 4:
    book_name = book_record[16]

elif book_ID == 5:
    book_name = book_record[21]

elif book_ID == 6:
    book_name = book_record[26]

elif book_ID == 7:
    book_name = book_record[31]

elif book_ID == 8:
    book_name = book_record[36]

elif book_ID == 9:
    book_name = book_record[41]

elif book_ID == 10:
    book_name = book_record[46]

return book_name
```

```
def book_price(book_record,book_ID):  
    if book_ID == 1:  
        book_price = book_record[3]  
        book_price = book_price.replace("$","")  
  
    elif book_ID == 2:  
        book_price = book_record[8]  
        book_price = book_price.replace("$","")  
  
    elif book_ID == 3:  
        book_price = book_record[13]  
        book_price = book_price.replace("$","")  
  
    elif book_ID == 4:  
        book_price = book_record[18]  
        book_price = book_price.replace("$","")  
  
    elif book_ID == 5:  
        book_price = book_record[23]  
        book_price = book_price.replace("$","")  
  
    elif book_ID == 6:  
        book_price = book_record[28]  
        book_price = book_price.replace("$","")  
  
    elif book_ID == 7:  
        book_price = book_record[33]  
        book_price = book_price.replace("$","")  
  
    elif book_ID == 8:  
        book_price = book_record[38]
```

```
book_price = book_price.replace("$", "")

elif book_ID == 9:
    book_price = book_record[43]
    book_price = book_price.replace("$", "")

elif book_ID == 10:
    book_price = book_record[48]
    book_price = book_price.replace("$", "")

return book_price
```

```
def book_borrow(book_record):
    price_of_book = 0
    book_Name = ""
    flag = True
    valid_y = True
    valid_n = True

    while valid_y == True:
        try:
            book_ID = int(input("\nEnter the book ID: "))
            break

        except:
            print("Enter a valid ID from the record.")

    while flag == True:
```

```

if book_ID == 1:
    book_quantity = int(book_record[4])
    if book_quantity > 0:
        book_record_displayAvailable()
        book_available(book_record,book_quantity,book_ID)
        book_record_display(book_record)
        price_of_book = book_price(book_record,book_ID)
        book_Name = book_counts(book_record,book_ID)
        break

    else:
        while valid_n == True:
            try:
                book_ID = int(input("\nOut of stock.Please enter the book ID of another
book you want to borrow:"))
                break
            except:
                print("Enter a valid ID from the record.")

elif book_ID == 2:
    book_quantity = int(book_record[9])
    if book_quantity > 0:
        book_record_displayAvailable()
        book_available(book_record,book_quantity,book_ID)
        book_record_display(book_record)
        price_of_book = book_price(book_record,book_ID)
        book_Name = book_counts(book_record,book_ID)
        break

    else:
        while valid_n == True:

```



```
        try:
            book_ID = int(input("\nOut of stock.Please enter the book ID of another
book you want to borrow:"))
            break
        except:
            print("Enter a valid ID from the record.")
```

```
elif book_ID == 3:
    book_quantity = int(book_record[14])
    if book_quantity > 0:
        book_record_displayAvailable()
        book_available(book_record,book_quantity,book_ID)
        book_record_display(book_record)
        price_of_book = book_price(book_record,book_ID)
        book_Name = book_counts(book_record,book_ID)
        break
```

```
else:
    while valid_n == True:
        try:
            book_ID = int(input("\nOut of stock.Please enter the book ID of another
book you want to borrow:"))
            break
        except:
            print("Enter a valid ID from the record.")
```

```
elif book_ID == 4:
    book_quantity = int(book_record[19])
    if book_quantity > 0:
        book_record_displayAvailable()
```

```

        book_available(book_record,book_quantity,book_ID)
        book_record_display(book_record)
        price_of_book = book_price(book_record,book_ID)
        book_Name = book_counts(book_record,book_ID)
        break

    else:
        while valid_n == True:
            try:
                book_ID = int(input("\nOut of stock.Please enter the book ID of another
book you want to borrow:"))
                break
            except:
                print("Enter a valid ID from the record.")

elif book_ID == 5:
    book_quantity = int(book_record[24])
    if book_quantity > 0:
        book_record_displayAvailable()
        book_available(book_record,book_quantity,book_ID)
        book_record_display(book_record)
        price_of_book = book_price(book_record,book_ID)
        book_Name = book_counts(book_record,book_ID)
        break

    else:
        while valid_n == True:
            try:
                book_ID = int(input("\nOut of stock.Please enter the book ID of another
book you want to borrow:"))

```

```

        break
    except:
        print("Enter a valid ID from the record.")

elif book_ID == 6:
    book_quantity = int(book_record[29])
    if book_quantity > 0:
        book_record_displayAvailable()
        book_available(book_record,book_quantity,book_ID)
        book_record_display(book_record)
        price_of_book = book_price(book_record,book_ID)
        book_Name = book_counts(book_record,book_ID)
        break

    else:
        while valid_n == True:
            try:
                book_ID = int(input("\nOut of stock.Please enter the book ID of another
book you want to borrow:"))
                break
            except:
                print("Enter a valid ID from the record.")

elif book_ID == 7:
    book_quantity = int(book_record[34])
    if book_quantity > 0:
        book_record_displayAvailable()
        book_available(book_record,book_quantity,book_ID)
        book_record_display(book_record)
        price_of_book = book_price(book_record,book_ID)
        book_Name = book_counts(book_record,book_ID)

```

```

        break

    else:
        while valid_n == True:
            try:
                book_ID = int(input("\nOut of stock.Please enter the book ID of another
book you want to borrow:"))
                break
            except:
                pprint("Enter a valid ID from the record.")

    elif book_ID == 8:
        book_quantity = int(book_record[39])
        if book_quantity > 0:
            book_record_displayAvailable()
            book_available(book_record,book_quantity,book_ID)
            book_record_display(book_record)
            price_of_book = book_price(book_record,book_ID)
            book_Name = book_counts(book_record,book_ID)
            break

    else:
        while valid_n == True:
            try:
                book_ID = int(input("\nOut of stock.Please enter the book ID of another
book you want to borrow:"))
                break
            except:
                print("Enter a valid ID from the record.")

    elif book_ID == 9:

```

```

book_quantity = int(book_record[44])
if book_quantity > 0:
    book_record_displayAvailable()
    book_available(book_record,book_quantity,book_ID)
    book_record_display(book_record)
    price_of_book = book_price(book_record,book_ID)
    book_Name = book_counts(book_record,book_ID)
    break

else:
    while valid_n == True:
        try:
            book_ID = int(input("\nOut of stock.Please enter the book ID of another
book you want to borrow:"))
            break
        except:
            print("Enter a valid ID from the record.")

elif book_ID == 10:
    book_quantity = int(book_record[49])
    if book_quantity > 0:
        book_record_displayAvailable()
        book_available(book_record,book_quantity,book_ID)
        book_record_display(book_record)
        price_of_book = book_price(book_record,book_ID)
        book_Name = book_counts(book_record,book_ID)
        break

else:
    while valid_n == True:
        try:

```

```
        book_ID = int(input("\nOut of stock.Please enter the book ID of another  
book you want to borrow:"))
```

```
        break
```

```
    except:
```

```
        print("Enter a valid ID from the record.")
```

```
    else:
```

```
        print("\nError!!!No book with such book ID.")
```

```
        break
```

```
    return price_of_book,book_Name
```

```
def
```

```
book_borrow_continued(book_record,book_record_display,book_total_cost,book_name  
):
```

```
    flag = True
```

```
    book_cost,book_Name = book_borrow(book_record)
```

```
    book_total_cost += int(book_cost)
```

```
    book_name += book_Name+"\n"
```

```
while flag == True:
```

```
    Yes_No = input("\nIf you want to borrow another book 'Y' else type 'N':")
```

```
    if (Yes_No.upper() == "Y"):
```

```
        book_cost,book_Name = book_borrow(book_record)
```

```
        book_total_cost += int(book_cost)
```

```
        book_name += "\t\t\t\t "+book_Name+"\n"
```

```

elif (Yes_No.upper() == "N"):
    print("\nThank you for borrowing the books. Happy reading :).\n\n")
    break
else:
    break

```

```

return book_total_cost,book_name

```

```

def book_bill(cost_book,book_name,name):
    bill_date_time = datetime.datetime.now().replace(microsecond=0)

    hour = str((datetime.datetime.now().hour))
    minute = str(datetime.datetime.now().minute)
    second = str(datetime.datetime.now().second)
    unique_file_number = hour+minute+second

    file = open("b_"+name+"_"+unique_file_number+".txt","w")
    file.write("-----LIBRARY MANAGEMENT SYSTEM-----")
    file.write("\n\n")
    file.write("\n\n")
    file.write("\nCustomer name \t\t\t: "+name)
    file.write("\n\n")
    file.write("\nDate and Time \t\t\t: "+str(bill_date_time))

```

```

        file.write("\n-----")
    -----")
    file.write("\nName of the borrowed book \t:" + book_name)
    file.write("-----")
    -----")
    file.write("\nTotal Cost \t\t\t: $" + str(cost_book))
    file.write("\n-----")
    -----")
    file.write("\n\nHope you have a good time reading the book.")
    file.close()

```

```

def book_record_displayAvailable():
    print("\nGlad to know.The book is available.")

```

```

def book_add(book_record, book_quantity, book_ID):
    book_quantity1 = book_record[4]
    book_quantity2 = book_record[9]
    book_quantity3 = book_record[14]
    book_quantity4 = book_record[19]
    book_quantity5 = book_record[24]
    book_quantity6 = book_record[29]
    book_quantity7 = book_record[34]
    book_quantity8 = book_record[39]
    book_quantity9 = book_record[44]
    book_quantity10 = book_record[49]

    file = open("book_list.txt", "w")

```



```

if book_ID == 1:
    book_quantity1 = int(book_record[4])+1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+str(book_quantity1)+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
"\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

```

```

elif book_ID == 2:
    book_quantity2 = int(book_record[9])+1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+str(book_quantity2)+
"\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

```

```

elif book_ID == 3:
    book_quantity3 = int(book_record[14])+1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+

```

```

        "\n3,Gilead,Marilynne
Robinson,$15,"+str(book_quantity3)+"\n4,Elevation,Stephen
King,$15,"+book_quantity4+
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

```

```

elif book_ID == 4:
    book_quantity4 = int(book_record[19])+1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
        "\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen
King,$15,"+str(book_quantity4)+
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

```

```

elif book_ID == 5:
    book_quantity5 = int(book_record[24])+1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
        "\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+

```

```

        "\n5,Ghost Wall,Sarah Moss,$4,"+str(book_quantity5)+"\n6,War and
Peace,Leo Tolstoy,$14,"+book_quantity6+
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

```

```

elif book_ID == 6:
    book_quantity6 = int(book_record[29])+1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
        "\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+str(book_quantity6)+
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")

```

```

elif book_ID == 7:
    book_quantity7 = int(book_record[34])+1
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
        "\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
        "\n7,East of Eden,John Steinbeck,$9,"+str(book_quantity7)+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+

```

```
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
elif book_ID == 8:
```

```
    book_quantity8 = int(book_record[39])+1
```

```
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
        "\n3,Gilead,Marilynne
```

```
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
```

```
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+str(book_quantity8)+
```

```
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
elif book_ID == 9:
```

```
    book_quantity9 = int(book_record[44])+1
```

```
    file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
```

```
        "\n3,Gilead,Marilynne
```

```
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
```

```
        "\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
```

```
        "\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
```

```
        "\n9,The Kite Runner,Khaled Hosseini,$13,"+str(book_quantity9)+"\n10,On
the Road,Jack Kerouac,$10,"+book_quantity10+"")
```

```
elif book_ID == 10:
```

```
    book_quantity10 = int(book_record[49])+1
```

```

file.write("1,The Alchemist,Paulo Coelho,$5,"+book_quantity1+"\n2,Song of
Solomon,Toni Morrison,$10,"+book_quantity2+
"\n3,Gilead,Marilynne
Robinson,$15,"+book_quantity3+"\n4,Elevation,Stephen King,$15,"+book_quantity4+
"\n5,Ghost Wall,Sarah Moss,$4,"+book_quantity5+"\n6,War and Peace,Leo
Tolstoy,$14,"+book_quantity6+
"\n7,East of Eden,John Steinbeck,$9,"+book_quantity7+"\n8,Mortal
Engines,Philip Reeve,$11,"+book_quantity8+
"\n9,The Kite Runner,Khaled Hosseini,$13,"+book_quantity9+"\n10,On the
Road,Jack Kerouac,$10,"+str(book_quantity10)+"")

```

```

file.close()

```

```

book_quantity_remaining = book_quantity + 1
for i in range(len(book_record)):
    for j in range(len(book_record[i])):
        if book_ID == 1:
            book_record[4] = str(book_quantity_remaining)

        elif book_ID == 2:
            book_record[9] = str(book_quantity_remaining)

        elif book_ID == 3:
            book_record[14] = str(book_quantity_remaining)

        elif book_ID == 4:
            book_record[19] = str(book_quantity_remaining)

```

```
elif book_ID == 5:  
    book_record[24] = str(book_quantity_remaining)
```

```
elif book_ID == 6:  
    book_record[29] = str(book_quantity_remaining)
```

```
elif book_ID == 7:  
    book_record[34] = str(book_quantity_remaining)
```

```
elif book_ID == 8:  
    book_record[39] = str(book_quantity_remaining)
```

```
elif book_ID == 9:  
    book_record[44] = str(book_quantity_remaining)
```

```
elif book_ID == 10:  
    book_record[49] = str(book_quantity_remaining)
```

```
def book_return(book_record, name, book_record_display):
```

```
    flag = True
```

```
    valid_y = True
```

```
    valid_n = True
```

```
    while valid_y == True:
```

```
        try:
```

```
            book_ID = int(input("\nEnter the book ID: "))
```

```
            break
```

```
        except:
```

```
            print("\nEnter a valid ID from the record.")
```

```
while flag == True:
    if book_ID == 1:

        while valid_n == True:

            try:
                book_no_of_day = int(input("\nFor how many days has been the book
borrowed??? "))
                break

            except:
                print("\nEnter a valid day.")

        book_fine(book_no_of_day, name, book_record, book_ID)

        book_quantity = int(book_record[4])
        book_add(book_record, book_quantity, book_ID)
        book_record_display(book_record)
        break

    elif book_ID == 2:

        while valid_n == True:

            try:
```

```
        book_no_of_day = int(input("\nFor how many days has been the book  
borrowed??? "))
```

```
        break
```

```
    except:
```

```
        print("\nEnter a valid day.")
```

```
book_fine(book_no_of_day, name, book_record, book_ID)
```

```
book_quantity = int(book_record[9])
```

```
book_add(book_record, book_quantity, book_ID)
```

```
book_record_display(book_record)
```

```
break
```

```
elif book_ID == 3:
```

```
    while valid_n == True:
```

```
        try:
```

```
            book_no_of_day = int(input("\nFor how many days has been the book  
borrowed??? "))
```

```
            break
```

```
        except:
```

```
            print("\nEnter a valid day.")
```

```
book_fine(book_no_of_day, name, book_record, book_ID)
```

```
book_quantity = int(book_record[14])
```

```
book_add(book_record, book_quantity, book_ID)
```

```
book_record_display(book_record)
```



```
break
```

```
elif book_ID == 4:
```

```
while valid_n == True:
```

```
try:
```

```
    book_no_of_day = int(input("\nFor how many days has been the book  
borrowed??? "))
```

```
    break
```

```
except:
```

```
    print("\nEnter a valid day.")
```

```
book_fine(book_no_of_day, name, book_record, book_ID)
```

```
book_quantity = int(book_record[19])
```

```
book_add(book_record, book_quantity, book_ID)
```

```
book_record_display(book_record)
```

```
break
```

```
elif book_ID == 5:
```

```
while valid_n == True:
```

```
try:
```

```
    book_no_of_day = int(input("\nFor how many days has been the book  
borrowed??? "))
```

```
    break
```

```

    except:
        print("\nEnter a valid day.")

    book_fine(book_no_of_day, name, book_record, book_ID)

    book_quantity = int(book_record[24])
    book_add(book_record, book_quantity, book_ID)
    book_record_display(book_record)
    break

elif book_ID == 6:

    while valid_n == True:

        try:
            book_no_of_day = int(input("\nFor how many days has been the book
borrowed??? "))
            break

        except:
            print("\nEnter a valid day.")

    book_fine(book_no_of_day, name, book_record, book_ID)

    book_quantity = int(book_record[29])
    book_add(book_record, book_quantity, book_ID)
    book_record_display(book_record)
    break

elif book_ID == 7:

```

```
while valid_n == True:

    try:
        book_no_of_day = int(input("\nFor how many days has been the book
borrowed??? "))
        break

    except:
        print("\nEnter a valid day.")

book_fine(book_no_of_day, name, book_record, book_ID)

book_quantity = int(book_record[34])
book_add(book_record, book_quantity, book_ID)
book_record_display(book_record)
break

elif book_ID == 8:

    while valid_n == True:

        try:
            book_no_of_day = int(input("\nFor how many days has been the book
borrowed??? "))
            break

        except:
            print("\nEnter a valid day.")

    book_fine(book_no_of_day, name, book_record, book_ID)
```

```
book_quantity = int(book_record[39])
book_add(book_record, book_quantity, book_ID)
book_record_display(book_record)
break
```

```
elif book_ID == 9:
```

```
while valid_n == True:
```

```
    try:
        book_no_of_day = int(input("\nFor how many days has been the book
borrowed??? "))
        break
```

```
    except:
        print("\nEnter a valid day.")
```

```
book_fine(book_no_of_day, name, book_record, book_ID)
```

```
book_quantity = int(book_record[44])
book_add(book_record, book_quantity, book_ID)
book_record_display(book_record)
break
```

```
elif book_ID == 10:
```

```
while valid_n == True:
```

```
    try:
        book_no_of_day = int(input("\nFor how many days has been the book
borrowed??? "))
```

break

except:

print("\nEnter a valid day.")

book_fine(book_no_of_day, name, book_record, book_ID)

book_quantity = int(book_record[49])

book_add(book_record, book_quantity, book_ID)

book_record_display(book_record)

break

else:

print("Error!!!No book with such book ID.")

break

def book_fine(book_no_of_day, name, book_record, book_ID):

if int(book_no_of_day) > 10:

book_fine_bill(name, book_record, book_ID, book_no_of_day)

else:

book_no_fine_bill(name, book_record, book_ID)

def book_fine_bill(name, book_record, book_ID, book_no_of_day):

name_of_book = book_counts(book_record, book_ID)

```
book_fine_amount = (int(book_no_of_day) - 10) * 1
bill_date_time = datetime.datetime.now().replace(microsecond=0)
```

```
hour = str((datetime.datetime.now().hour))
minute = str(datetime.datetime.now().minute)
second = str(datetime.datetime.now().second)
unique_file_number = hour+minute+second
```

```
file = open("r_"+name+"_"+unique_file_number+".txt", "w")
file.write("-----LIBRARY MANAGEMENT SYSTEM-----")
file.write("\n")
file.write("\nBILL FOR FINE:")
file.write("\n-----")
file.write("\nCustomer name \t\t\t: "+name)
file.write("\n-----")
file.write("\nDate and Time \t\t\t: "+str(bill_date_time))
file.write("\n-----")
file.write("\nName of the borrowed book \t: "+name_of_book)
file.write("\n-----")
file.write("\nFine amount \t\t\t: $" +str(book_fine_amount))
file.write("\n-----")
file.write("\n\nHope you had a good time reading the book.")
file.close()
```

```

def book_no_fine_bill(name, book_record, book_ID):
    name_of_book = book_counts(book_record, book_ID)
    bill_date_time = datetime.datetime.now().replace(microsecond=0)

    hour = str((datetime.datetime.now().hour))
    minute = str(datetime.datetime.now().minute)
    second = str(datetime.datetime.now().second)
    unique_file_number = hour+minute+second

    file = open("r_"+name+"_ "+unique_file_number+".txt", "w")
    file.write("-----LIBRARY MANAGEMENT SYSTEM-----")
    file.write("\n")
    file.write("\nNO FINE:")
    file.write("\n-----")
    file.write("\n")
    file.write("\nCustomer name \t\t\t: "+name)
    file.write("\n-----")
    file.write("\n")
    file.write("\nDate and Time \t\t\t: "+str(bill_date_time))
    file.write("\n-----")
    file.write("\n")
    file.write("\nName of the borrowed book \t:" +name_of_book)
    file.write("\n-----")
    file.write("\n")
    file.write("\nNO FINE :D. The book was returned on time.")
    file.write("\n-----")
    file.write("\n")

```

```
file.write("\n\nHope you had a good time reading the book.")
```

```
file.close()
```