

LIBRARY MANAGEMENT SYSTEM

PON RASHMI G R

ABHIRAMI C VARIER

PRANAV R R

RANJITH D

DESCRIPTION:

A simple console interactive library management system consisting of two roles – admin and user, each having a login. One can also register their new account as a user. Here, Admin has many privileges such as they can add books, list books (both available and borrowed), listing the users, adding and deleting the users, promoting user to admin and demoting admin to user whereas user has some privileges such as they can list the books, search through the books, borrow and return the books and listing the borrowed books.

GITHUB REPOSITORY LINK AND VIDEO LINK:

- GITHUB LINK: [PonRashmiGR/Library-Management Python \(github.com\)](https://github.com/PonRashmiGR/Library-Management-Python)
- VIDEO LINK: [Call with Python Team-20230306_220158-Meeting Recording.mp4 \(sharepoint.com\)](#)

REQUIREMENTS:

1. **NOTEPAD++ v8.5:** Free source code editor and Notepad replacement that supports several languages.
2. **POSTGRESQL:** Powerful, reliable and flexible database management system that can handle complex data models and large-scale applications. The latest version comes with pgadmin.
3. **GITBASH:** Command-line interface (CLI) tool that provides a Unix-like environment on Windows systems primarily used for working with Git repositories.

INSTALLATIONS: (WINDOWS)

1. NOTEPAD++ V8.5:

- Go to the Notepad++ website ([Downloads | Notepad++ \(notepad-plus-plus.org\)](https://notepad-plus-plus.org/downloads)) and download the latest version of it.
- Once the download is complete, double-click on the installer and click 'yes'.
- Select your language and click 'ok'. After this, the installation begins.
- Once the installation is complete, you can launch Notepad++ from the desktop or start menu shortcut.

2. POSTGRESQL:

- Go to the Postgresql website ([PostgreSQL: Downloads](#)) and download the latest version of it.
- Double click on the downloaded file to start the installation process.
- After installation is done, make sure to uncheck the box that is displayed and finish the installation.
- Now, you can launch Postgresql from the desktop as pgadmin.
- There will be a point where password is taken from the user. Remember that password. It will be useful in further connections.

3. GITBASH:

- Go to the Git Bash website ([Git - Downloading Package \(git-scm.com\)](#)) and download the latest version of it.
- Double click on the downloaded file to start the installation process.
- After installation is done, you can launch Git bash from the desktop.

CREATING TABLES IN POSTGRESQL :

- Create a database by right clicking it. Create → Database.
- Under Database → Schemas → Tables → Right click on it and create table.
- Name the table and in columns section, add the columns, database, if NOT-NULL type, if Primary Key and default.
- After creating the table, save it.
- Now the created table will appear below the table section. Just right click on it and select view/edit data. Here one can view the data and also enter the data.

The screenshot shows the pgAdmin 4 interface. On the left, the 'Browser' pane shows a tree view of the database structure. The 'public' schema is expanded, and the 'users' table is selected. The main pane displays the 'Query' editor with the following SQL query:

```
1 SELECT * FROM public.users
2 ORDER BY id ASC
```

Below the query editor, the 'Data Output' pane shows the results of the query. The table has 5 rows and 4 columns: 'id' (integer, primary key), 'username' (character varying (50)), 'password' (character varying (50)), and 'role' (character varying (10)).

id	username	password	role
1	rashmi	12301	admin
2	nisen	31105	admin
3	archana	12345	user
4	nithish	678910	user
5	sandiyaa	sandiyaa	user

At the bottom of the 'Data Output' pane, it says 'Total rows: 5 of 5' and 'Query complete 00:00:00.065'.

- In SQL, one can see the query generated by the table. This query can be made to run in query tool to generate this table.
- For Library Management System, 3 tables are created – books, loans and users with different columns in it.

CONNECTION TO THE DATABASE WITH PYTHON:

- **Psycopg2** is the most popular PostgreSQL adapter used in Python. It is designed to perform heavily multi-threaded applications that usually create and destroy lots of cursors and make many simultaneous INSERTS or UPDATES. Psycopg2 features client-side and server-side cursors, asynchronous communication, and notification.
[Use `pip install psycopg2-binary` in command window to download it]

RESULTS:

MAIN WINDOW:

```
Welcome to the Library Management System!
What would you like to do?
1. Register as a new user
2. Log in
3. Exit
Enter your choice (1-3):
```

REGISTERING AS A NEW USER:

```
Welcome to the Library Management System!
What would you like to do?
1. Register as a new user
2. Log in
3. Exit
Enter your choice (1-3): 1
Enter a username: abhi
Enter a password: ab@7
Confirm password: ab@7
Registration successful.
What would you like to do?
1. Register as a new user
2. Log in
3. Exit
Enter your choice (1-3):
```

	id	username	password	role
	[PK] integer	character varying (50)	character varying (50)	character varying (10)
1	1	rasnmi	12301	admin
2	2	nisen	31105	admin
3	3	archana	12345	user
4	4	nithish	678910	user
5	5	sandiyaa	sandiya	user
6	6	abhi	ab@7	user

LOGIN:

```
What would you like to do?
1. Register as a new user
2. Log in
3. Exit
Enter your choice (1-3): 2
Enter your username: rashmi
Enter your password:
What would you like to do?
1. Add Books
2. List Books
3. List borrowed books
4. List users
5. Add a user
6. Promote a user to admin
7. Demote an admin to user
8. Delete a user
9. Logout
Enter your choice (1-7):
```

rashmi is the admin. So, the privilege of admin is listed in the screenshot attached.

```
Welcome to the Library Management System!
What would you like to do?
1. Register as a new user
2. Log in
3. Exit
Enter your choice (1-3): 2
Enter your username: archana
Enter your password:
What would you like to do?
1. List Books
2. Borrow a book
3. Return a book
4. Search
5. List borrowed books
6. Logout
Enter your choice (1-4):
```

archana is the user. So, the privilege of user is listed in the screenshot attached.

ADDING BOOKS:

```
What would you like to do?
1. Add Books
2. List Books
3. List borrowed books
4. List users
5. Add a user
6. Promote a user to admin
7. Demote an admin to user
8. Delete a user
9. Logout
Enter your choice (1-7): 1
Enter the title of the book: Python Programming
Enter the author of the book: ABCD
Enter the genre of the book: Programming
Enter the publication date of the book (YYYY-MM-DD): 2012-12-03
```

	id [PK] integer	title character varying (100)	author character varying (100)	publication_date date	available boolean	genre character varying (255)
1	1	wings of fire	APJ	1999-03-12	true	biography
2	2	harry potter	j k rowling	1998-11-03	true	magic
3	3	hamlet	shakespeare	2004-06-06	true	fiction
4	4	Python Programming	ABCD	2012-12-03	true	Programming

LISTING BOOKS:

```

What would you like to do?
1. Add Books
2. List Books
3. List borrowed books
4. List users
5. Add a user
6. Promote a user to admin
7. Demote an admin to user
8. Delete a user
9. Logout
Enter your choice (1-7): 2
ID      Title      Author  genre  Publication Date      Available
1      wings of fire  APJ     biography  1999-03-12      True
2      harry potter   j k rowling  magic  1998-11-03      True
3      hamlet        shakespeare  fiction  2004-06-06      True
4      Python Programming  ABCD     Programming  2012-12-03      True

```

BORROW BOOK:

```

Welcome to the Library Management System!
What would you like to do?
1. Register as a new user
2. Log in
3. Exit
Enter your choice (1-3): 2
Enter your username: archana
Enter your password:
What would you like to do?
1. List Books
2. Borrow a book
3. Return a book
4. Search
5. List borrowed books
6. Logout
Enter your choice (1-4): 2
Enter the ID of the book you want to borrow: 1

```

	id [PK] integer	title character varying (100)	author character varying (100)	publication_date date	available boolean	genre character varying (255)
1	1	wings of fire	APJ	1999-03-12	false	biography
2	2	harry potter	j k rowling	1998-11-03	true	magic
3	3	hamlet	shakespeare	2004-06-06	true	fiction
4	4	Python Programming	ABCD	2012-12-03	true	Programming

Here, wings of fire book is borrowed. So, the available column changes to false.

LISTING THE BORROWED BOOKS:

```
What would you like to do?
1. List Books
2. Borrow a book
3. Return a book
4. Search
5. List borrowed books
6. Logout
Enter your choice (1-4): 5
Book ID Title Borrower Loan Date Return Date
1 wings of fire archana 2023-03-06 None
```

RETURNING THE BORROWED BOOKS:

```
What would you like to do?
1. List Books
2. Borrow a book
3. Return a book
4. Search
5. List borrowed books
6. Logout
Enter your choice (1-4): 3
Enter the ID of the book you want to return: 1
```

	id [PK] integer	title character varying (100)	author character varying (100)	publication_date date	available boolean	genre character varying (255)
1	1	wings of fire	APJ	1999-03-12	true	biography
2	2	harry potter	j k rowling	1998-11-03	true	magic
3	3	hamlet	shakespeare	2004-06-06	true	fiction
4	4	Python Programming	ABCD	2012-12-03	true	Programming

After returning, the book id 1 Boolean turns to be true.

SEARCH BOOKS:

```
What would you like to do?
1. List Books
2. Borrow a book
3. Return a book
4. Search
5. List borrowed books
6. Logout
Enter your choice (1-4): 4
Enter search term: wings of fire
ID Title Author Publication Date Available
1 wings of fire APJ biography True
```

PROMOTING THE USER TO ADMIN:

	id [PK] integer	username character varying (50)	password character varying (50)	role character varying (10)
1	1	rashmi	12301	admin
2	2	nisen	31105	admin
3	3	archana	12345	user
4	4	nithish	678910	user
5	5	sandiyaa	sandiya	user
6	6	abhi	ab@7	user

```
What would you like to do?
1. Add Books
2. List Books
3. List borrowed books
4. List users
5. Add a user
6. Promote a user to admin
7. Demote an admin to user
8. Delete a user
9. Logout
Enter your choice (1-7): 6
Enter the ID of the user you want to promote to admin: 3
User promoted to admin successfully.
```

	id [PK] integer	username character varying (50)	password character varying (50)	role character varying (10)
1	1	rashmi	12301	admin
2	2	nisen	31105	admin
3	3	archana	12345	admin
4	4	nithish	678910	user
5	5	sandiyaa	sandiya	user
6	6	abhi	ab@7	user





DEMOTING THE ADMIN TO USER:

	id [PK] integer	username character varying (50)	password character varying (50)	role character varying (10)
1	1	rashmi	12301	admin
2	2	nisen	31105	admin
3	3	archana	12345	admin
4	4	nithish	678910	user
5	5	sandiyaa	sandiya	user
6	6	abhi	ab@7	user

```

What would you like to do?
1. Add Books
2. List Books
3. List borrowed books
4. List users
5. Add a user
6. Promote a user to admin
7. Demote an admin to user
8. Delete a user
9. Logout
Enter your choice (1-7): 7
Enter the ID of the admin you want to demote to user: 3
Admin demoted to user successfully.

```

	id [PK] integer 	username character varying (50) 	password character varying (50) 	role character varying (10) 
1	1	rashmi	12301	admin
2	2	nisen	31105	admin
3	3	archana	12345	user
4	4	nithish	678910	user
5	5	sandiyaa	sandiya	user
6	6	abhi	ab@7	user