GURU GHASIDAS VISHWAVIDYALYA BILASPUR(C.G)

A

PROJECT

ON

LIBRARY MANAGEMENT SYSTEM USING PYTHON AND MYSQL

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Guided by

Dr.Pushpalata Pujari Ma'am

GGV, Bilaspur (C.G)

Sign_____

Submitted by

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Class- BCA 3rd sem.

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DEPARTMENT OF CSIT

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CERTIFICATE

This is to certify that **Tripurari Nath** 3rd Semester student of Bachelor of Computer Application, Guru Ghasidas Vishwavidalaya, has successfully completed the project on topic "**Library Management System using python and mysql**" under the guidance of **Dr. Pushpalata Pujari ma'am** during the 3rd semester.

Signature

Project guide

DECLARATION

I hereby declare that. The Project entitled is an outcome of my own efforts under the guidance of Dr.Pushpalata Pujari ma'am. The project is submitted to the CSIT Department. For the partial fulfillment of the Bachelor of Computer Application examination 2023-24.

I also declare that this project has not been previously submitted to any other university.

Tripurari Nath

Acknowledgment

It is our proud privilege to express our profound gratitude to the entire management of Guru Ghasidas Vishwavidyalaya, Bilaspur and the teacher for providing us the opportunity. The knowledge and values inculcated have provide to be of immense help at the very start of my career. I am making this project not only for marks but also to increase my knowledge.

I am grateful to Prof (Dr.) Pushpalata Pujari Ma'am for their astute guidance, constant encouragement and sincer support for this project work.

Tripurari Nath

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Introduction to Python & Mysql

Python and MySQL can be effectively combined to develop a robust Library Management System (LMS), facilitating the efficient management of books, issues, return, and related activities in libraries. Here's a simplified overview of utilizing Python and MySQL in building an LMS:

Python programming language :-

Python, renowned for its simplicity and readability, offers a wide range of libraries and frameworks suitable for diverse applications. In the context of an LMS, Python serves several purposes:

- Implementing the core logic and functionality of the system.
- Handling user interactions through a graphical user interface (GUI) or a command-line interface (CLI).
- Integrating with external systems or services (e.g., email notifications, third-party APIs for book information).
- Data manipulation and processing.

MySQL Database Management System:-

MySQL, an open-source relational database management system (RDBMS), is known for its reliability and scalability. In an LMS context, MySQL is used for:

- Sorting book information (e.g., Book_Name, Authors, Subject etc.)
- Managing user data
- Recording transactional data
- Supporting complex queries and data analysis

Combining Python and MySQL involves several key steps:

1. Database Design:

Designing the database schema to represent entities like books user, including defining tables,columns,relationship and constraints.

2. Python and MySQL Connection:

Establishing a connection between the Python application and the MySQL database using libraries like mysql-connector-python or pymsql.

3. Data Manipulation and Queries:

Writing Python code to perform CRUD operation(Create,Issue,Delete,Display) on the MySQL database,executing SQL queries to manage data based on user action or system requirement.

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Module and function

Modules:

Import mysql.connector:

By importing this package , we are able to establish the connection between SQL and Python.

Here's a brief overview of how to us '**mysql.connector':**

1.Installation: Before using `mysql.connector`, you need to make sure it's installed in your Python environment. You can install it using pip, the Python package manager, by running:

pip install mysql-connector-python

2. Importing the Library: Once installed ,you import 'mysql.connector' into your python or application using the **'import'** statement:

import mysql.connector

3. Connecting to a MySQL Database: After importing 'mysql.connector', you typically establish a connection to a MySQL database using the '**connect()**' function.

```
mydb = mysql.connector.connect(
  host="localhost",
  user="username",
  password="password",
  database="database_name" )
```

4.Execute SQL Queries: Once connected to the database , you can execute SQL queries using '**cursor'** object associated with the connection:

```
# Creating a cursor object to execute SQL queries
        mycursor = mydb.cursor()
# Example SQL query
   mycursor.execute("SELECT * FROM table_name")
# Fetching results
    results = mycursor.fetchall()
# Iterating through the results
    for row in results:
        print(row)
```

5. Closing the connection: After done the database operation ,close the connection using **close()** function

```
        # Closing the connection
            mydb.close()
```

FUNCTIONS:

Connect() :

This function established connection between Python and MySQL.

Cursor():

It is a special control structure that facilitates the row-by- processing of records in the result set.

The syntax is:

<cursor object>=<connection object>.cursor()

execute():

This function is used to execute the sql query and retrieve record using python.

The syntax is:

<cursor object>.execute(<sql query string>)

def():

A function is a block of code which only runs when it is called.

fetchall():

This function will return all the rows from the result set in the form of a tuple containing the records.

fetchone():

This function will return one row from the result set in the form of a tuple containing the records**.**

commit(): This function provides changes in the database physically.

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DETAILED DESCRIPTION

- **Our project has containing 3 MySQL tables. These are:**
  1. books
  2. Issue
  3. return_

1.) The table books contain the following column:

a) Book_Name
b) Author
c) Book_code
d) Total
e) Subject

2.) The table issue contain the following columns:

a) Name
b) E_No
c) Book_code
d) Issue_Date

3.) The table return_ contain the following columns:

a) Name
b) E_No
c) Book_code
d) Return_Date

SOURCE CODE

For MySQL :

create database library:

use library;

```
create table books(Book_Name varchar(50),
                   Author varchar(50),
                   Book_code int,
                   Total int,
                   Subject varchar(50)
                  );
create table issue ( Name varchar(50),
                   E_No varchar(50),
                   Book_code int,
                   Issue_Date date
                   );
create table return_ ( Name varchar(50),
                      E_No varchar(50),
                      Book_code int,
                      Return_Date date
                      );
```

For Python :

```
import mysql.connector as a
con=a.connect(host='localhost',username='root',password='nat
h@98',database='library')
# print(" Data base successfully connected ")
```

def addbook():

```
    book_name=input("Enter The Book Name : ")
    book_author=input("Enter The Author's Name : ")
    book_code=int(input("Enter The Book Code : "))
    total=int(input("Total Books : "))
    sub=input("Enter Subject : ")
    data=(book_name,book_author,book_code,total,sub)
                # create a tuple named ‘data’
    sql='insert into books values(%s,%s,%s,%s,%s);'
              # insert data into books table
    c=con.cursor()
     # create a cursor object a . it is use to execute SQL Commands
    c.execute(sql,data)  # execute the sql query
    con.commit()   # commits the transaction to the database.
    print("\n\n Book Added Successfully.....\n\n")
    wait=input('\n Press enter to continue...\n')
           # wait for user input
    main()  # main function call
```

def issue_book():

```
    student_name=input("Enter The Student Name : ")
    en_no=input("Enter Enrollment No. : ")
    co=int(input("Enter Book Code : "))
    date=input("Enter Date : ")
```

```
    a='insert into issue values(%s,%s,%s,%s);'
    data=(student_name,en_no,co,date)
    c=con.cursor()
    c.execute(a,data)
    con.commit()
    print("\n Book issued Successfully :")
    wait=input("\n Press enter to continue...\n")
    bookup(co,-1)
    main()
def return_book():
    student_name=input("Enter Student Name : ")
    en_no=input("Enter Enrollment No : ")
    co=input("Enter Book Code : ")
    date=input("Enter Date : ")
    a="insert into return_ values(%s,%s,%s,%s);"
    data=(student_name,en_no,co,date)
    c=con.cursor()
    c.execute(a,data)
    con.commit()
    print("Book Return by :",student_name)
    wait=input('\n\npress enter to continue...\n\n')
    bookup(co,1)
    main()
def dbook():
    ac=int(input("Enter Book Code : "))
    a="delete from books where Book_code=%s;"
    data=(ac,)
    c=con.cursor()
    c.execute(a,data)
    con.commit()
```

```
    print("\nBook Deleted Successfully : ")
    wait=input("\n Press enter to continue...\n\n")
    main()
def dispbook():
    a="select*from books;"
    c=con.cursor()
    c.execute(a)
          #   executes the SQL query stored in the variable a
    myresult=c.fetchall()
          # This line fetches data  all the rows
    for i in myresult:
       print("Book Name :",i[0])
     # prints value of the first column (index 0) of the current row
       print("Author : ",i[1])
       print("Book Code :",i[2])
       print("Total : ",i[3])
       print("Subject :",i[4])
       print("\n")
    wait=input('\n press enter to continue ...\n\n')
    main()

def report_issued_books():
    a="select*from issue;"
    c=con.cursor()
    c.execute(a)
    myresult=c.fetchall()
    for i in myresult:
       print(i)
    wait=input("\npress enter to continue ...\n")
    main()
```

```
def report_return_books():
    a="select*from return_;"
    c=con.cursor()
    c.execute(a)
    myresult=c.fetchall()
    for i in myresult:
        print(i)
    wait=input("\n press enter to continue...\n")
    main()

def report_menu():
    print('''REPORT MENU
    ---------------
    1. ISSUED BOOKS
    2. RETURNED BOOKS
    3. GO BACK TO MAIN MENU\n''')
    choice = input("Enter Task No:... ")
    print("\n\n")
    if choice == '1':
        report_issued_books()
    elif choice == '2':
        report_return_books()
    elif choice == '3':
          main()
    else:
        print("Invalid choice. Please try again...\n")
        report_menu()

def main():
    print(''' \n\n LIBRARAY MANAGEMENT SYSTEM
```

```
    ----------------------------

            1. ADD BOOK
            2. ISSUE OF BOOK
            3. RETURN OF BOOK
            4. DELETE BOOK
            5. DISPLAY BOOKS
            6. REPORT MENU
            7.EXIT PROGRAM
    ''')
    choice=input("Enter Task No:...")
    print('\n')
    if(choice=='1'):
       addbook()
    elif(choice=='2'):
      issue_book()
    elif(choice=='3'):
      return_book()
    elif(choice=='4'):
      dbook()
    elif(choice=='5'):
      dispbook()
    elif(choice=='6'):
         report_menu()
    elif (choice=='7'):
         print(' Thank you and have a great day ahead...\n')
    else:
        print(" Invalid choice ! Please try again...\n")
        main()
main()
```

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OUTPUT AND TABLES

➢ Output :

1.) Add a Book

a)

```
 LIBRARAY MANAGEMENT SYSTEM
----------------------------

             1. ADD BOOK
             2. ISSUE OF BOOK
             3. RETURN OF BOOK
             4. DELETE BOOK
             5. DISPLAY BOOKS
             6. REPORT MENU
             7.EXIT PROGRAM

Enter Task No:...1


Enter The Book Name : Data Communication and Networking
Enter The Author's Name : B.A Forouzan
Enter The Book Code : 101
Total Books : 05
Enter Subject : Computer Network


 Book Added Successfully.....


 Press enter to continue...
```

b)

```
 LIBRARAY MANAGEMENT SYSTEM
----------------------------

             1. ADD BOOK
             2. ISSUE OF BOOK
             3. RETURN OF BOOK
             4. DELETE BOOK
             5. DISPLAY BOOKS
             6. REPORT MENU
             7.EXIT PROGRAM

Enter Task No:...1


Enter The Book Name : Think Python
Enter The Author's Name : Allen B. Downey
Enter The Book Code : 102
Total Books : 10
Enter Subject : Python programming


 Book Added Successfully.....


 Press enter to continue...
```

2 .) Issue of a Book

a)

```
 LIBRARAY MANAGEMENT SYSTEM
----------------------------

             1. ADD BOOK
             2. ISSUE OF BOOK
             3. RETURN OF BOOK
             4. DELETE BOOK
             5. DISPLAY BOOKS
             6. REPORT MENU
             7.EXIT PROGRAM

Enter Task No:...2


Enter The Student Name : Tripurari Nath
Enter Erollment No. : GGV/22/15349
Enter Book Code : 101
Enter Date : 2024-03-09

 Book issued Successfully :

 Press enter to continue...
```

b)

```
 LIBRARAY MANAGEMENT SYSTEM
----------------------------

             1. ADD BOOK
             2. ISSUE OF BOOK
             3. RETURN OF BOOK
             4. DELETE BOOK
             5. DISPLAY BOOKS
             6. REPORT MENU
             7.EXIT PROGRAM

Enter Task No:...2


Enter The Student Name : Sanjeev Kumar
Enter Enrollment No. : GGV/22/231523
Enter Book Code : 110
Enter Date : 2024-03-10

 Book issued Successfully :

 Press enter to continue...
```

3.) Return Book :

```
 LIBRARAY MANAGEMENT SYSTEM
----------------------------

              1. ADD BOOK
              2. ISSUE OF BOOK
              3. RETURN OF BOOK
              4. DELETE BOOK
              5. DISPLAY BOOKS
              6. REPORT MENU
              7.EXIT PROGRAM

Enter Task No:...3


Enter Student Name : Tripurari Nath
Enter Enrollment No : GGV/22/15349
Enter Book Code : 101
Enter Date : 2024-03-11
Book Return by : Tripurari Nath


press enter to continue...
```

4.) Delete Book:

```
 LIBRARAY MANAGEMENT SYSTEM
----------------------------

              1. ADD BOOK
              2. ISSUE OF BOOK
              3. RETURN OF BOOK
              4. DELETE BOOK
              5. DISPLAY BOOKS
              6. REPORT MENU
              7.EXIT PROGRAM

Enter Task No:...4


Enter Book Code : 113

Book Deleted Successfully :

 Press enter to continue...
```

5.) Display Book :

```
 LIBRARAY MANAGEMENT SYSTEM
----------------------------

             1. ADD BOOK
             2. ISSUE OF BOOK
             3. RETURN OF BOOK
             4. DELETE BOOK
             5. DISPLAY BOOKS
             6. REPORT MENU
             7.EXIT PROGRAM

Enter Task No:...5


Book Name : Data Communication and Networking
Author :  B.A Forouzan
Book Code : 101
Total :  5
Subject : Computer Network


Book Name : Think Python
Author :  Allen B. Downey
Book Code : 102
Total :  10
Subject : Python programming



Book Name : Artifical Intelligence
Author :  E.Rich and K.Knight
Book Code : 103
Total :  3
Subject : AI


Book Name : Database System Concepts
Author :  Abrahan Silberschatz
Book Code : 104
Total :  2
Subject : DBMS


Book Name : Indian Polity
Author :  M. Laxmikanth
Book Code : 110
Total :  10
Subject : Polity
```

6.) Report Menu:

```
 LIBRARAY MANAGEMENT SYSTEM
----------------------------

             1. ADD BOOK
             2. ISSUE OF BOOK
             3. RETURN OF BOOK
             4. DELETE BOOK
             5. DISPLAY BOOKS
             6. REPORT MENU
             7.EXIT PROGRAM

Enter Task No:...6


REPORT MENU
---------------
    1. ISSUED BOOKS
    2. RETURNED BOOKS
    3. GO BACK TO MAIN MENU

Enter Task No:...
```

1. Issued Books

```
REPORT MENU
---------------
    1. ISSUED BOOKS
    2. RETURNED BOOKS
    3. GO BACK TO MAIN MENU

Enter Task No:... 1



('Tripurari Nath', 'GGV/22/15349', 101, datetime.date(2024, 3, 9))
('Sanjeev Kumar', 'GGV/22/231523', 110, datetime.date(2024, 3, 10))

press enter to continue ...
```

2. Returned Books

```
REPORT MENU
---------------
    1. ISSUED BOOKS
    2. RETURNED BOOKS
    3. GO BACK TO MAIN MENU

Enter Task No:... 2



[('Tripurari Nath', 'GGV/22/15349', 101, datetime.date(2024, 3, 11))]

press enter to continue...
```

3. Go Back:

```
REPORT MENU
---------------
    1. ISSUED BOOKS
    2. RETURNED BOOKS
    3. GO BACK TO MAIN MENU

Enter Task No:... 3




 LIBRARAY MANAGEMENT SYSTEM
----------------------------

             1. ADD BOOK
             2. ISSUE OF BOOK
             3. RETURN OF BOOK
             4. DELETE BOOK
             5. DISPLAY BOOKS
             6. REPORT MENU
             7.EXIT PROGRAM
```

7.) Exit:

```
 LIBRARAY MANAGEMENT SYSTEM
-----------------------------

             1. ADD BOOK
             2. ISSUE OF BOOK
             3. RETURN OF BOOK
             4. DELETE BOOK
             5. DISPLAY BOOKS
             6. REPORT MENU
             7.EXIT PROGRAM

Enter Task No:...7


 Thank you and have a great day ahead...
```

➢ Tables:

Select*from books

Book_Name	Author	Book_code	Total	Subject
Data Communication and Networking	B.A Forouzan	101	5	Computer Network
Think Python	Allen B. Downey	102	10	Python programming
Artifical Intelligence	E.Rich and K.Knight	103	3	AI
Database System Concepts	Abrahan Silberschatz	104	2	DBMS
Indian Polity	M. Laxmikanth	110	10	Polity
Modern History	Bipin Chandra	111	5	Modern History of India
Ancient History	Rs Sharma	112	6	History
Indian Economy	Ramesh Singh	114	4	Economy

Select*from issue;

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Name	E_No	Book_code	Issue_Date
Tripurari Nath	GGV/22/15349	101	2024-03-09
Sanjeev Kumar	GGV/22/231523	110	2024-03-10

Select*from return_;

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Name	E_No	Book_code	Return_Date
Tripurari Nath	GGV/22/15349	101	2024-03-11

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Reference

- Python Libraries
- You tube Video Lectures
- Online Source
- Google.com
- ChatGpt
- Google Bard

Use:

- **Code editor-**Visual studio code

- **DB –** MySQL Workbench 8.0 CE