LONDON METROPOLITAN UNIVERSITY

Islington college
(इस्लिङ्टन कलेज)

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CC4002NA Information Systems

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Year and Semester

2018-19 Autumn

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London Met ID:

College ID: np01cp4a180122

Assignment Due Date: January 18 2019

Assignment Submission Date: January 18 2019

I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.

Purpose

The libraries in our community usually uses records that are handwritten. In a world of technology, this method is very unreliable. The approach for this problem can be to create a software that can display all the books that are available for borrowing, be able to show a note when a book is either borrowed or returned.

Problem statement

In the modern time where technology is at its most use, the handwritten method to store all the information about the books is not the most convenient method. It is not a very secure way to store the information as the pages can be torn or the whole book can be misplaced. If once lost track of the books, it can be quite hard for the librarian to know the availability of the books. It also consumes a lot of time to write it in a logbook or to search about a particular customer's data.

Aims and objectives

The main objectives of this program are:

1. To secure the information about the books.
2. To make the data more accurate and reliable.
3. To be able to quickly search and store the data about the books.

Proposed approach

The problem can be dealt by creating an application with the help of python that lets the user to keep track of all the books either lent or returned.

Targeted audience

This application is created mostly based on the problems of a librarian. So, the main targeted audience would be a librarian.

Hardware and software requirements

The program that is created is a very simple python-based program. So python software is a must and any pc that is able run it properly can be used.

Activity description and timeline

PROJECT NAME	PROJECT DURATION	PROJECT START DATE	PROJECT END DATE
library management system	23	25/12/2018	19/01/2019

Task ID	Task Description	Task Duration	Start Date	End date
1	Planning	3	25/12/2018	28/12/2018
2	Research	2	28/12/2018	30/12/2018
3	Porposal writing	1	30/12/2018	31/12/2018
4	Algorithm	2	31/12/2018	02/01/2019
5	Coding	7	02/01/2019	09/01/2019
6	Flowchart	4	09/01/2019	13/01/2019
7	Pseudo Code	2	13/01/2019	15/01/2019
8	Testing	2	15/01/2019	17/01/2019

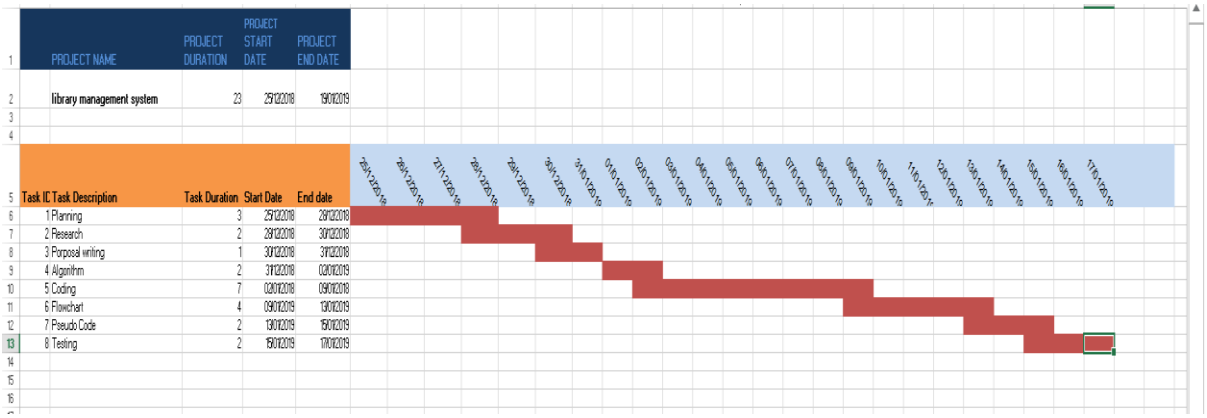


Figure 1 Gantta chart

Contents

Introduction

The handwritten method that is used to record the information of the books in the library is not the best way to do it. The best solution to overcome this problem is to create a software that can display all the books available for borrowing and keeps all the information about the lent books. The program takes an integer as an input. the program runs according to the input given by the user. When the user enters 1, the program allows the user to borrow a book. When the user enters 2, the program allows the user to return the book and if the user enters 3, it allows the user to exit the program. If the user gives the input besides any of these number,

When 1 is entered, the program displays all the information of all the books . Then the program asks for the user to enter the bookID to check for its availability. If the book is available, the program asks for the user to enter his/her name and the quantity of the book to be borrowed. The program then provides the date and time at which the book was lent with its total price. When 2 is entered , the program allows the librarian to enter the number of days after which the books were returned. If the books were returned after 10 days, the program adds the price of the book for each day. When 3 is entered the program ends and it closes by itself.

The application is programmed to run unless the librarian decides to close the program.

Some of the key terms used in creating the program are:

Def (function name) - creates function in the program

While loop – it runs the loop until the statement is satisfied.

If else loop – it helps to compare between the input and run the program.

Import – it helps to call modules

f.write – it helps to write in text files.

Int – it converts any value given as input to convert into integer

Str – it heps to convert any value given to convert into string

Float - it heps to convert any value given to convert into decimal value

Return – it helps to return the value as a result of a function

f.close – it helps to close the file opened by the user.

\t – it helps to give tabbing in the program

\n – it helps to break the line

Discussion and analysis

For the completion of this program, various other applications were required. The coding to run the program was written using Python IDLE. It is an integrated developing program which can be run in any type of OS.

The explanation of the program and its working mechanism is done in Microsoft word. It is a program that helps to write and store information according to the will of the user. It also provides heading, bold, italics, table of contents and various other features.

The flowchart was created using Microsoft Visio. Visio allows the user to create a detailed flowchart with the help of its various features. It offers a wide range of built-in shapes, objects and stencils to work with. It is also a very easy and user friendly program.

The Gantt chart is a chart that shows the tasks done during a specific time. It was created using a Microsoft Excel. It shows how much time it was taken to finish a particular task.

Data structures

There are four ways for storing data collectively. They are:

1. List
2. Tuples
3. Dictionary
4. Set

List

A list in python is a data structure whose values in it can be changed. It is an ordered sequence of elements which can be accessed by the help of index. The elements present inside the list is known as its item. A list can be created by placing all the items inside a square bracket and the items are separated by commas. A list can contain any type of data. (w3resource, 2018)

Some examples of list are:

a_list = [], b_list= [“Sohail”, 18, “Dangol”]

To access a list, python has provided us with index. The first item in the list is assigned with 0 and second item with 1 and so on.

For example:

Print(b_list[1]) will give 18 as the output.

There are various operations that can be done in a list. They are:

- L.append() work
- Del(L[index])
- L.pop()
- L.remove(element)

Tuple

Tuple is a data structure whose values in it cannot be changed. It is an ordered sequence of elements and can store various types of elements. The functions of a tuple is as same as of the list. Tuples are immutable as of lists are mutable. Once a tuple is made, the items in it cannot be modified. The iteration in tuples work as same way a list works. Tuples are mostly used for storing constants.

Some examples of tuple are:

T= (1, 2, 3, 4), Y_tuple= (“name”, “class”, 12)

Dictionary

A dictionary is an unordered collection of key-value pairs with unique keys. A dictionary in python can be denoted by using curly brackets. As of tuple, the values could not be changed. But dictionaries are mutable. (DigitalOcean™ Inc, 2018) So the items in it can be easily added or removed. We can also create custom keys for each items in the dictionary.

Some examples of dictionary are:

Age_of_people= {“Sohail”: 18, “Prasanna”:20, “Binil”:10},

Marks= {“Ram”:20, “Shyam”: 50}

We can print the values in the dictionary by the help of keys. Keys work as index for the dictionary. For example:

Print(Marks[“Ram”]) will give the output 20

We can also iterate the values in the dictionary in the following way:

```
For key, value in Age_of_people():
    Print(key, value)
```

Sets

A set is a data structure which contains unordered collection of elements. Sets are also mutable, so the values in it can be easily modified or removed. It is different from other types of data structures as it doesn't contain duplicate elements. A set is usually used to check whether a specific element is contained in that set. Sets are denoted by curly brackets.

Some examples of set are:

Numbers= {2, 5, 4, 1}

names={Sohail, Sai, Sohail}

The values in a set can be iterated by using a for loop:

```
For o in numbers:
    Print(o) gives output as 1 2 3 4
```

A set can also be converted into a list:

```
S= list(set(names)
```

The operations that can be done in a set are demonstrated below:

```
a= {5, 4, 3, 2, 1}
b= {1, 3, 5, 7, 9}
print(a.union(b))
print(a.intersection(b))
print(a.difference(b))
print(b.difference(a))
print(a.symmetric_difference(b))
print(len(a))
```

Research

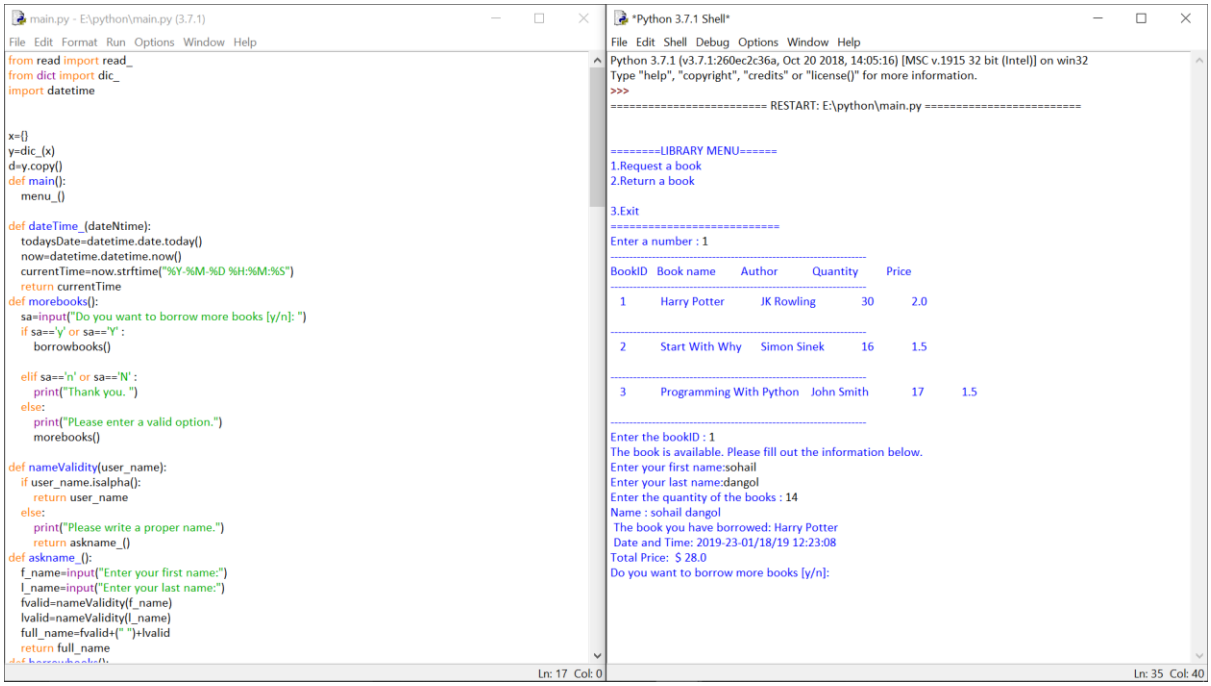
To create a bug-free program, I had to search a lot about the python programming on the internet. The books that I read to make the python were, Fundamentals of Python: First Programs, Python Fundamentals, Modular Programming with Python, Learning Python in 7 days and Learning Programming with Cody Jackson.

Fundamental of Python: First Programs is a book related to Data types, Text file, List and Dictionaries etc. Python Fundamentals is a book about data structures which helps to identify the efficient way to store data and information. Modular Programming with Python is a book that teaches us to do modular programming. Learning Python in 7 days is a book which teaches about the syntax that can be used in python. The book also contains information about functions, arguments and return values. Learning programming with Cody Jackson is a book which describes about the various syntax about the python.

The websites that I found very useful during the coding were: stackoverflow.com, tutorialspoint.com, pythonforbeginners.com, python.org and learnpython.org.

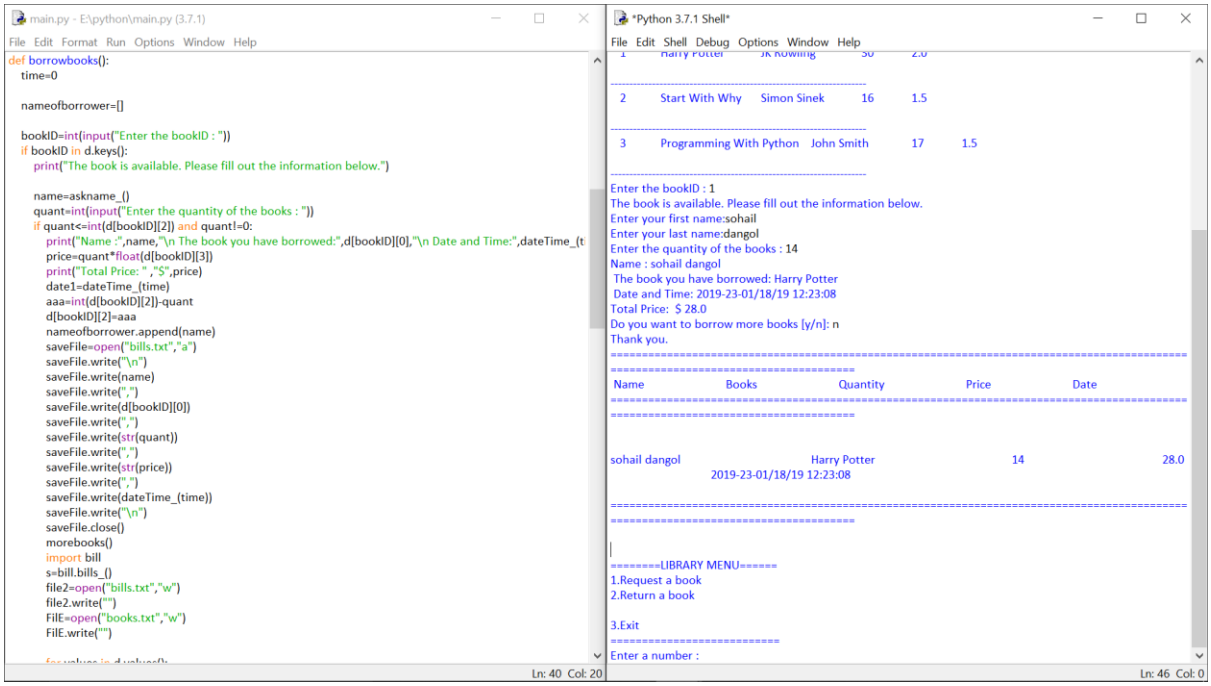
Stackoverflow.com is a website where a user can ask their problems and various other user answers their problem with the solution. It also acts as a blog and also helps other users who have the similar types of problems. Tutorialspoint.com is a website that offers tutorials which helps the user to learn about python efficiently. Pythonforbeginners.com is a website that contains a lot of python coding guides and snippets that can help to create projects. Python.org is also a similar website that contains a lot of references, materials and resources to work with the programming language. Learnpython.org is a platform that lets the user to participate in interactive tutorials. It doesn't require any type of software and helps the user to do python programming on their browser.

Program



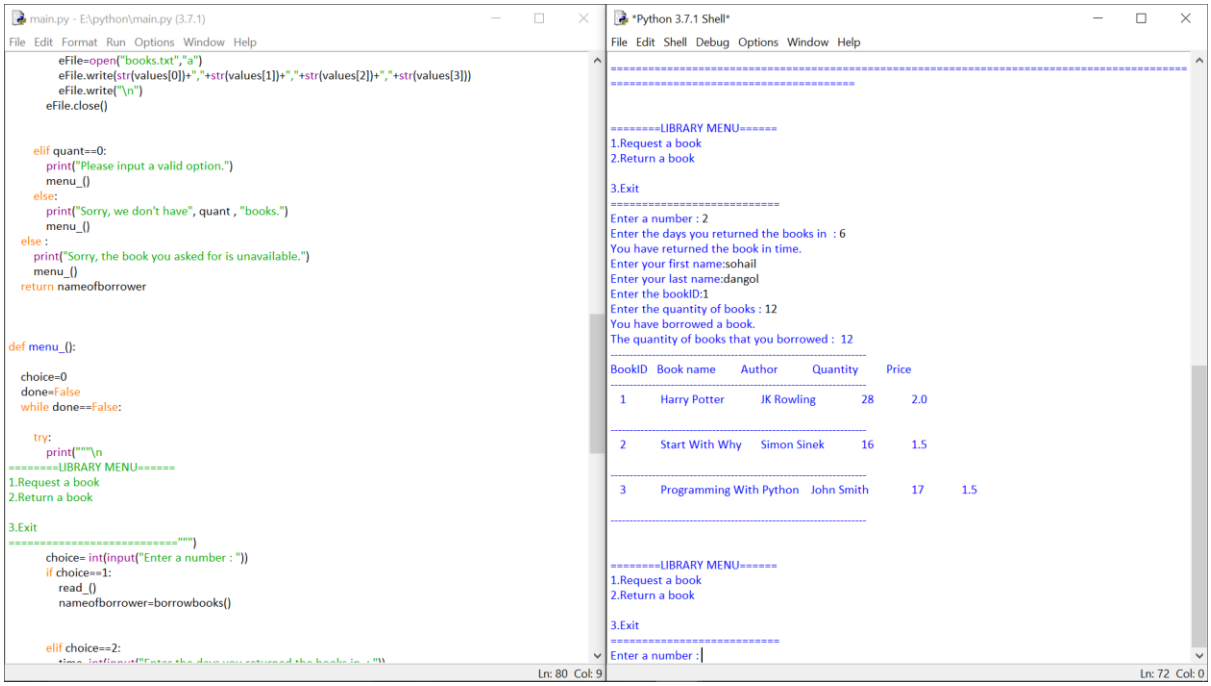
```
main.py - E:\python\main.py (3.7.1)
File  Edit  Format  Run  Options  Window  Help
from read import read_
from dict import dic_
import datetime


x={}
y=dic_(x)
d=y.copy()
def main():
    menu_()

def dateTime_(dateNtime):
    todaysDate=datetime.date.today()
    now=datetime.datetime.now()
    currentTime=now.strftime("%Y-%M-%D %H:%M:%S")
    return currentTime
def morebooks():
    sa=input("Do you want to borrow more books [y/n]: ")
    if sa=='y' or sa=='Y' :
        borrowbooks()

    elif sa=='n' or sa=='N' :
        print("Thank you. ")
    else:
        print("PLease enter a valid option.")
        morebooks()

def nameValidity(user_name):
    if user_name.isalpha():
        return user_name
    else:
        print("Please write a proper name.")
        return askname_()
def askname_():
    f_name=input("Enter your first name:")
    l_name=input("Enter your last name:")
    fvalid=nameValidity(f_name)
    lvalid=nameValidity(l_name)
    full_name=fvalid+(" ")+lvalid
    return full_name
def borrowbooks():
                                                                    Ln: 17  Col: 0
```

```
*Python 3.7.1 Shell*
File  Edit  Shell  Debug  Options  Window  Help
Python 3.7.1 (v3.7.1:260ec2c36a, Oct 20 2018, 14:05:16) [MSC v.1915 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: E:\python\main.py ==========


========LIBRARY MENU======
1.Request a book
2.Return a book

3.Exit
============================
Enter a number : 1
-------------------------------------------------------------------------
BookID  Book name       Author          Quantity        Price
-------------------------------------------------------------------------
 1      Harry Potter    JK Rowling      30      2.0

-------------------------------------------------------------------------
 2      Start With Why  Simon Sinek     16      1.5

-------------------------------------------------------------------------
 3      Programming With Python  John Smith     17      1.5

-------------------------------------------------------------------------
Enter the bookID : 1
The book is available. Please fill out the information below.
Enter your first name:sohail
Enter your last name:dangol
Enter the quantity of the books : 14
Name : sohail dangol
 The book you have borrowed: Harry Potter
 Date and Time: 2019-23-01/18/19 12:23:08
Total Price:  $ 28.0
Do you want to borrow more books [y/n]:
                                                                    Ln: 35  Col: 40
```



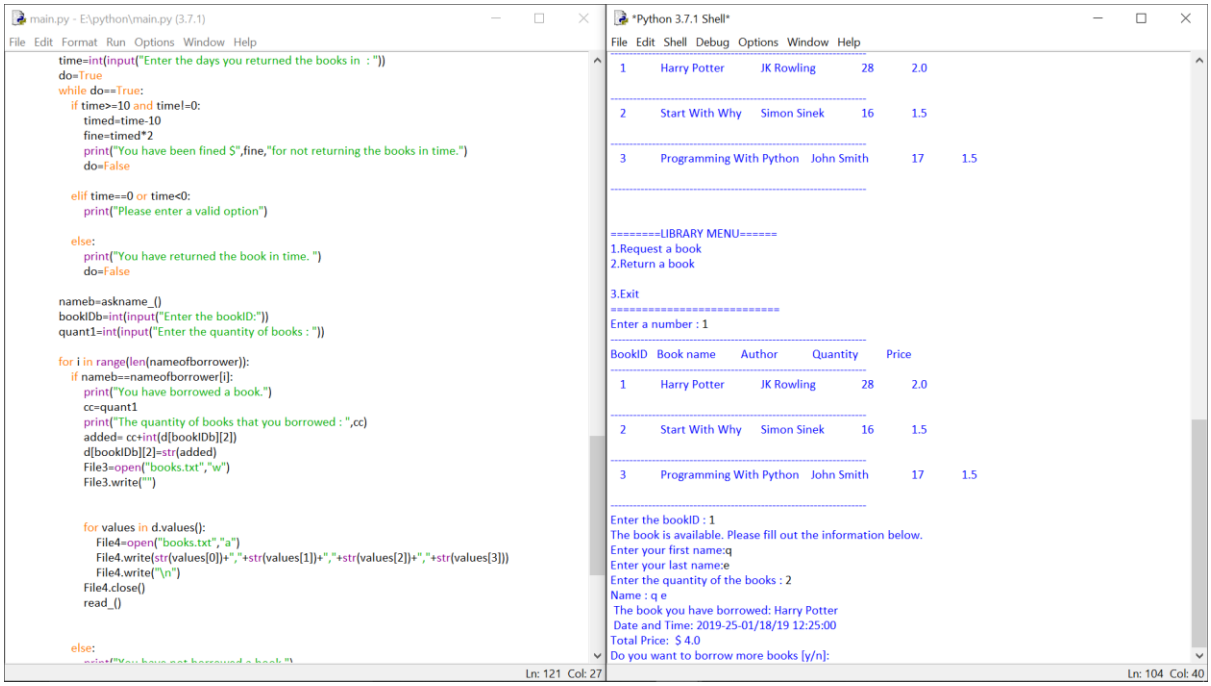
```
def borrowbooks():
    time=0

    nameofborrower=[]

    bookID=int(input("Enter the bookID : "))
    if bookID in d.keys():
        print("The book is available. Please fill out the information below.")

        name=askname_()
        quant=int(input("Enter the quantity of the books : "))
        if quant<=int(d[bookID][2]) and quant!=0:
            print("Name :",name,"\n The book you have borrowed:",d[bookID][0],"\n Date and Time:",dateTime_(t
            price=quant*float(d[bookID][3])
            print("Total Price: ","$",price)
            date1=dateTime_(time)
            aaa=int(d[bookID][2])-quant
            d[bookID][2]=aaa
            nameofborrower.append(name)
            saveFile=open("bills.txt","a")
            saveFile.write("\n")
            saveFile.write(name)
            saveFile.write(",")
            saveFile.write(d[bookID][0])
            saveFile.write(",")
            saveFile.write(str(quant))
            saveFile.write(",")
            saveFile.write(str(price))
            saveFile.write(",")
            saveFile.write(dateTime_(time))
            saveFile.write("\n")
            saveFile.close()
            morebooks()
            import bill
            s=bill.bills_()
            file2=open("bills.txt","w")
            file2.write("")
            FilE=open("books.txt","w")
            FilE.write("")
```

```
2       Start With Why      Simon Sinek         16        1.5

-------------------------------------------------------------------------------
3       Programming With Python     John Smith          17        1.5

-------------------------------------------------------------------------------
Enter the bookID : 1
The book is available. Please fill out the information below.
Enter your first name:sohail
Enter your last name:dangol
Enter the quantity of the books : 14
Name : sohail dangol
 The book you have borrowed: Harry Potter
 Date and Time: 2019-23-01/18/19 12:23:08
Total Price:  $ 28.0
Do you want to borrow more books [y/n]: n
Thank you.
================================================================================
========================================
Name                    Books                   Quantity                Price                   Date
================================================================================
========================================


sohail dangol                   Harry Potter                    14                      28.0
                        2019-23-01/18/19 12:23:08

================================================================================
========================================

========LIBRARY MENU======
1.Request a book
2.Return a book

3.Exit
============================
Enter a number :
```



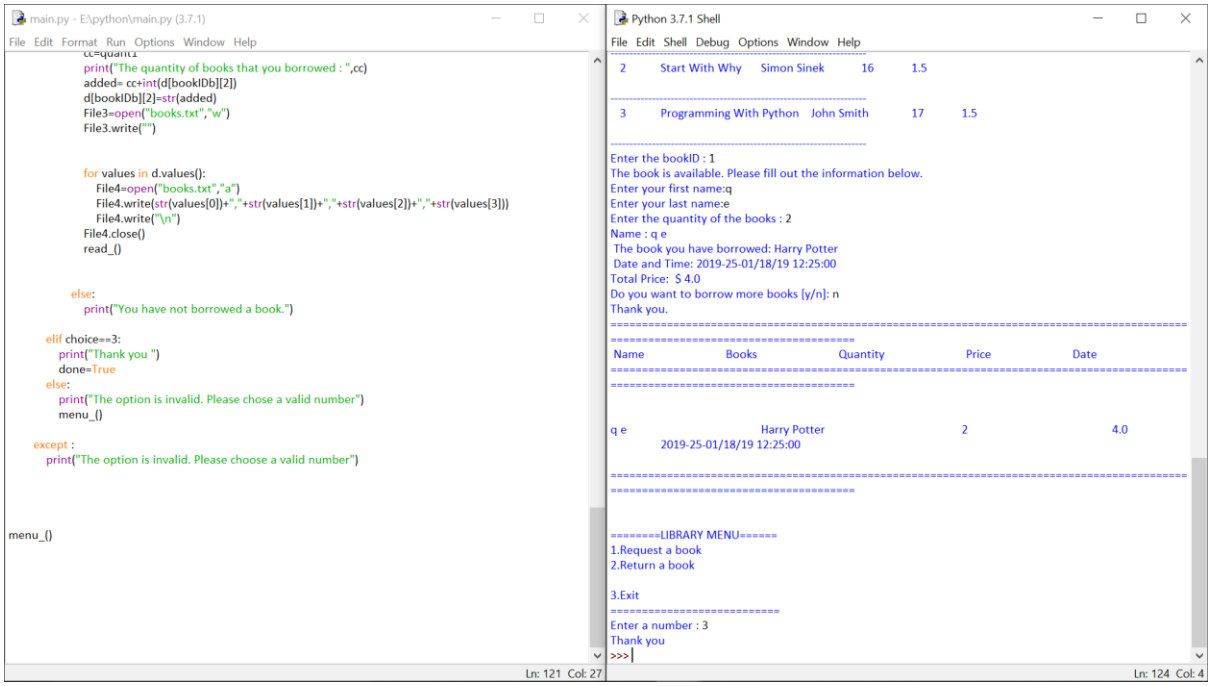
```
            eFile=open("books.txt","a")
            eFile.write(str(values[0])+","+str(values[1])+","+str(values[2])+","+str(values[3]))
            eFile.write("\n")
        eFile.close()


    elif quant==0:
        print("Please input a valid option.")
        menu_()
    else:
        print("Sorry, we don't have", quant , "books.")
        menu_()
else :
    print("Sorry, the book you asked for is unavailable.")
    menu_()
return nameofborrower



def menu_():

    choice=0
    done=False
    while done==False:

        try:
            print("""\n
========LIBRARY MENU======
1.Request a book
2.Return a book

3.Exit
============================""")
            choice= int(input("Enter a number : "))
            if choice==1:
                read_()
                nameofborrower=borrowbooks()


            elif choice==2:
```

```
================================================================================
========================================


========LIBRARY MENU======
1.Request a book
2.Return a book

3.Exit
============================
Enter a number : 2
Enter the days you returned the books in  : 6
You have returned the book in time.
Enter your first name:sohail
Enter your last name:dangol
Enter the bookID:1
Enter the quantity of books : 12
You have borrowed a book.
The quantity of books that you borrowed :  12
-------------------------------------------------------------------------------
BookID  Book name       Author          Quantity        Price
-------------------------------------------------------------------------------
1       Harry Potter        JK Rowling          28        2.0

-------------------------------------------------------------------------------
2       Start With Why      Simon Sinek         16        1.5

-------------------------------------------------------------------------------
3       Programming With Python     John Smith          17        1.5

-------------------------------------------------------------------------------


========LIBRARY MENU======
1.Request a book
2.Return a book

3.Exit
============================
Enter a number :
```



```
main.py - E:\python\main.py (3.7.1)
File  Edit  Format  Run  Options  Window  Help
        time=int(input("Enter the days you returned the books in  : "))
        do=True
        while do==True:
            if time>=10 and time!=0:
                timed=time-10
                fine=timed*2
                print("You have been fined $",fine,"for not returning the books in time.")
                do=False

            elif time==0 or time<0:
                print("Please enter a valid option")

            else:
                print("You have returned the book in time. ")
                do=False

        nameb=askname_()
        bookIDb=int(input("Enter the bookID:"))
        quant1=int(input("Enter the quantity of books : "))

        for i in range(len(nameofborrower)):
            if nameb==nameofborrower[i]:
                print("You have borrowed a book.")
                cc=quant1
                print("The quantity of books that you borrowed : ",cc)
                added= cc+int(d[bookIDb][2])
                d[bookIDb][2]=str(added)
                File3=open("books.txt","w")
                File3.write("")


                for values in d.values():
                    File4=open("books.txt","a")
                    File4.write(str(values[0])+","+str(values[1])+","+str(values[2])+","+str(values[3]))
                    File4.write("\n")
                File4.close()
                read_()


            else:
Ln: 121  Col: 27
```

```
*Python 3.7.1 Shell*
File  Edit  Shell  Debug  Options  Window  Help
------------------------------------------------------------------------------------------
 1       Harry Potter          JK Rowling          28          2.0

------------------------------------------------------------------------------------------
 2       Start With Why        Simon Sinek         16          1.5

------------------------------------------------------------------------------------------
 3       Programming With Python    John Smith     17          1.5

------------------------------------------------------------------------------------------


========LIBRARY MENU======
1.Request a book
2.Return a book

3.Exit
============================
Enter a number : 1
------------------------------------------------------------------------------------------
BookID  Book name       Author          Quantity        Price
------------------------------------------------------------------------------------------
 1       Harry Potter          JK Rowling          28          2.0

------------------------------------------------------------------------------------------
 2       Start With Why        Simon Sinek         16          1.5

------------------------------------------------------------------------------------------
 3       Programming With Python    John Smith     17          1.5

------------------------------------------------------------------------------------------
Enter the bookID : 1
The book is available. Please fill out the information below.
Enter your first name:q
Enter your last name:e
Enter the quantity of the books : 2
Name : q e
 The book you have borrowed: Harry Potter
 Date and Time: 2019-25-01/18/19 12:25:00
Total Price:  $ 4.0
Do you want to borrow more books [y/n]:
Ln: 104  Col: 40
```

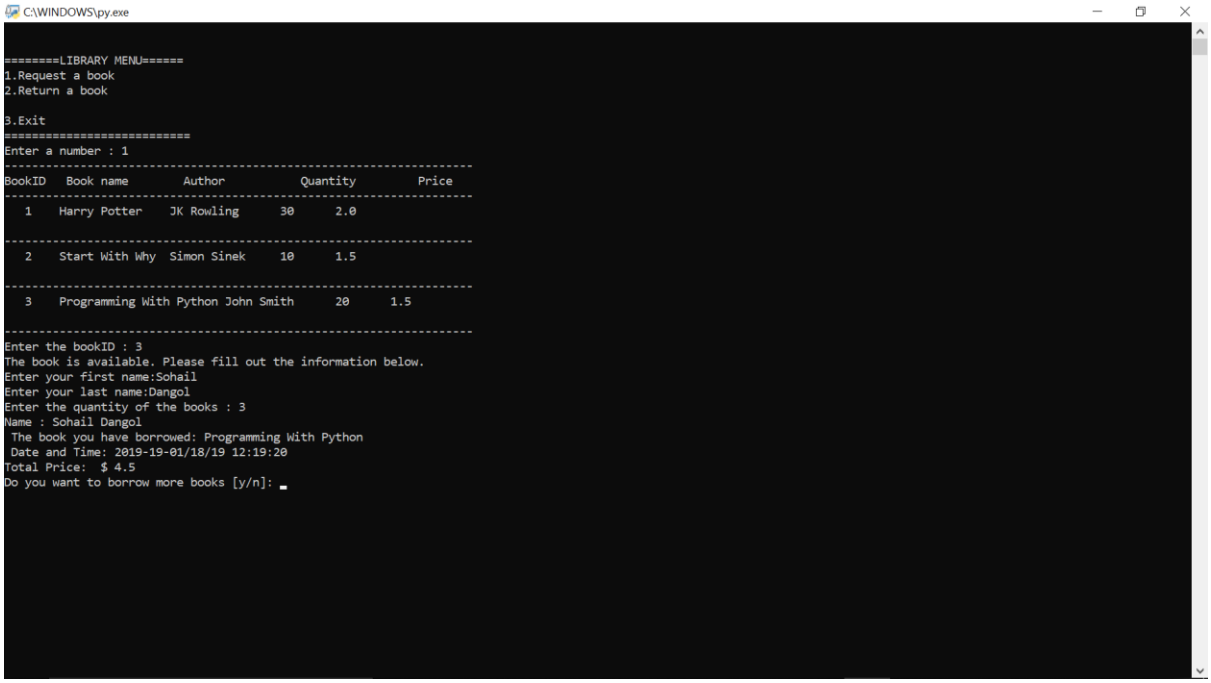


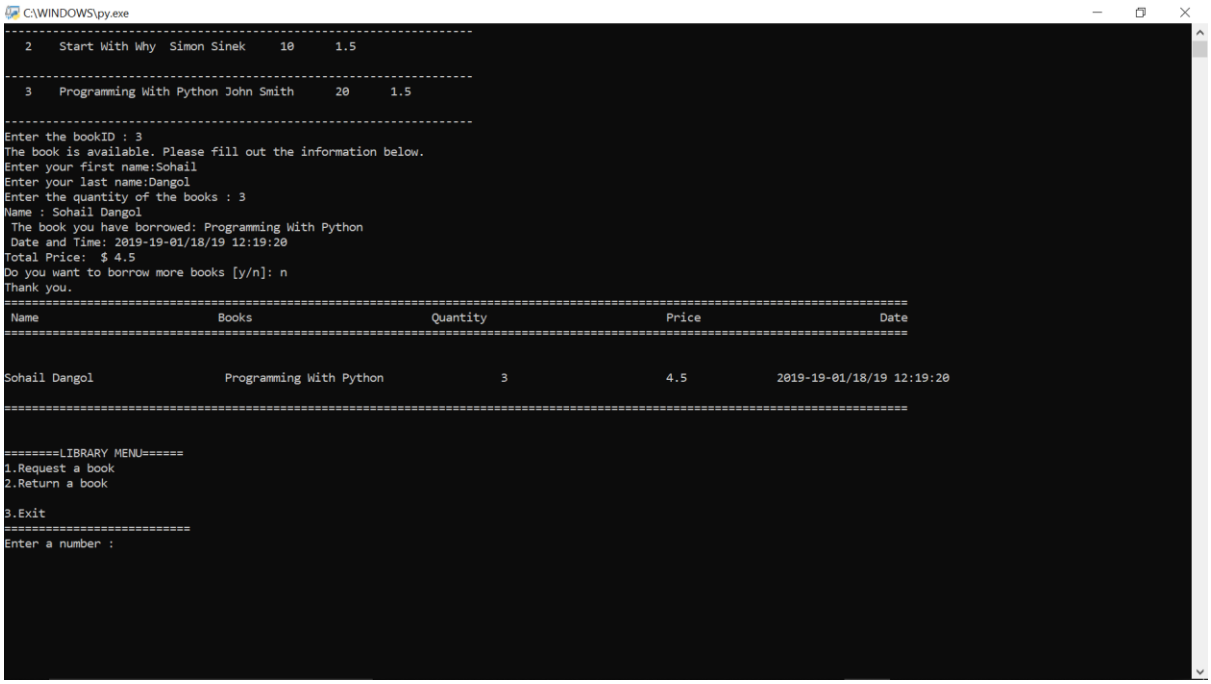
```
main.py - E:\python\main.py (3.7.1)
File  Edit  Format  Run  Options  Window  Help
                print("The quantity of books that you borrowed : ",cc)
                added= cc+int(d[bookIDb][2])
                d[bookIDb][2]=str(added)
                File3=open("books.txt","w")
                File3.write("")


                for values in d.values():
                    File4=open("books.txt","a")
                    File4.write(str(values[0])+","+str(values[1])+","+str(values[2])+","+str(values[3]))
                    File4.write("\n")
                File4.close()
                read_()


            else:
                print("You have not borrowed a book.")

        elif choice==3:
            print("Thank you ")
            done=True
        else:
            print("The option is invalid. Please chose a valid number")
            menu_()

    except :
        print("The option is invalid. Please choose a valid number")



menu_()
Ln: 121  Col: 27
```

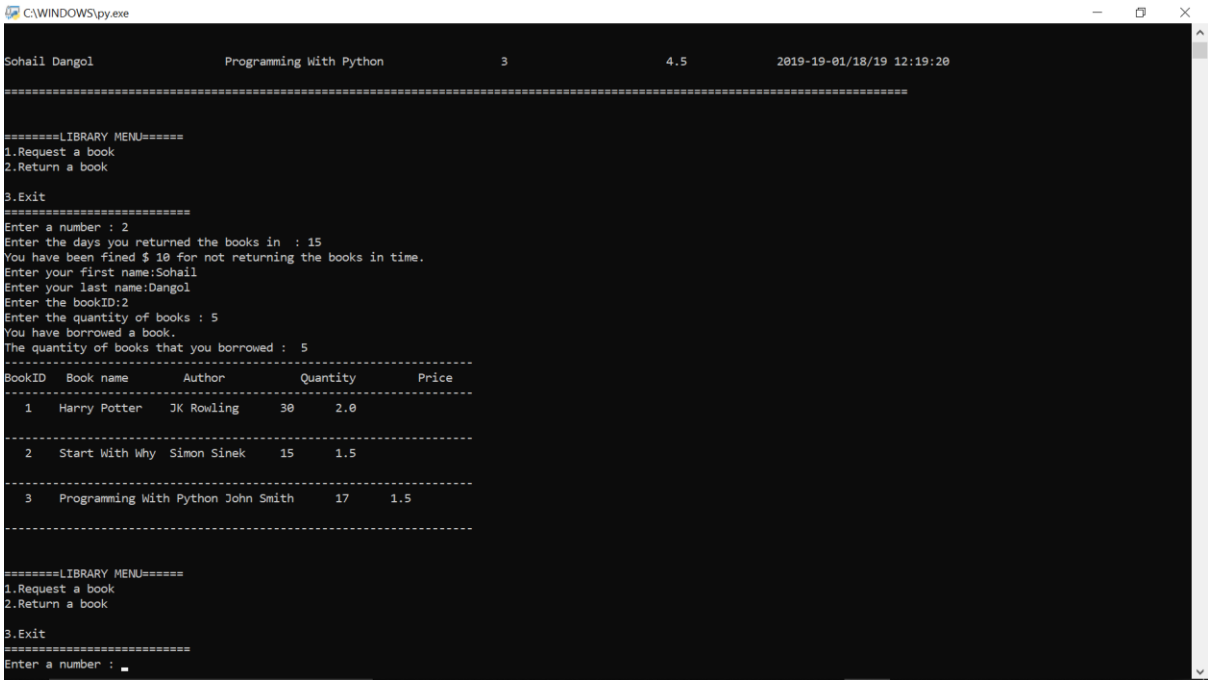
```
Python 3.7.1 Shell
File  Edit  Shell  Debug  Options  Window  Help
------------------------------------------------------------------------------------------
 2       Start With Why        Simon Sinek         16          1.5

------------------------------------------------------------------------------------------
 3       Programming With Python    John Smith     17          1.5

------------------------------------------------------------------------------------------
Enter the bookID : 1
The book is available. Please fill out the information below.
Enter your first name:q
Enter your last name:e
Enter the quantity of the books : 2
Name : q e
 The book you have borrowed: Harry Potter
 Date and Time: 2019-25-01/18/19 12:25:00
Total Price:  $ 4.0
Do you want to borrow more books [y/n]: n
Thank you.
==========================================================================================
==========================================
Name                Books                Quantity            Price               Date
==========================================================================================
==========================================


q e                         Harry Potter                2                   4.0
                2019-25-01/18/19 12:25:00

==========================================================================================
==========================================


========LIBRARY MENU======
1.Request a book
2.Return a book

3.Exit
============================
Enter a number : 3
Thank you
>>>
Ln: 124  Col: 4
```

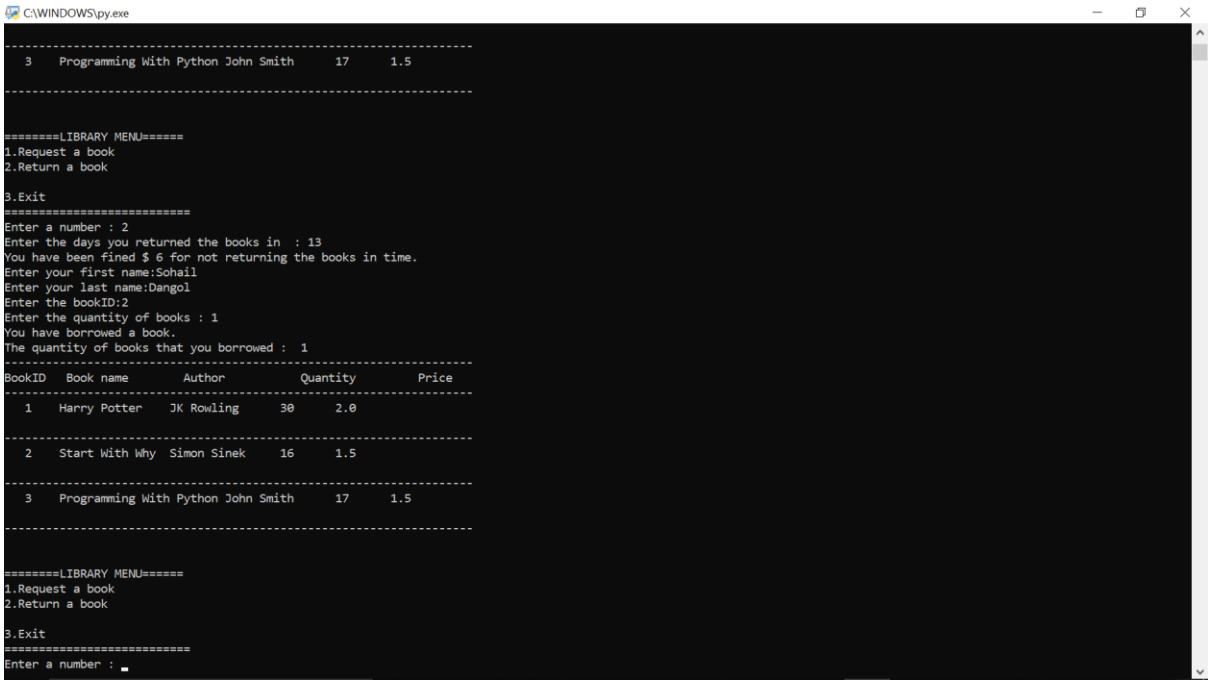
Testing


C:\WINDOWS\py.exe
========LIBRARY MENU======
1.Request a book
2.Return a book
3.Exit
==========
Enter a number :


C:\WINDOWS\py.exe
========LIBRARY MENU======
1.Request a book
2.Return a book
3.Exit
==========
Enter a number : 1
BookID Book name Author Quantity Price
1 Harry Potter JK Rowling 30 2.0
2 Start With Why Simon Sinek 10 1.5
3 Programming With Python John Smith 20 1.5
Enter the bookID : 3
The book is available. Please fill out the information below.
Enter your first name:Sohail
Enter your last name:Dangol
Enter the quantity of the books : 3
Name : Sohail Dangol
The book you have borrowed: Programming With Python
Date and Time: 2019-19-01/18/19 12:19:20
Total Price: $ 4.5
Do you want to borrow more books [y/n]:


C:\WINDOWS\py.exe
2 Start With Why Simon Sinek 10 1.5
3 Programming With Python John Smith 20 1.5
Enter the bookID : 3
The book is available. Please fill out the information below.
Enter your first name:Sohail
Enter your last name:Dangol
Enter the quantity of the books : 3
Name : Sohail Dangol
The book you have borrowed: Programming With Python
Date and Time: 2019-19-01/18/19 12:19:20
Total Price: $ 4.5
Do you want to borrow more books [y/n]: n
Thank you.
Name Books Quantity Price Date
Sohail Dangol Programming With Python 3 4.5 2019-19-01/18/19 12:19:20
========LIBRARY MENU======
1.Request a book
2.Return a book
3.Exit
Enter a number :


C:\WINDOWS\py.exe
Sohail Dangol Programming With Python 3 4.5 2019-19-01/18/19 12:19:20
========LIBRARY MENU======
1.Request a book
2.Return a book
3.Exit
Enter a number : 2
Enter the days you returned the books in : 15
You have been fined $ 10 for not returning the books in time.
Enter your first name:Sohail
Enter your last name:Dangol
Enter the bookID:2
Enter the quantity of books : 5
You have borrowed a book.
The quantity of books that you borrowed : 5
BookID Book name Author Quantity Price
1 Harry Potter JK Rowling 30 2.0
2 Start With Why Simon Sinek 15 1.5
3 Programming With Python John Smith 17 1.5
========LIBRARY MENU======
1.Request a book
2.Return a book
3.Exit
Enter a number :


C:\WINDOWS\py.exe
3 Programming With Python John Smith 17 1.5
========LIBRARY MENU======
1.Request a book
2.Return a book
3.Exit
Enter a number : 2
Enter the days you returned the books in : 13
You have been fined $ 6 for not returning the books in time.
Enter your first name:Sohail
Enter your last name:Dangol
Enter the bookID:2
Enter the quantity of books : 1
You have borrowed a book.
The quantity of books that you borrowed : 1
BookID Book name Author Quantity Price
1 Harry Potter JK Rowling 30 2.0
2 Start With Why Simon Sinek 16 1.5
3 Programming With Python John Smith 17 1.5
========LIBRARY MENU======
1.Request a book
2.Return a book
3.Exit
Enter a number :

Pseudocode

Main module

```
from read import read_
from dict import dic_
import datetime



x={}
y=dic_(x)
d=y.copy()
def main():
menu_()

def dateTime_(dateNtime):
todaysDate=datetime.date.today()
now=datetime.datetime.now()
currentTime=now.strftime("%Y-%M-%D %H:%M:%S")
return currentTime
def morebooks():
sa=input("Do you want to borrow more books [y/n]: ")
if sa=='y' or sa=='Y' :
borrowbooks()

elif sa=='n' or sa=='N' :
print("Thank you. ")
else:
print("PLease enter a valid option.")
morebooks()
```

```
def nameValidity(user_name):
if user_name.isalpha():
return user_name
else:
print("Please write a proper name.")
return askname_()
def askname_():
f_name=input("Enter your first name:")
l_name=input("Enter your last name:")
fvalid=nameValidity(f_name)
lvalid=nameValidity(l_name)
full_name=fvalid+(" ")+lvalid
return full_name
def borrowbooks():
time=0

nameofborrower=[]

bookID=int(input("Enter the bookID : "))
if bookID in d.keys():
print("The book is available. Please fill out the information below.")

name=askname_()
quant=int(input("Enter the quantity of the books : "))
if quant<=int(d[bookID][2]) and quant!=0:
print("Name :",name,"\n The book you have borrowed:",d[bookID][0],"\n Date and
Time:",dateTime_(time))
price=quant*float(d[bookID][3])
print("Total Price: " ,"$",price)
date1=dateTime_(time)
aaa=int(d[bookID][2])-quant
```

```
d[bookID][2]=aaa
nameofborrower.append(name)
saveFile=open("bills.txt","a")
saveFile.write("\n")
saveFile.write(name)
saveFile.write(",")
saveFile.write(d[bookID][0])
saveFile.write(",")
saveFile.write(str(quant))
saveFile.write(",")
saveFile.write(str(price))
saveFile.write(",")
saveFile.write(dateTime_(time))
saveFile.write("\n")
saveFile.close()
morebooks()
import bill
s=bill.bills_()
file2=open("bills.txt","w")
file2.write("")
FilE=open("books.txt","w")
FilE.write("")

for values in d.values():
eFile=open("books.txt","a")
eFile.write(str(values[0])+","+str(values[1])+","+str(values[2])+","+str(values[3]))
eFile.write("\n")
eFile.close()



elif quant==0:
```

```
print("Please input a valid option.")
menu_()
else:
print("Sorry, we don't have", quant , "books.")
menu_()
else :
print("Sorry, the book you asked for is unavailable.")
menu_()
return nameofborrower



def menu_():

choice=0
done=False
while done==False:

try:
print("""\n
========LIBRARY MENU======
1.Request a book
2.Return a book

3.Exit
============================""")
choice= int(input("Enter a number : "))
if choice==1:
read_()
nameofborrower=borrowbooks()
```

```
elif choice==2:
time=int(input("Enter the days you returned the books in  : "))
do=True
while do==True:
if time>=10 and time!=0:
timed=time-10
fine=timed*2
print("You have been fined $",fine,"for not returning the books in time.")
do=False

elif time==0 or time<0:
print("Please enter a valid option")

else:
print("You have returned the book in time. ")
do=False

nameb=askname_()
bookIDb=int(input("Enter the bookID:"))
quant1=int(input("Enter the quantity of books : "))

for i in range(len(nameofborrower)):
if nameb==nameofborrower[i]:
print("You have borrowed a book.")
cc=quant1
print("The quantity of books that you borrowed : ",cc)
added= cc+int(d[bookIDb][2])
d[bookIDb][2]=str(added)
File3=open("books.txt","w")
File3.write("")
```

```
for values in d.values():
File4=open("books.txt","a")
File4.write(str(values[0])+","+str(values[1])+","+str(values[2])+","+str(values[3]))
File4.write("\n")
File4.close()
read_()


else:
print("You have not borrowed a book.")

elif choice==3:
print("Thank you ")
done=True
else:
print("The option is invalid. Please chose a valid number")
menu_()

except :
print("The option is invalid. Please choose a valid number")




menu_()
```

Read module

```
def read_():
print("-----------------------------------------------------------------")
print("BookID   Book name       Author          Quantity        Price       ")
print("-----------------------------------------------------------------")
file=open("books.txt","r")
a=1

for line in file:
print("  ",a,"\t"+line.replace(",","\t"))
a=a+1
print("-----------------------------------------------------------------")
```

Dict module

```
def dic_(x):
file1=open("books.txt","r")
d={}
b=1
for line in file1:
line=line.replace("\n","")
line=line.replace("$","")
d[b]=line.split(",")
b=b+1
return d
```

Bill module

```
def bills_():

print("================================================================================
==================================================")

print(" Name                Books                Quantity                Price                Date")

print("================================================================================
==================================================")

file=open("bills.txt","r")


for line in file:

print(""+line.replace(",","\t\t\t"))


print("================================================================================
==================================================")
```

Algorithm

Algorithm is a step by step method to solve a problem. It is generally used for calculation related problems. (techopedia, 2019)

The algorithm for the project is as below:

Step 1: Start
Step 2: input the books of the library
Step 3: print the menu
Step 4: ask how the user wants to access the library
Step 5: if the user wants to go to option 1 then goto Step 6 ,if the user wants to go to option 2 then goto Step 15, if the user wants to go to option then go to step 18 ,if user inputs other value then ask him to input the valid number
Step 6: ask the user to enter the BookID he wants to borrow
Step 7: check whether the book is available or not
Step 8: if the book is available then goto step 9 else ask the user to ask for the books available in the library
Step 9: ask the user to enter his name

Step 10: Ask the user the number of books he wants to borrow
Step 11: If the number of books he entered is available then go to Step 12 else ask him to input the number of books available in the library
Step 12: Multiply the number of books by the price
Step 13: print the bill
Step 14: ask the user whether he wants to borrow more books. If the user prints 'yes' then go to step 6
Step 15: Ask the user how many has he returned and also ask how many days has it been since he borrowed the book
Step 16: if the number of days exceeds 10 then multiply the days more than 10 by 2
Step 17: else print thank you and go to step 18
Step 18: stop

References

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