

Mini Project-Library Management System

Create a Library Management System using Python. Below are the steps which you need to follow to create an end-to-end project for LMS. Here Librarian can add/modify/issue the books and can perform various other operation as listed in below steps. Use Python concepts only for creating this project. Steps:

Step 1: Basic Structure

1. Write a Python script that prints a welcome message for the Library Management System.
2. Define an initial list or dictionary to store books, with details like title, author, and availability.

Example: library = { "Python Basics": {"author": "Test", "available": True}, "Data Science": {"author": "Test1", "available": False} } 3. Write a function to display all the books with their details.

```
In [41]: def display_books(library):
    print("\nLibrary Catalog:")
    if not library:
        print("No books in the library.")
        return
    for title, details in library.items():
        availability = "Available" if details["available"] else "Not Available"
        print(f"Title: {title}, Author: {details['author']}, Status: {availability}")

# Initial library catalog
library = {
    "Python Basics": {"author": "Alok", "available": True},
    "Data Science": {"author": "Adhiranshu", "available": False}
}

print("Welcome to the Library Management System!")

display_books(library)
```

Welcome to the Library Management System!

Library Catalog:

Title: Python Basics, Author: Alok, Status: Available

Title: Data Science, Author: Adhiranshu, Status: Not Available

```
In [42]: def add_book(library):
    title = input("Enter the title of the book: ")
    author = input("Enter the author of the book: ")

    if title in library:
        print("Error: This book already exists in the library.")
    else:
        library[title] = {"author": author, "available": True}
        print(f"Book '{title}' by {author} added successfully!")

# Call the function to add a book
add_book(library)

# Display the updated list of books
display_books(library)
```

Book 'Power BI' by Aryan added successfully!

Library Catalog:

Title: Python Basics, Author: Alok, Status: Available

Title: Data Science, Author: Adhiranshu, Status: Not Available

Title: Power BI, Author: Aryan, Status: Available

```
In [ ]: Step 3: Issuing Books
5.      Create a function to issue a book. The function should:
o       Check if the book exists and is available.
o       Mark it as unavailable if issued and record the name of the person issuing it.
6.      Modify the display function to show the current status of the book (Available or Issued).
```

```
In [43]: def issue_book(library):
    title = input("Enter the title of the book to issue: ")
    if title in library:
        if library[title]["available"]:
            user_name = input("Enter your name: ")
            library[title]["available"] = False
            library[title]["issued_to"] = user_name # Record the person issuing the book
            print(f"Book '{title}' issued to {user_name} successfully!")
        else:
            print(f"Book '{title}' is currently not available.")
    else:
        print(f"Book '{title}' not found in the library.")
```

```
def display_books(library):
    print("\nLibrary Catalog:")
    if not library:
        print("No books in the library.")
        return
    for title, details in library.items():
        availability = "Available" if details["available"] else "Not Available"
        if "issued_to" in details and not details["available"]:
            print(f"Title: {title}, Author: {details['author']}, Status: {availability}, Issued to: {details['issued_to']}")
        else:
            print(f"Title: {title}, Author: {details['author']}, Status: {availability}")

issue_book(library)
display_books(library)
```

Book 'Power BI' issued to Aryan successfully!

Library Catalog:

Title: Python Basics, Author: Alok, Status: Available

Title: Data Science, Author: Adhiranshu, Status: Not Available

Title: Power BI, Author: Aryan, Status: Not Available, Issued to: Aryan

```
In [46]: def return_book(library):
    title = input("Enter the title of the book to return: ")
    if title in library:
        if not library[title]["available"]:
            library[title]["available"] = True
            issued_to = library[title].pop("issued_to", None) # Remove the issuer's name
            print(f"Book '{title}' returned successfully by {issued_to}!")
        else:
            print(f"Book '{title}' was not issued.")
    else:
        print(f"Book '{title}' not found in the library.")

return_book(library)
display_books(library)
```

Book 'Power BI' returned successfully by Aryan!

Library Catalog:

Title: Python Basics, Author: Alok, Status: Available

Title: Data Science, Author: Adhiranshu, Status: Not Available

Title: Power BI, Author: Aryan, Status: Available

```
In [65]: credentials = {"admin": "admin123", "librarian": "lib123"}
# Function to issue a book
def login():
    attempts = 0
    while attempts < 3:
        username = input("Enter username: ")
        password = input("Enter password: ")
        if username in credentials and credentials[username] == password:
            print("Login successful!")
            return True
        else:
            attempts += 1
            print(f"Invalid credentials. {3 - attempts} attempts remaining.")
    print("Too many incorrect login attempts. Exiting.")
    return False
if login():
    display_books(library)
```

Login successful!

Library Catalog:

Title: Python Basics, Author: Alok, Status: Available

Title: Data Science, Author: Adhiranshu, Status: Not Available

Title: Power BI, Author: Aryan, Status: Available

```
In [66]: def view_issued_books(library):
    print("\nIssued Books:")
    issued_books_found = False
    for title, details in library.items():
        if "issued_to" in details and not details["available"]:
            print(f"Title: {title}, Issued to: {details['issued_to']}")
            issued_books_found = True
    if not issued_books_found:
        print("No books are currently issued.")

# Example usage (assuming 'library' is your library dictionary):
view_issued_books(library)
```

Issued Books:
No books are currently issued.

```
In [ ]: # prompt: 10. Combine all the functions into a menu-driven program:
# 0 Use a while loop to display options like:
# ↪ View Books
# ↪ Add a Book
# ↪ Issue a Book
# ↪ Return a Book
# ↪ View Issued Books
# ↪ Exit

def display_books(library):
    print("\nLibrary Catalog:")
    if not library:
        print("No books in the library.")
        return
    for title, details in library.items():
        availability = "Available" if details["available"] else "Not Available"
        if "issued_to" in details and not details["available"]:
            print(f"Title: {title}, Author: {details['author']}, Status: {availability}, Issued to: {details['issued_to']}")
        else:
            print(f"Title: {title}, Author: {details['author']}, Status: {availability}")

def add_book(library):
    title = input("Enter the title of the book: ")
    author = input("Enter the author of the book: ")

    if title in library:
        print("Error: This book already exists in the library.")
    else:
        library[title] = {"author": author, "available": True}
        print(f"Book '{title}' by {author} added successfully!")

def issue_book(library):
    title = input("Enter the title of the book to issue: ")
    if title in library:
        if library[title]["available"]:
            user_name = input("Enter your name: ")
            library[title]["available"] = False
            library[title]["issued_to"] = user_name
            print(f"Book '{title}' issued to {user_name} successfully!")
        else:
            print(f"Book '{title}' is currently not available.")
    else:
        print(f"Book '{title}' not found in the library.")

def return_book(library):
    title = input("Enter the title of the book to return: ")
    if title in library:
        if not library[title]["available"]:
            library[title]["available"] = True
            issued_to = library[title].pop("issued_to", None)
            print(f"Book '{title}' returned successfully by {issued_to}!")
        else:
            print(f"Book '{title}' was not issued.")
    else:
        print(f"Book '{title}' not found in the library.")

def view_issued_books(library):
    print("\nIssued Books:")
    issued_books_found = False
    for title, details in library.items():
        if "issued_to" in details and not details["available"]:
            print(f"Title: {title}, Issued to: {details['issued_to']}")
            issued_books_found = True
    if not issued_books_found:
        print("No books are currently issued.")

# Initial library catalog
library = {
    "Python Basics": {"author": "Alok", "available": True},
    "Data Science": {"author": "Adhiranshu", "available": False}
}

credentials = {"admin": "admin123", "librarian": "lib123"}

def login():
    attempts = 0
    while attempts < 3:
        username = input("Enter username: ")
        password = input("Enter password: ")
        if username in credentials and credentials[username] == password:
```

```

        print("Login successful!")
        return True
    else:
        attempts += 1
        print(f"Invalid credentials. {3 - attempts} attempts remaining.")
    print("Too many incorrect login attempts. Exiting.")
    return False

if login():
    while True:
        print("\nMain Menu:")
        print("1. View Books")
        print("2. Add a Book")
        print("3. Issue a Book")
        print("4. Return a Book")
        print("5. View Issued Books")
        print("6. Exit")

        choice = input("Enter your choice: ")

        if choice == '1':
            display_books(library)
        elif choice == '2':
            add_book(library)
        elif choice == '3':
            issue_book(library)
        elif choice == '4':
            return_book(library)
        elif choice == '5':
            view_issued_books(library)
        elif choice == '6':
            print("Exiting the Library Management System.")
            break
        else:
            print("Invalid choice. Please try again.")

```

Login successful!

Main Menu:

1. View Books
2. Add a Book
3. Issue a Book
4. Return a Book
5. View Issued Books
6. Exit

Library Catalog:

Title: Python Basics, Author: Alok, Status: Available

Title: Data Science, Author: Adhiranshu, Status: Not Available

Main Menu:

1. View Books
2. Add a Book
3. Issue a Book
4. Return a Book
5. View Issued Books
6. Exit

Book 'Machine Learning' by Aryan added successfully!

Main Menu:

1. View Books
2. Add a Book
3. Issue a Book
4. Return a Book
5. View Issued Books
6. Exit

Book 'Python Basics' issued to Alok successfully!

Main Menu:

1. View Books
2. Add a Book
3. Issue a Book
4. Return a Book
5. View Issued Books
6. Exit

Issued Books:

Title: Python Basics, Issued to: Alok

Main Menu:

1. View Books
2. Add a Book
3. Issue a Book
4. Return a Book
5. View Issued Books
6. Exit

Library Catalog:
Title: Python Basics, Author: Alok, Status: Not Available, Issued to: Alok
Title: Data Science, Author: Adhiranshu, Status: Not Available
Title: Machine Learning, Author: Aryan, Status: Available

Main Menu:

1. View Books
2. Add a Book
3. Issue a Book
4. Return a Book
5. View Issued Books
6. Exit

Book 'Emotional Manipulation' by Alok Miglani added successfully!

Main Menu:

1. View Books
2. Add a Book
3. Issue a Book
4. Return a Book
5. View Issued Books
6. Exit

Library Catalog:

Title: Python Basics, Author: Alok, Status: Not Available, Issued to: Alok
Title: Data Science, Author: Adhiranshu, Status: Not Available
Title: Machine Learning, Author: Aryan, Status: Available
Title: Emotional Manipulation, Author: Alok Miglani, Status: Available

Main Menu:

1. View Books
2. Add a Book
3. Issue a Book
4. Return a Book
5. View Issued Books
6. Exit

Library Catalog:

Title: Python Basics, Author: Alok, Status: Not Available, Issued to: Alok
Title: Data Science, Author: Adhiranshu, Status: Not Available
Title: Machine Learning, Author: Aryan, Status: Available
Title: Emotional Manipulation, Author: Alok Miglani, Status: Available

Main Menu:

1. View Books
2. Add a Book
3. Issue a Book
4. Return a Book
5. View Issued Books
6. Exit

In []:

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