



(BookWise)
Library Management
System

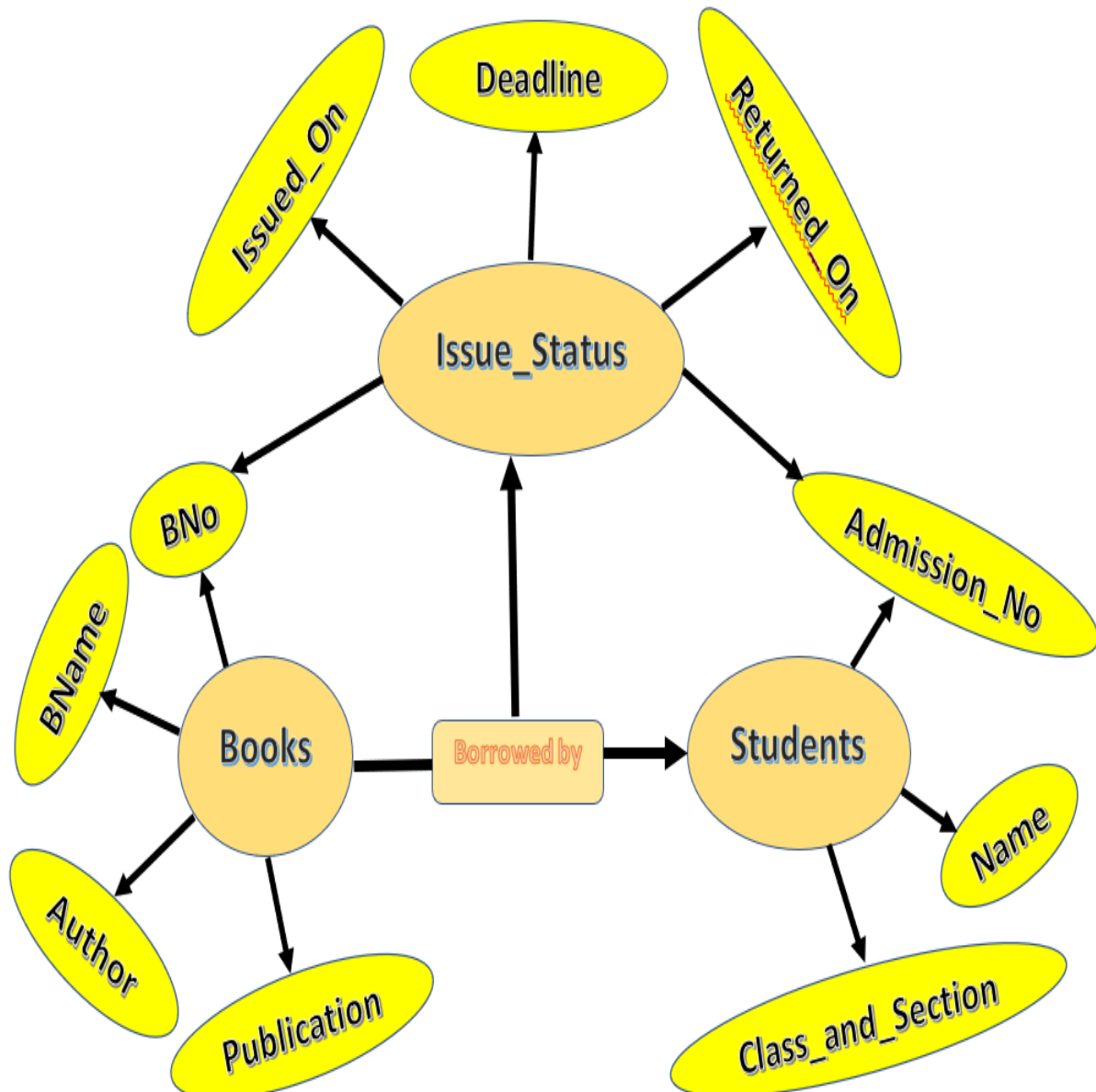
INTRODUCTION

DBMS has found many applications in today's era. One of these many applications is that of management of various data in a library. Our project, albeit a miniature version of the actual vast database system of a library aims to study and analyze how DBMS has made the management of various data such as that of books, members etc. easier. Data Management in a library includes a variety of tasks such as entering new records related to books, members etc. as well as modifying and deleting them whenever necessary. Also in order to ensure timely return of books, late fees is charged from members who fail to return books on time. This is also done through the data stored in database. Such huge amount tasks need to be done frequently in a library and so DBMS is an important tool that accomplishes this all the while eradicating data redundancy and inconsistency and maintaining data integrity.

We have limited our scope to that of a school library management system so as to make our study easier to analyze and comprehend. Our group consists of three members, Arham, Abrar and Muffadal who have with their joined efforts developed this project.

For this purpose, we have used connectivity of Python and MySQL interface. The project has been made using version 3.9 of IDLE Python and version 8.0 of MySQL command line client and is therefore best compatible with these versions on a particular computer system.

DATA ENTITY DIAGRAM



PYTHON CODE

```
import mysql.connector as mysql

mycon=mysql.connect(host='localhost',user='root',passwd='muffadal',
database='Library')

cc=mycon.cursor()

if mycon.is_connected()==False:
    print('ERROR!')
else:
    print('WELCOME!')

def newrecord():
    print('1: Books')
    print('2: Students')
    print('3: Issue_Status')

    choice=int(input("enter the table in which you wish to enter a
record(1/2/3): "))

    if choice==1:
        n=int(input("enter number of records: "))
        for i in range(n):
            no=int(input("enter bookno:"))
            name=input("enter name: ")
            author=input("enter author: ")
            publication=input("enter publication: ")

            cc.execute('insert into books
values({},{},"{}",{},"{}").format(no,name,author,publication))
```

```
        mycon.commit()
elif choice==2:
    n=int(input("enter number of records: "))
    for i in range(n):
        admission_no=int(input("enter admission no:"))
        name=input("enter name: ")
        Class_and_Section=input("enter class and section: ")
        cc.execute('insert into students
values({},{},"{}","{}")'.format(admission_no,name,Class_and_Section))
        mycon.commit()
elif choice==3:
    n=int(input("enter number of records: "))
    for i in range(n):
        book_no=int(input("enter bookno:"))
        admission_no=input("enter admission number: ")
        issuedate=input("enter issuedate: ")
        deadline_date=input("enter deadline date: ")
        returndate=input("enter return date: ")
        cc.execute('insert into issue_status
values({},{},"{}","{}","{}")'.format(book_no,admission_no,issuedate,d
eadline_date,returndate))
        mycon.commit()
else:
    print('INVALID INPUT. KINDLY ENTER A INPUT FROM
THE LIST DISPLAYED.')
```

```
def searchrecord():
    n=int(input('enter number of times for searching: '))
    for i in range(n):
        admission_no=input("enter admission number: ")
        cc.execute('select * from ( select * from Students natural join
Issue_Status where Admission_No={}) e natural join
Books'.format(admission_no))
        data=cc.fetchall()
        print(data)
        s=input("Do you wish to calculate the student's late
fees?(y/n): ")
        if s=='y':
            print('Late fees for one day delay is 10 rupees')
            cc.execute('select * from Issue_Status where
Admission_No={}'.format(admission_no))
            a=cc.fetchall()
            x=int(str(a[0][4])[8:])
            y=int(str(a[0][3])[8:])
            b=x-y
            if b>0:
                print('LATE FEES IS: ',b*10)
            else:
                print('LATE FEES IS NOT APPLICABLE')
        elif s=='n':
            print('OK')
```

```
def deleterecord():
    print('1: Books')
    print('2: Students')
    print('3: Issue_Status')
    choice=int(input('enter the table(1/2/3): '))
    if choice==3:
        s=int(input('enter number of records you wish to delete: '))
        for i in range(s):
            n=int(input('enter bookno: '))
            cc.execute('delete from Issue_Status where
Bno={}'.format(n))
            mycon.commit()
    elif choice==2:
        s=int(input('enter number of records you wish to delete: '))
        for i in range(s):
            n=int(input('enter admissionno: '))
            cc.execute('delete from Students where
Admission_No={}'.format(n))
            mycon.commit()
    elif choice==1:
        s=int(input('enter number of records you wish to delete: '))
        for i in range(s):
            n=int(input('enter bookno: '))
            cc.execute('delete from Books where Bno={}'.format(n))
```

```

        mycon.commit()

    else:

        print('INVALID INPUT.')

def modifyrecord():

    amdnno=int(input("enter admission number: "))

    date=input('enter return date: ')

    cc.execute('update Issue_Status set Returned_On={}' where
Admission_No={}'.format(date,amdnno))

    cc.execute('select * from Issue_Status where
Admission_No={}'.format(amdnno))

    data=cc.fetchall()

    print('THE UPDATED RECORD: ',data)

    mycon.commit()

def displayallrecord():

    cc.execute('select * from ( select * from Students natural join
Issue_Status) e natural join Books ')

    data=cc.fetchall()

    print('THE RECORDS OF ALL THE TABLES AS OF NOW ARE:
',data)

print("""

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```



```
*****ABRAR - CLASS XII C - ROLL NO - 2[ 2022-2023
]*****
*****ARHAM - CLASS XII C - ROLL NO - 6 [ 2022-2023
]*****
*****MUFFADAL - CLASS XII C - ROLL NO - 17 [ 2022-2023
]****
""")

print("Kindly enter what you wish to do ")
print('1. Enter a new record: ')
print('2. Search for a particular record ')
print('3. Delete a record ')
print('4. Modify a record ')
print('5. Display all records as of now ')
print('6. Exit')

while True:
    selection=int(input('enter your choice(1/2/3/4/5/6): '))
    if selection==1:
        newrecord()
        print('THE NEW RECORDS HAVE BEEN ADDED: ')
    elif selection==2:
        searchrecord()
    elif selection==3:
        deleterecord()
    elif selection==4:
```

```
        modifyrecord()
    elif selection==5:
        displayallrecord()
    elif selection==6:
        mycon.close()
        break
    else:
        print('INVALID INPUT. KINDLY ENTER A VALID
INPUT FROM THE LIST PROVIDED.')
```

OUTPUT WINDOW

```
mysql> use library;
Database changed
mysql> show tables;
+-----+
| Tables_in_library |
+-----+
| books              |
| issue_status       |
| students           |
+-----+
3 rows in set (0.01 sec)

mysql> desc books;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| BNo        | int       | NO   | PRI | NULL    |       |
| BName      | varchar(90) | NO   |     | NULL    |       |
| Author     | varchar(90) | NO   |     | NULL    |       |
| Publication | varchar(90) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.03 sec)

mysql> desc students;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Admission_No | int       | NO   | PRI | NULL    |       |
| Name        | varchar(90) | NO   |     | NULL    |       |
| Class_and_Section | varchar(90) | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> desc issue_status;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| BNo        | int       | YES  |     | NULL    |       |
| Admission_No | int       | YES  |     | NULL    |       |
| Issued_On  | date      | NO   |     | NULL    |       |
| Deadline   | date      | NO   |     | NULL    |       |
| Returned_On | date      | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

Database library with three tables: Books, Issue_Status, Students

```
+-----+
3 rows in set (0.02 sec)

mysql> select * from books;
+-----+-----+-----+-----+
| BNo | BName                                     | Author       | Publication |
+-----+-----+-----+-----+
| 101 | Murder On The Orient Express             | Agatha Christie | Harper Collins |
| 102 | Harry Potter and Deathly Hallows         | J.K Rowling    | Bloomsberry  |
| 103 | Dollar Bahu                             | Sudha Murthy   | Penguin      |
+-----+-----+-----+-----+
3 rows in set (0.05 sec)

mysql> select * from students;
+-----+-----+-----+
| Admission_No | Name | Class_and_Section |
+-----+-----+-----+
| 1814        | GHI  | XII-A             |
| 2091        | ABC  | XII-C             |
| 6922        | DEF  | XI-B              |
+-----+-----+-----+
3 rows in set (0.01 sec)

mysql> select * from issue_status;
+-----+-----+-----+-----+-----+
| BNo | Admission_No | Issued_On | Deadline | Returned_On |
+-----+-----+-----+-----+-----+
| 101 | 2091         | 2022-11-29 | 2022-12-06 | NULL        |
| 102 | 6922         | 2022-11-28 | 2022-12-06 | 2022-12-20 |
| 103 | 1814         | 2022-11-25 | 2022-12-06 | 2022-12-02 |
+-----+-----+-----+-----+-----+
3 rows in set (0.02 sec)
```

The three tables with some preliminary data

WELCOME!

```
*****MAYOOR SCHOOL, NOIDA *****
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*****ABRAR - CLASS XII C - ROLL NO - 2[ 2022-2023 ]*****
*****ARHAM - CLASS XII C - ROLL NO - 6 [ 2022-2023 ]*****
*****MUFFADAL - CLASS XII C - ROLL NO - 17 [ 2022-2023 ]****
```

Kindly enter what you wish to do

```
1. Enter a new record:
2. Search for a particular record
3. Delete a record
4. Modify a record
5. Display all records as of now
6. Exit
enter your choice(1/2/3/4/5/6): |
```

Entering a new record in all three tables

Kindly enter what you wish to do

```
1. Enter a new record:
2. Search for a particular record
3. Delete a record
4. Modify a record
5. Display all records as of now
6. Exit
enter your choice(1/2/3/4/5/6): 1
1: Books
2: Students
3: Issue_Status
enter the table in which you wish to enter a record(1/2/3): 1
enter number of records: 1
enter bookno:104
enter name: The Listerdale Mystery
enter author: Agatha Christie
enter publication: Dodd and Meads
THE NEW RECORDS HAVE BEEN ADDED:
enter your choice(1/2/3/4/5/6): 1
1: Books
2: Students
3: Issue_Status
enter the table in which you wish to enter a record(1/2/3): 2
enter number of records: 1
enter admission no:4688
enter name: JKL
enter class and section: XII-B
THE NEW RECORDS HAVE BEEN ADDED:
```

```
enter your choice(1/2/3/4/5/6): 1
1: Books
2: Students
3: Issue_Status
enter the table in which you wish to enter a record(1/2/3): 3
enter number of records: 1
enter bookno:104
enter admission number: 4688
enter issuedate: 2022-11-27
enter deadline date: 2022-12-04
enter return date: 2022-12-06
THE NEW RECORDS HAVE BEEN ADDED:
```

```
mysql> select * from books;
```

BNo	BName	Author	Publication
101	Murder On The Orient Express	Agatha Christie	Harper Collins
102	Harry Potter and Deathly Hallows	J.K Rowling	Bloomsberry
103	Dollar Bahu	Sudha Murthy	Penguin
104	The Listerdale Mystery	Agatha Christie	Dodd and Meads

```
4 rows in set (0.00 sec)
```

```
mysql> select * from students;
```

Admission_No	Name	Class_and_Section
1814	GHI	XII-A
2091	ABC	XII-C
4688	JKL	XII-B
6922	DEF	XI-B

```
4 rows in set (0.00 sec)
```

```
mysql> select * from issue_status;
```

BNo	Admission_No	Issued_On	Deadline	Returned_On
101	2091	2022-11-29	2022-12-06	NULL
102	6922	2022-11-28	2022-12-06	2022-12-20
103	1814	2022-11-25	2022-12-06	2022-12-02
104	4688	2022-11-27	2022-12-04	2022-12-06

```
4 rows in set (0.00 sec)
```

Corresponding changes in database

```

Kindly enter what you wish to do
1. Enter a new record:
2. Search for a particular record
3. Delete a record
4. Modify a record
5. Display all records as of now
6. Exit
enter your choice(1/2/3/4/5/6): 2
enter number of times for searching: 1
enter admission number: 6922
[(102, 6922, 'DEF', 'XI-B', datetime.date(2022, 11, 28), datetime.date(2022, 12, 6), datetime.date(2022, 12, 20), 'Harry Potter and Deathly Hallows', 'J.K R
owling', 'Bloomsberry')]
Do you wish to calculate the student's late fees?(y/n): y
Late fees for one day delay is 10 rupees
LATE FEES IS: 140

```

Searching of all information related to a unique admission number and also calculation of late fees in case of delay in returning

```

enter your choice(1/2/3/4/5/6): 3
1: Books
2: Students
3: Issue_Status
enter the table(1/2/3): 1
enter number of records you wish to delete: 1
enter bookno: 104
enter your choice(1/2/3/4/5/6): 3
1: Books
2: Students
3: Issue_Status
enter the table(1/2/3): 2
enter number of records you wish to delete: 1
enter admissionno: 4688
enter your choice(1/2/3/4/5/6): 3
1: Books
2: Students
3: Issue_Status
enter the table(1/2/3): 3
enter number of records you wish to delete: 1
enter bookno: 104

```

Deletion of record from all three tables

```
mysql> select * from issue_status;
```

BNo	Admission_No	Issued_On	Deadline	Returned_On
101	2091	2022-11-29	2022-12-06	NULL
102	6922	2022-11-28	2022-12-06	2022-12-20
103	1814	2022-11-25	2022-12-06	2022-12-02

```
3 rows in set (0.00 sec)
```

```
mysql> select * from books;
```

BNo	BName	Author	Publication
101	Murder On The Orient Express	Agatha Christie	Harper Collins
102	Harry Potter and Deathly Hallows	J.K Rowling	Bloomsberry
103	Dollar Bahu	Sudha Murthy	Penguin

```
3 rows in set (0.00 sec)
```

```
mysql> select * from students;
```

Admission_No	Name	Class_and_Section
1814	GHI	XII-A
2091	ABC	XII-C
6922	DEF	XI-B

```
3 rows in set (0.00 sec)
```

Corresponding changes in database

Kindly enter what you wish to do

1. Enter a new record:
2. Search for a particular record
3. Delete a record
4. Modify a record
5. Display all records as of now
6. Exit

enter your choice(1/2/3/4/5/6): 4

enter admission number: 2091

enter return date: 20221212

THE UPDATED RECORD: [(101, 2091, datetime.date(2022, 11, 29), datetime.date(2022, 12, 6), datetime.date(2022, 12, 12))]

BNo	Admission_No	Issued_On	Deadline	Returned_On
101	2091	2022-11-29	2022-12-06	2022-12-12
102	6922	2022-11-28	2022-12-06	2022-12-20
103	1814	2022-11-25	2022-12-06	2022-12-02

Modifying a record in table issue_status and corresponding changes in database

enter your choice(1/2/3/4/5/6): 5

THE RECORDS OF ALL THE TABLES AS OF NOW ARE: [(101, 2091, 'ABC', 'XII-C', datetime.date(2022, 11, 29), datetime.date(2022, 12, 6), datetime.date(2022, 12, 12), 'Murder On The Orient Express', 'Agatha Christie', 'Harper Collins'), (102, 6922, 'DEF', 'XI-B', datetime.date(2022, 11, 28), datetime.date(2022, 12, 6), datetime.date(2022, 12, 20), 'Harry Potter and Deathly Hallows', 'J.K Rowling', 'Bloomsberry'), (103, 1814, 'GHI', 'XII-A', datetime.date(2022, 11, 25), datetime.date(2022, 12, 6), datetime.date(2022, 12, 2), 'Dollar Bahu', 'Sudha Murthy', 'Penguin')]

Displaying all the records as of now

WELCOME!

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 *****ARHAM - CLASS XII C - ROLL NO - 6 [2022-2023]*****
 *****MUFFADAL - CLASS XII C - ROLL NO - 17 [2022-2023]*****

Kindly enter what you wish to do

1. Enter a new record:
2. Search for a particular record
3. Delete a record
4. Modify a record
5. Display all records as of now
6. Exit

enter your choice(1/2/3/4/5/6): 4

enter admission number: 2091

enter return date: 20221212

THE UPDATED RECORD: [(101, 2091, datetime.date(2022, 11, 29), datetime.date(2022, 12, 6), datetime.date(2022, 12, 12))]

enter your choice(1/2/3/4/5/6): 5

THE RECORDS OF ALL THE TABLES AS OF NOW ARE: [(101, 2091, 'ABC', 'XII-C', datetime.date(2022, 11, 29), datetime.date(2022, 12, 6), datetime.date(2022, 12, 12), 'Murder On The Orient Express', 'Agatha Christie', 'Harper Collins'), (102, 6922, 'DEF', 'XI-B', datetime.date(2022, 11, 28), datetime.date(2022, 12, 6), datetime.date(2022, 12, 20), 'Harry Potter and Deathly Hallows', 'J.K Rowling', 'Bloomsberry'), (103, 1814, 'GHI', 'XII-A', datetime.date(2022, 11, 25), datetime.date(2022, 12, 6), datetime.date(2022, 12, 2), 'Dollar Bahu', 'Sudha Murthy', 'Penguin')]

enter your choice(1/2/3/4/5/6): 6

>>> |

Finally, exiting the program

CONCLUSION

Thus, the through the use of above prototype library DBMS, it becomes extremely clear that DBMS has deeply entrenched itself in the field of data management and is a top-notch tool in maintaining the data's security, authenticity and integrity. The use of DBMS has ensured that various processes of a library database such as addition of new records, modification, deletion, calculation of various entities based on existing data etc. are made easier than would have otherwise been tedious and monotonous to accomplish on a daily basis.

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