LIBRARY MANAGEMENT SYSTEM

THEORY

A School library management is a project that manages and stores books information electronically according to students' needs. The system helps both students and library manager to keep a constant track of all the books available in the library. It allows both the admin and the student to search for the desired book. It becomes necessary for colleges to keep a continuous check on the books issued and returned and even calculate fine. 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 this system reduces manual work to a great extent allows smooth flow of library activities by removing chances of errors in the details.

FUNCTIONS AND MODULES

MODULES –

1. mysql.connector :

   - To create a connection between the MySQL database and the python application, the connect() method of mysql.connector module is used.
   - Pass the database details like Host Name, username, and the database password in the method call. The method returns the connection object.

2. Tabulate:

- Tabulate is an open-source python package/module which is used to print tabular data in nicely formatted tables. It is easy to use and contains a variety of formatting functions. It has the following functionalities:

  i. One function call for all types of formatting.
  ii. Can be downloaded in multiple output formats.
  iii. Provides a better presentation with text and data.

SOURCE CODE

SQL-

```
mysql> create table books(
    -> Book_Code int(10),
    -> Book_Name varchar(40),
    -> Author_Name varchar(40),
    -> Total_Books int(25));
Query OK, 0 rows affected, 2 warnings (0.08 sec)
```

```
mysql> create table issue(
    -> Name varchar(40),
    -> RegNo int(20),
    -> Book_Code int(10),
    -> Issue_Date date);
Query OK, 0 rows affected, 2 warnings (0.02 sec)
```

```
mysql> create table return_book(
    -> Name varchar(40),
    -> RegNo int(20),
    -> Book_Code int(10),
    -> Return_Date date);
Query OK, 0 rows affected, 2 warnings (0.04 sec)
```

PYTHON-

```
from tabulate import tabulate
import mysql.connector as a
con = a.connect(host = 'localhost', user = 'root', password = 'mysql', database =
'library')

def addbook():
    bcode = int(input("Enter book code: "))
    bname = input("Enter book name: ")
    aname = input("Enter author name: ")
    btotal = int(input("Enter total number of books: "))
    my = con.cursor()
    sql = 'insert into books values(%s, %s, %s, %s)'
    data = (bcode, bname, aname, btotal)
    my.execute(sql, data)
    c = con.commit()
    print("Book added successfully!")
    print('\n')

def issuebook():
    name = input("Enter the name: ")
    regno = int(input("Enter registration number: "))
    bcode = int(input("Enter book code: "))
    issue_date = int(input("Enter the issue date without any space, slash,
hyphen(yyyymmdd): "))
    my = con.cursor()
    data = (name, regno, bcode, issue_date)
    sql = 'insert into issue values(%s, %s, %s, %s)'
    my.execute(sql, data)
    my = con.commit()
    print("Book issued successfully to {}!".format(name))
    print('\n')

def returnbook():
    name = input("Enter the name: ")
    regno = int(input("Enter registration number: "))
    bcode = int(input("Enter book code: "))
    return_date = int(input("Enter the return date without any space, slash,
hyphen(yyyymmdd): "))
    my = con.cursor()
    data = (name, regno, bcode, return_date)
    sql = 'insert into return_book values(%s, %s, %s, %s)'
    my.execute(sql, data)
```

```
    my = con.commit()
    print("Book returned successfully by {}!".format(name))
    print('\n')

def deletebook():
    bcode = int(input("enter book code to delete: "))
    my = con.cursor()
    data = (bcode,)
    sql = 'delete from books where Book_code = %s'
    my.execute(sql, data)
    my = con.commit()
    print("Book deleted successfully!")
    print('\n')

def deleteissuedbook():
    rgno = int(input("enter registration number to delete: "))
    my = con.cursor()
    data = (rgno,)
    sql = 'delete from issue where RegNo = %s'
    my.execute(sql, data)
    my = con.commit()
    print("Issued Book deleted successfully!")
    print('\n')

def deletereturnedbook():
    rgno = int(input("enter registration number to delete: "))
    my = con.cursor()
    data = (rgno,)
    sql = 'delete from return_book where RegNo = %s'
    my.execute(sql, data)
    my = con.commit()
    print("Returned Book deleted successfully!")
    print('\n')

def displaybook():
    my = con.cursor()
    sql = 'select * from books;'
    my.execute(sql)
    m = my.fetchall()
    headers = ['Book Code', 'Book name', 'Author name', 'Total books']
    tablefmt = "double_outline"
    print(tabulate(m, headers, tablefmt))
    my = con.commit()
    print('\n')
```

```
def displayissuedbooks():
    my = con.cursor()
    sql = 'select * from issue'
    my.execute(sql)
    m = my.fetchall()
    headers = ['Name', 'Registration number', 'Book code', 'Issued date']
    tablefmt = "double_outline"
    print(tabulate(m, headers, tablefmt))
    my = con.commit()
    print('\n')

def displayreturnedbooks():
    my = con.cursor()
    sql = 'select * from return_book'
    my.execute(sql)
    m = my.fetchall()
    headers = ['Name', 'Registration number', 'Book code', 'Returned date']
    tablefmt = "double_outline"
    print(tabulate(m, headers, tablefmt))
    my = con.commit()
    print('\n')

def maincode():
    header = ["LIBRARY MANGEMENT APPLICATION"]
    footer = [['1.ADD BOOK'], ['2.ISSUE BOOK'], ['3.RETURN BOOK'], ['4.DELETE
BOOK'],['5.DELETE ISSUED BOOK'], ['6.DELETE RETURNED BOOK'], ['7.VIEW MENU'],
['8.EXIT PROGRAM']]
    tablefmt = "simple"
    print(tabulate(footer, header, tablefmt))

maincode()

while True:
    print('\n')
    choice = int(input("Enter task number(1-8): "))
    print('\n')
    if choice == 1:
        addbook()
        maincode()

    elif choice == 2:
        issuebook()
        maincode()

    elif choice == 3:
```

```
        returnbook()
        maincode()

    elif choice == 4:
        deletebook()
        maincode()

    elif choice == 5:
        deleteissuedbook()
        maincode()

    elif choice == 6:
        deletereturnedbook()
        maincode()

    elif choice == 7:

        def viewmenu():

            header = ["VIEW MENU"]
            footer = [['1. DISPLAY BOOKS'], ['2. DISPLAY ISSUED BOOKS'], ['3.
DISPLAY RETURNED BOOKS'], ['4. GO BACK TO MAIN MENU']]
            tablefmt = "simple"
            print(tabulate(footer, header, tablefmt))
            print('\n')

            choice1 = int(input("Enter task number(1-4): "))
            print('\n')

            if choice1 == 1:
                displaybook()
                print('\n')
                viewmenu()

            elif choice1 == 2:
                displayissuedbooks()
                print('\n')
                viewmenu()

            elif choice1 == 3:
                displayreturnedbooks()
                print('\n')
                viewmenu()

            elif choice1 == 4:
```

```
                print('\n')
                maincode()
                print('\n')

            else:
                print("Invalid choice. Please try again")
                print('\n')
                viewmenu()
                print('\n')

        viewmenu()

    elif choice == 8:
        print("Thank you for using library management application. Have a great
day ahead!")
        break

    else:
        print("Invalid choice. Please try again")
        print('\n')
        maincode()
        print('\n')
```

OUTPUT

1) ADD BOOK-

```
LIBRARY MANGEMENT APPLICATION
------------------------------
1.ADD BOOK
2.ISSUE BOOK
3.RETURN BOOK
4.DELETE BOOK
5.DELETE ISSUED BOOK
6.DELETE RETURNED BOOK
7.VIEW MENU
8.EXIT PROGRAM


Enter task number(1-8): 1


Enter book code: 111
Enter book name: HARRY POTTER - The Sorcerer's Stone
Enter author name: J.K.ROWLING
Enter total number of books: 5
Book added successfully!
```

2) ISSUE BOOK-

```
LIBRARY MANGEMENT APPLICATION
------------------------------
1.ADD BOOK
2.ISSUE BOOK
3.RETURN BOOK
4.DELETE BOOK
5.DELETE ISSUED BOOK
6.DELETE RETURNED BOOK
7.VIEW MENU
8.EXIT PROGRAM


Enter task number(1-8): 2


Enter the name: Adhi
Enter registration number: 411
Enter book code: 111
Enter the issue date without any space, slash, hyphen(yyyymmdd): 20230102
Book issued successfully to Adhi!
```

3) RETURN BOOK-

```
LIBRARY MANGEMENT APPLICATION
------------------------------
1.ADD BOOK
2.ISSUE BOOK
3.RETURN BOOK
4.DELETE BOOK
5.DELETE ISSUED BOOK
6.DELETE RETURNED BOOK
7.VIEW MENU
8.EXIT PROGRAM


Enter task number(1-8): 3


Enter the name: Neha
Enter registration number: 410
Enter book code: 106
Enter the return date without any space, slash, hyphen(yyyymmdd): 20230106
Book returned successfully by Neha!
```

4) DELETE BOOK

```
LIBRARY MANGEMENT APPLICATION
------------------------------
1.ADD BOOK
2.ISSUE BOOK
3.RETURN BOOK
4.DELETE BOOK
5.DELETE ISSUED BOOK
6.DELETE RETURNED BOOK
7.VIEW MENU
8.EXIT PROGRAM


Enter task number(1-8): 4


enter book code to delete: 111
Book deleted successfully!
```

5) DELETE ISSUED BOOK-

```
LIBRARY MANGEMENT APPLICATION
------------------------------
1.ADD BOOK
2.ISSUE BOOK
3.RETURN BOOK
4.DELETE BOOK
5.DELETE ISSUED BOOK
6.DELETE RETURNED BOOK
7.VIEW MENU
8.EXIT PROGRAM


Enter task number(1-8): 5


enter registration number to delete: 411
Issued Book deleted successfully!
```

6) DELETE RETURNED BOOK-

```
LIBRARY MANGEMENT APPLICATION
------------------------------
1.ADD BOOK
2.ISSUE BOOK
3.RETURN BOOK
4.DELETE BOOK
5.DELETE ISSUED BOOK
6.DELETE RETURNED BOOK
7.VIEW MENU
8.EXIT PROGRAM


Enter task number(1-8): 6


enter registration number to delete: 410
Returned Book deleted successfully!
```

7) VIEW MENU-

```
LIBRARY MANGEMENT APPLICATION
------------------------------
1.ADD BOOK
2.ISSUE BOOK
3.RETURN BOOK
4.DELETE BOOK
5.DELETE ISSUED BOOK
6.DELETE RETURNED BOOK
7.VIEW MENU
8.EXIT PROGRAM


Enter task number(1-8): 7


VIEW MENU
-------------------------
1. DISPLAY BOOKS
2. DISPLAY ISSUED BOOKS
3. DISPLAY RETURNED BOOKS
4. GO BACK TO MAIN MENU


Enter task number(1-4):
```

8) DISPLAY BOOKS-

```
VIEW MENU
------------------------
1. DISPLAY BOOKS
2. DISPLAY ISSUED BOOKS
3. DISPLAY RETURNED BOOKS
4. GO BACK TO MAIN MENU


Enter task number(1-4): 1
```

Book Code	Book name	Author name	Total books
101	Moby Dick	Herman Melville	10
102	The Moonstone	Wilkie Collins	15
103	The Adventures of Huckleberry Finn	Mark Twain	8
104	The Red Badge of Courage	Stephen Crane	5
105	The Call of the Wild	Jack London	12
106	The Thirty-Nine Steps	John Buchan	8
107	A Passage To India	E.M.Forster	2
108	The Maltese Falcon	Dashiell Hammett	6
109	Tropic of Cancer	Henry Miller	4
110	The Big Sleep	Raymond Chandler	9

9) DISPLAY ISSUED BOOKS-

```
VIEW MENU
-------------------------
1. DISPLAY BOOKS
2. DISPLAY ISSUED BOOKS
3. DISPLAY RETURNED BOOKS
4. GO BACK TO MAIN MENU


Enter task number(1-4): 2
```

Name	Registration number	Book code	Issued date
John	401	110	2022-12-21
Akash	402	110	2022-12-29
Mohit	403	110	2023-01-01
Ankitha	404	108	2023-01-03
Sanjana	405	107	2022-12-25
Akshay	406	101	2022-12-27
Rakesh	407	102	2023-01-03
Sneha	408	104	2023-01-02
Kishore	409	105	2022-12-20
Neha	410	106	2022-12-30

10) DISPLAY RETURNED BOOK-

```
VIEW MENU
-------------------------
1. DISPLAY BOOKS
2. DISPLAY ISSUED BOOKS
3. DISPLAY RETURNED BOOKS
4. GO BACK TO MAIN MENU


Enter task number(1-4): 3
```

Name	Registration number	Book code	Returned date
John	401	110	2023-01-05
Akash	402	110	2023-01-05
Sanjana	405	107	2023-01-06
Akshay	406	101	2023-01-04
Kishore	409	105	2023-01-02

11) BACK TO MAIN MENU-

```
VIEW MENU
-------------------------
1. DISPLAY BOOKS
2. DISPLAY ISSUED BOOKS
3. DISPLAY RETURNED BOOKS
4. GO BACK TO MAIN MENU


Enter task number(1-4): 4
```

```
LIBRARY MANGEMENT APPLICATION
--------------------------------
1.ADD BOOK
2.ISSUE BOOK
3.RETURN BOOK
4.DELETE BOOK
5.DELETE ISSUED BOOK
6.DELETE RETURNED BOOK
7.VIEW MENU
8.EXIT PROGRAM



Enter task number(1-8):
```

12) EXIT PROGRAM-

```
LIBRARY MANGEMENT APPLICATION
------------------------------
1.ADD BOOK
2.ISSUE BOOK
3.RETURN BOOK
4.DELETE BOOK
5.DELETE ISSUED BOOK
6.DELETE RETURNED BOOK
7.VIEW MENU
8.EXIT PROGRAM



Enter task number(1-8): 8


Thank you for using library management application. Have a great day ahead!
>>>
```

SQL TABLES-

1) BOOKS-

```
mysql> select * from books;
+-----------+-----------------------------------+-----------------+-------------+
| Book_Code | Book_Name                         | Author_Name     | Total_Books |
+-----------+-----------------------------------+-----------------+-------------+
|       101 | Moby Dick                         | Herman Melville |          10 |
|       102 | The Moonstone                     | Wilkie Collins  |          15 |
|       103 | The Adventures of Huckleberry Finn | Mark Twain      |           8 |
|       104 | The Red Badge of Courage          | Stephen Crane   |           5 |
|       105 | The Call of the Wild              | Jack London     |          12 |
|       106 | The Thirty-Nine Steps             | John Buchan     |           8 |
|       107 | A Passage To India                | E.M.Forster     |           2 |
|       108 | The Maltese Falcon                | Dashiell Hammett |           6 |
|       109 | Tropic of Cancer                  | Henry Miller    |           4 |
|       110 | The Big Sleep                     | Raymond Chandler |           9 |
+-----------+-----------------------------------+-----------------+-------------+
10 rows in set (0.00 sec)
```

2) ISSUED BOOKS-

```
mysql> select * from issue;
+---------+-------+-----------+------------+
| Name    | RegNo | Book_Code | Issue_Date |
+---------+-------+-----------+------------+
| John    |   401 |       110 | 2022-12-21 |
| Akash   |   402 |       110 | 2022-12-29 |
| Mohit   |   403 |       110 | 2023-01-01 |
| Ankitha |   404 |       108 | 2023-01-03 |
| Sanjana |   405 |       107 | 2022-12-25 |
| Akshay  |   406 |       101 | 2022-12-27 |
| Rakesh  |   407 |       102 | 2023-01-03 |
| Sneha   |   408 |       104 | 2023-01-02 |
| Kishore |   409 |       105 | 2022-12-20 |
| Neha    |   410 |       106 | 2022-12-30 |
| Adhi    |   411 |       111 | 2023-01-02 |
+---------+-------+-----------+------------+
11 rows in set (0.00 sec)
```

3) RETURN BOOK-

```
mysql> select * from return_book;
+---------+-------+-----------+-------------+
| Name    | RegNo | Book_Code | Return_Date |
+---------+-------+-----------+-------------+
| John    |   401 |       110 | 2023-01-05  |
| Akash   |   402 |       110 | 2023-01-05  |
| Sanjana |   405 |       107 | 2023-01-06  |
| Akshay  |   406 |       101 | 2023-01-04  |
| Kishore |   409 |       105 | 2023-01-02  |
+---------+-------+-----------+-------------+
5 rows in set (0.00 sec)
```