D.A.V. PUBLIC SCHOOL, THERMAL COLONY, PANIPAT

INFORMATICS PRACTICES

PROJECT

ON

LIBRARY MANAGEMENT

FOR

AISSCE 2023-24 Examination

(As a part of the Informatics Practices Course(065))

Submitted By: Lakshita

Roll No.: ……

Under the guidance of:

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CERTIFICATE

This is to certify that Lakshita of class 12 S1,

D.A.V. Public School, Panipat School, has successfully completed her Investigatory Project as prescribed by CBSE in the year 2023-2024.

Date:

Roll No:

Signature of Subject Teacher Signature of External Examiner

_____ _____

ACKNOWLEDGEMENT

I undertook this project as part of my Class XII informatics practices course. I had tried to apply my best of knowledge and experience, gained during the study and class work experience. However, developing software system is generally a quite complex and time consuming process. It requires a systematic study, insight vision and professional approach during the design and development. Moreover, the developer always feels the need, the help and good values of people near you, who have considerable experience and idea. I would like to extend my sincere thanks and gratitude to my teacher **Ms. Ruchi Chawla.** I am very much thankful to our principal **Ms. Ritu Dilbagi** for giving valuable time and moral support to develop the software. I also feel indebted to my friends for the valuable suggestions during the project work.

CONTENTS

MODULES AND SOFTWARE USED

Operating system:-Windows 10 PRO Build 19042 685

Hardware: -Intel(R)Core (TM) i5-3470 CPU @3.20GHz, 8.00GB RAM, x64 operating system.

Software: -Jupyter Notebook (Anaconda3), Microsoft Word

2019 Language:-Python Pandas library, Python Matplotlib Library.

INTRODUCTION TO PYTHON AND PANDAS AND MATPLOTLIB

Python is a programming language developed by Guido Van Rossum in
Feb. 1991. It is easy to Learn and powerful object oriented Programming Language. It has following advantages: -

- Easy to Use
- Expressive Language
- Interpreted Language
- Its Completeness (all the required libraries are included at the time of installation)
- Cross Platform Language
- Free and Open Source
- Variety of Applications like –scripting, web applications, game development, system administrations, rapid prototyping, GUI Programs, Database Applications

Pandas is a Python package providing fast, flexible, and expressive data structures designed to make working with "relational" or "labeled" data both easy and intuitive. It aims to be the fundamental high-level building block for doing practical, real world data a

nalysis in Python. Additionally, it has the broader goal of becoming the most powerful and flexible opensource data analysis / manipulation tool available in any language. It is already well on its way toward this GOAL.

Pandas is well suited for many different kinds of data:

- Tabular data with heterogeneously typed columns, as in an SQL table or Excel spreadsheet
- Ordered and unordered (not necessarily fixed frequency) time series data.
- Arbitrary matrix data (homogeneously typed or heterogeneous) with row and column labels
- Any other form of observational / statistical data sets. The data actually need not be labeled at all to be placed into a panda's data structure.

Matplotlib is a python two-dimensional plotting library for data visualization and creating interactive graphics or plots. Using pythons matplotlib, the data visualization of large and complex data becomes easy. Using matplotlib we can plot different scatter plots, line graphs, bar graphs, pie chart and histograms. Matplotlib is:- • A multi-platform data visualization tool

- it's fast and efficient.

- It possesses the ability to work well with many operating systems and graphic backends.
- It possesses high-quality graphics and plots to print and view for a range of graphs such as histograms, bar charts, pie charts, scatter plots and heat maps.
- It has large community support and cross-platform support as it is an open-source tool.
- It has full control over graph or plot styles such as line properties, thoughts, and access properties.

PROBLEM DEFINITION AND ANALYSIS

The hardest part of building a software system is deciding precisely what to build. No other part of the conceptual work is so difficult as establishing the detailed technical requirement. Defining and applying good, complete requirements are hard to work, and success in this endeavor has eluded many of us. Yet, we continue to make progress.

Problem definition describes the What of a system, not How. The quality of a software product is only as good as the process that creates it. Problem definition is one of the most crucial steps in this creation process. Without defining a problem, developers do not know what to build, customers do not know what to expect, and there is no way to validate that the build system satisfies the requirement.

Problem definition and Analysis is the activity the encompasses learning about the problems to be solved, understanding the needs of customers and users, trying to find out who the user really is, and understanding all the constraints on the solution. It includes all activities related to the following:

- Identification and documentation of user needs.
- Creation of a document that describes the external behavior and the association constraints that will satisfy those needs.

- Analysis and validation of the required documents to ensure consistency, completeness, and feasibility.
- Evolution of needs.
- The proposed system should maintain all the records and should generate the required reports and information when required.
- To provide efficient and secure Information storage, ensuring the integrity and validity of records.
- To provide graphical and user-friendly interface to interact with a centralized database based on client server architecture.
- To identify the critical operation procedure and possibilities of simplification using modern IT tools and practices.

INTRODUCTION

Library management, also known as an automatic library system, is software that has been developed to handle basic housekeeping functions of a library.

It helps to provide information on any book presented in the library to the user as well as staff members. This task if carried out manually will be tedious and includes chances of mistakes. These errors are avoided by allowing the system to keep track of information such as issue date, last date to return the book and even fine information and thus there is no need to keep manual track of this information which thereby avoids chances of mistakes. Thus, the system reduces manual work to a great extent and allows smooth flow of library activities by removing chances of errors in the details.

MODULES

1. ADMIN LOGIN: Admin is the one who administers the system by adding or removing e-books into and from the system respectively.

2. USER LOGIN: Students have to register themselves into the system to create an account. After registering successfully, they can then login into the system by entering a 10digit mobile number and their email id.

3. ADD AND UPDATE BOOKS: The admin can add books to the system by entering the details of the books and can even update the details.

4. SEARCH OPTION: Admin and Students can even search for books by entering the name of the book.

5. VIEW ORDER: The admin can view order for the books and simultaneously the quantity of the book ordered will be decreased.

6. CALCULATE FINE: The student can view the issue and expiry date for the book issued and even calculate fine.

PROGRAM CODE

BOOK.py

```
impo
rt csv
book
= [
        ["1001","Twilight","Meyer, Stephenie","550","N"],
        ["1002","Lost Symbol, The", "Brown, Dan","450","N"],
        ["1003","One Day", "Nicholls, David","345","N"],
        ["2001","Life of Pi", "Martel, Yann","420","N"],
        ["2002","Small Island", "Levy,
Andrea","370","N"],          ["2003","Brick Lane",
"Ali, Monica","280","N"]]  with open ('book.csv',
'w', newline='') as a file:
    filewriter= csv.writer(afile, delimiter=',',lineterminator='\n')
file_writer.writerows(book)

with open ('book.csv', 'r') as file:

reader = csv.reader(file)

 for row in reader:
```

```
print(row)
```

MEMBER.py

```
 import csv member=
["A001","AMIT","","Y"
],
        ["B002","MEENA","","N"],
        ["C003","KANIKA","","N"],
        ["D001","CHARU","","N"],
        ["E002","MAHESH","","N"],
        ["F003","DIMPLE","","N"]]

with open('member.csv','w',newline='') as mfile:

filewriter = csv.writer(mfile,delimiter=',',lineterminator='\n')
filewriter.writerows(member)

 with open ('member.csv', 'r') as file:

        reader = csv.reader(file)

        for row in reader:

        print(row)
```

LIBRARY.py

```
import csv



def DispMenu():  print ("\n\n\n\t\t############# LIBRARY
MANAGEMENT ################")  print ("\n\t\t\t 1. BOOK
MANAGEMENT ")  print ("\n\t\t\t 2. MEMBER MANAGEMENT ")  print
("\n\t\t\t 3. ISSUE BOOK")  print ("\n\t\t\t 4. RETURN BOOK")
 print ("\n\t\t\t 5. EXIT ")
print("\t\t###########################################################")



 def BookMenu():
print ("\n\n\n\t\t############# BOOK MANAGEMENT ################")
 print ("\n\t\t\t 1. ADD
BOOK ")  print ("\n\t\t\t
2. DELETE BOOK ")  print
("\n\t\t\t 3. MODIFY
BOOK")  print ("\n\t\t\t 4.
DISPLAY BOOKS")
 print ("\n\t\t\t 5. EXIT ")
print("\t\t#########################################################")



 def MemberMenu():
    print ("\n\n\n\t\t############# MEMBER MANAGEMENT
################")       print ("\n\t\t\t 1. ADD MEMBER ")      print
```

```
("\n\t\t\t 2. DELETE MEMBER ")       print ("\n\t\t\t 3. MODIFY MEMBER")
print ("\n\t\t\t 4. DISPLAY MEMBERS")
     print ("\n\t\t\t 5. EXIT ")
print("\t\t#########################################################")



 def bookadd():
bookrec= []
file=open
('book.csv', 'r')
book1 =
csv.reader(file)
for brec in
book1:
          bookrec.append(brec)
  file.close()


 print ("Enter the following information")
bno=input ("Enter the book number:")
bname=input ("Enter book name:")
bauthor=input ("Enter author name:")
bprice=input ("Enter book price:")
brec1=[bno,bname,bauthor,bprice]
bookrec.append(brec1)  print ("book
added")


 with open ('book.csv', 'w',newline='') as file:
     writer = csv.writer(file)
```

```
    writer.writerows(bookrec)


 bookrec= []
file=open
('book.csv',
'r')  book1 =
csv.reader(fil
e)  for brec in
book1:
     bookrec.append(brec)
 file.close()
print(bookrec)


def
bookdelete():
bookrec= []
file=open
('book.csv', 'r')
book1 =
csv.reader(file)
for brec in
book1:
          bookrec.append(brec)
    file.close()


    bno=input ("Enter book Number to be deleted")
    flag=0
```

```
      for brec in
bookrec:            if
brec[0]==bno:
print("Book
Details:")
print(brec)
                bookrec.remove(brec)

flag=1
break
    if flag==1:
          print("Book has been deleted")
with open('book.csv','w',newline='') as
bcsv:


              bwriter = csv.writer(bcsv,delimiter=',',lineterminator='\n')
bwriter.writerows(bookrec)


 else:
         print("Book not found")


 bookrec=[]

file=open('book.
csv', 'r')  book1
=
csv.reader(file)
for brec in
```

```
book1:
bookrec.append
(brec)
 file.close()
 print(bookrec)


 def bookmodify():
         bookrec=[]
file=open('book.csv',
'r')          book1 =
csv.reader(file)
for brec in book1:
                  bookrec.append(brec)
          file.close()



 bno=input("Enter book Number to be modified")
 flag=0
 b1=0
 for brec in
bookrec:          if
brec[0]==bno:
print("Book
Details:")
print(brec)
               print("Enter the following information")
```

```
            bname=input("Enter book name:")
bauthor=input("Enter author name:")
bprice=input("Enter book price:")
br=[bno,bname,bauthor,bprice]              bookrec[b1]=br

flag=1
break
     b1=b1+1  if flag==1:
print("Book has been modified")
with open('book.csv','w',newline='') as
bcsv:
                bwriter = csv.writer(bcsv,delimiter=',',lineterminator='\n')

bwriter.writerows(bookrec)  else:
      print("Book not found")


  bookrec=[]
file=open('book.c
sv', 'r')    book1 =
csv.reader(file)
for brec in
book1:
      bookrec.append(brec)
  file.close()
  print(bookrec)

def bookdisp():
```

```
    bookrec=[]
file=open('book.csv', 'r')
book1 = csv.reader(file)

    print("\n\n\n##################BOOK DETAILS#######################")
print("%10s"%"BOOK NO","%20s"%"TITLE","%20s"%"AUTHOR","%"PRICE")
   for row in book1:

      print("%10s"%row[0],"%20s"%row[1],"%20s"%row[2],"%15s"%row[3])
print("\n###################### BOOK DETAILS ######################")
K=input("\n\nPress any key to continue")
  file.close()


def memberadd():
memberrec=[]
file=open('member.cs
v', 'r')    member1 =
csv.reader(file)    for
mrec in member1:
      memberrec.append(mrec)
  file.close()



  print("Enter    the    following
information")    mno=input("Enter
the      member      number:")
mname=input("Enter      member
name:")
```

```
    bno="
"
status="N
"
    mrec1=[mno,mname,bno,status]


    memberrec.append(mrec1)
    print("book added")


    with open('member.csv', 'w',newline='') as file:
          writer = csv.writer(file)

writer.writerows(member
rec)      memberrec=[]
file=open('member.csv',
'r')     member1 =
csv.reader(file)      for
mrec in book1:
         memberrec.append(mrec)
    file.close()

print(memberrec)
def
memberdelete():
memberrec=[]
file=open('member
.csv', 'r')
member1 =
```

```
csv.reader(file)
for mrec in
member1:
            memberrec.append(mrec)


    file.close()


    mno=input("Enter member Number to be deleted")
    flag=0


    for mrec in memberrec:
if              mrec[0]==mno:
print("Member Details:")
                print(mrec)
                memberrec.remove(mrec)


flag=1
break
if
flag==1
:
                print("Member has been deleted")
with open('member.csv','w',newline='') as mcsv:
                    bwriter = csv.writer(mcsv,delimiter=',',lineterminator='\n')
bwriter.writerows(memberrec)
        else:
                print("Book not found")
```

```
        memberrec=[]

file=open('member.csv',
'r')        member1 =
csv.reader(file)        for
mrec in member1:
            bookrec.append(mrec)
      file.close()
      print(memberrec)


def membermodify():
memberrec=[]
file=open('member.csv',
'r')       member1 =
csv.reader(file)       for
mrec in member1:
            memberrec.append(mrec)
      file.close()


      mno=input("Enter member number to be modified")
      flag=0
m1=0       for
mrec in
memberrec:
if
mrec[0]==mno:
                  print("Member Details”)
```

```
                    print(mrec)
                    print("Enter the following information")
mname=input("Enter member name:")
                    bno=mrec[2]
status=mrec[3]
                   mr=[mno,mname,bno,status]
memberrec[b1]=mr

flag=1
break
          m1=m1+1
          if flag==1:
                    print("Meember has been modified")
with open('member.csv','w',newline='') as mcsv:
                         bwriter = csv.writer(mcsv,delimiter=',',lineterminator='\n')
bwriter.writerows(memberrec)
          else:
                    print("Member not found")

          memberrec=[]
file=open('member.csv', 'r')

          member1 = csv.reader(file)
          for mrec in member1:
               memberrec.append(mrec)
          file.close()
```

```
        print(memberrec)
    def memberdisp():
        bookrec=[]
file=open('member.csv', 'r')
member1 = csv.reader(file)


        print("\n\n\n################# MEMBER DETAILS #################")
print("%10s"%"MEMBER NO.","%15s"%"NAME","%20s"%"BOOK
TITLE","%15s"%"STATUS")
        for row in member1:


        print("%10s"%row[0],"%15s"%row[1],"%20s"%row[2],"%15s"%row[3])
print("\n################### MEMBER DETAILS####################")
        K=input("\n\nPress any key to continue")
        file.close()



def IssueBook():
bookrec=[]
memberrec=[]
file=open('mem
ber.csv', 'r')
member1 =
csv.reader(file)
for mrec in
member1:
                memberrec.append(mrec)
        file.close()
```

```
 file=open('book.csv',
'r')          book1 =
csv.reader(file)
for brec in book1:
              bookrec.append(brec)
         file.close()
        mno=input("Enter Member Number")
         flag=0
     mr0
         for mrec in
memberrec:
if mrec[0]==mno:

print("Member        Details:")
print(memberrec[mr])
if mrec[3]== "N":
                          bno=input("Enter Book Number")
                          b1=0
for brec in bookrec:
if brec[0]== bno:
                                  flag=1
                                  if brec[4]=="N":
                                      print("Book Details:")
print(bookrec[b1])                                        bookrec[b1][4]="Y"
memberrec[mr][2]=bno
memberrec[mr][3]="Y"
        print("Book Successfully Issued")
print("Return the book within 10 days of issue date”)
```

```
                                    print(brec)
print(mrec)


break
else:
                                    print("Book already
issued")                                    b1=b1+1
if (flag==0):
                            print("Book already issued")
                else:
                        print("Return the
previous book")              mr=mr+1
with open('book.csv', 'w',newline='') as
file:
            writer = csv.writer(file)
writer.writerows(bookrec)       with
open('member.csv', 'w',newline='') as
file:
            writer = csv.writer(file)
            writer.writerows(memberrec)



def ReturnBook():
bookrec=[]
memberrec=[]

file=open('member.csv',
'r')
```

```
    member1 =
csv.reader(file)        for
mrec in member1:
                memberrec.append(mrec)
        file.close()
        print(memberrec)



file=open('book.csv',
'r')        book1 =
csv.reader(file)
for brec in book1:
            bookrec.append(brec)
        file.close()
        print(bookrec)


        mno=input("Enter Member Number")
        flag=0
m1=0        for
mrec in
memberrec:
if
mrec[0]==mno:
                print("Member Details:")                    print(mrec)
                    b1=0
for brec in bookrec:
if mrec[2]== brec[0]:
```

```
print("Book details:")
print(brec)
flag=1
                        bookrec[b1][4]="N"
memberrec[m1][2]=" "
memberrec[m1][3]="N"
days=int(input("Book returned in no. of days: "))

fine=0
if (days>10):
                            fine=(days-10)*2
print("Deposit the fine amount:",fine)
print("Book Successfully Returned")
                        break
                b1=b1+1
if (flag==0):
print("Book not found")
m1=m1+1
print(bookrec)
print(memberrec)
with open('book.csv',
'w',newline='') as file:
                writer = csv.writer(file)
writer.writerows(bookrec)               with
open('member.csv', 'w',newline='') as file:
                writer = csv.writer(file)
                writer.writerows(memberrec)
```

```
choice=0
while
choice!=5:
DispMenu
()
            choice = int(input('\t\t\t ENTER YOUR CHOICE :'))
            if choice==1:
                ch=0
while ch!=5:
BookMenu()
                    ch = int(input('\t\t\t ENTER YOUR CHOICE :')
  if ch==1
                            bookadd()
  elif ch==2:
                        bookdelete()

elif ch==3:
                        bookmodify()

elif ch==4:
                        bookdisp()

elif ch==5:
break

 else:
                        print('\n\t\t\t == INVALID CHOICE == ')
```

```
            elif choice==2:
                ch=0                    while ch!=5:
MemberMenu()                            ch =
int(input('\t\t\t ENTER YOUR CHOICE ))


  if ch==1:


memberadd()
elif ch==2:
                        memberdelete()

                    elif ch==3:
                        membermodify()


elif ch==4:
                        memberdisp()


elif ch==5:
break


else:
                         print('\n\t\t\t == INVALID CHOICE == ')
```

```
        elif
choice==3:
IssueBook()
elif choice==4:



                    ReturnBook()
      elif choice==5:


break
else:
                    print('\n\t\t\t == INVALID CHOICE == ')
```

OUTPUT

```
##################LIBRARY MANAGEMENT###################
    1. BOOK MANAGEMENT
    2. MEMBER MANAGEMENT
    3. ISSUE BOOK
    4. RETURN BOOK
    5. EXIT
########################################################      ENTER
YOUR CHOICE:1
```

```
       ##########BOOK MANAGEMENT############
1. ADD BOOK
2. DELETE BOOK
3. MODIFY BOOK
4. DISPLAY BOOKS
5. EXIT
###############################################
                ENTER YOUR CHOICE:1
Enter the following information Enter the book number:2004
Enter book name: Computer Science
Enter author name: XYZ
Enter book price:350
Book added
```

```
############BOOK MANAGEMENT##################
1.  ADD BOOK
2.  DELETE BOOK
3.  MODIFY BOOK
4.  DISPLAY BOOK
5.  EXIT
#####################################################
                ENTER YOUR CHOICE:4
```

```
################BOOK DETAILS#################
 BOOK NO.       TITLE                  AUTHOR           PRICE
1001          Twilight              Meyer, Stephenie     550
1002          Lost Symbol, The      Brown, Dan           450
1003          One Day           Nicholls, David          345
2001        Life of Pi              Martel, Yann          420
2002        Small Island          Levy, Andrea            370
2003        Brick Lane            Ali, Monica            280
2004        Computer Science      XYZ                     350
##############BOOK DETAILS####################


Press any key to continue
```

```
################## MEMBER MANAGEMENT################
1. ADD MEMBER
2. DELETE MEMBER
3. MODIFY MEMBER
4. DISPLAY MEMBERS
5. EXIT
#########################################################
                    ENTER YOUR CHOICE: 4
```

```
################MEMBER DETAILS############################
MEMBER NO.        NAME          BOOK TITLE          STATUS
      A001          AMIT                                Y
      B002          MEENA                               N
      C003          KANIKA                              N
      D001          CHARU                               N
      E002          MAHESH                              N
      F003          DIMPLE                              N
#########################################################


Press any key to continue
```

```
####################LIBRARY MANAGEMENT####################

                        1.BOOK MANAGEMENT
                        2. MEMBER MANAGEMENT
                        3.ISSUE BOOK
4. RETURN BOOK

5. EXIT
############################################################
                        ENTER YOUR CHOICE:3
```

```
Enter Member NumberA001 Member
Details:
['A001','AMIT',' ','N']
Enter Book Number2002 Book
Details:
['2002','Small Island', 'Levy, Andrea','370','Y'] Book
Successfully Issued
Return the book within 10 days of issue date
['2002', 'Small Island', 'Levy, Andrea','370','Y']
['A001','AMIT','2002','Y']
```

```
####################LIBRARY MANAGEMENT####################


                        1.BOOK MANAGEMENT
                         2. MEMBER MANAGEMENT
                         3.ISSUE BOOK
4. RETURN BOOK

5. EXIT
############################################################
                         ENTER YOUR CHOICE:4
```

```
Enter Member NumberA001 Member
Details:
['A001','AMIT','  ','N']    Book
Details:
['2002','Small Island', 'Levy, Andrea','370','Y'] Book
returned in no. Of days:
Deposit the fine amount:0
Book Successfully Returned
```

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