



ഗ്രന്ഥകോശം

Project Report

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GranthaKoshaya eLibrary

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Introduction

A library system is essential for a country. Although Sri Lanka's library system is currently in good condition. With the advancement of technology, the library also needs to be digitized. Many people missed this library because they should have stayed at home last few years. I thought of creating this GranthaKoshaya eLibrary System as a solution to this.

GranthaKoshaya eLibrary is library that stores content digitally and is accessible by any device any place and any time. eLibrary retrieves comprehensive yet accurate information that is 100% secure and virus-free, delivering it instantly at the click of the mouse across the internet. This efficient and interactive software solution, boasts the most up-to-date information on every subject that is quickly retrievable by keying in some elementary fields in the search options.

e-Library users can select searches in both Intranet and Internet model catalog for titles, authors, subjects or type keywords to describe an item they would like to find. If the search finds items, the system will show which collection the items are in and if they are available to check out.

GranthaKoshaya Library Collections contain e-Documents all accessible simultaneously by all users. It offers the world's largest collection of downloadable electronic books.

Background and Motivation

I have wanted to provide a service to Sri Lanka using new technology for a long time. In between, I got to know about this competition from a message received from the school. This inspired me to create a system like this.

Problem in Brief

One of the biggest problems with the library system in Sri Lanka is that it is difficult to manage books properly. Due to this, when students/customers get the books, notifying them about the dates to be returned, incidents such as non-delivery of books after they have been given can be reported.

The main problems of Normal Libraries are as follows:

- Growing mistrust of government
- The disappearing middle class
- The decline in reading
- Lack of recognition
- The struggle of library education

Aim & Objective

Aim

Provide a good service to Sri Lanka using new technology.

Objective

The main objectives of e-Libraries are as follows:

- Revival of reading and learning culture in general public, especially youth, families and senior citizens
- Inculcate e-reading and e-learning culture amongst general public, students, teachers and our society at large
- Establish a centralized Digital Library of e-books and documentaries.
- Explore and provide free, purchased, subscribed and indigenous e-resources.
- Encourage and persuade authors/publishers to provide e-Version of their publications for free reading and paid.

- Provide remote access to general public to top read international e-collections.
- Economize access to knowledge

Advantages of e-library

- ❖ No physical boundary: Since digital library is only a software and the materials are digital, the system can function anywhere in the institution with access to PC and LAN.
- ❖ Round-the-clock availability: Users can access the materials at any time within the institution's network.
- ❖ Multiple accesses: The same resources can be used at the same time by a number of users.
- ❖ Structured approach: e-library provides access to much richer content in a more structured manner, via main/sub/specific categories making the task of management of materials very easy for the librarian.
- ❖ Information retrieval: The system facilitates more flexibility and ease in searching a specific book or article. Simple or advance search options are available with options to use keywords, title, author, content, date, rating etc. as criteria.
- ❖ Preservation and conservation: An exact copy of the original can be made any number of times without any degradation in quality.
- ❖ Space: While traditional libraries are limited by storage space, digital libraries have the potential to store much more information simply because digital information requires very little physical space to contain it.
- ❖ Innovative technology: Digital libraries can immediately adopt innovations in technology providing users with improvements in electronic and audio book technology. Upgraded versions will be made available to the existing clients as and when they are done.
- ❖ Cost: The cost of maintaining a digital library is lower than that of a traditional library. A traditional library must spend large sums of money paying for staff, book maintenance, rent, and additional books, while digital libraries do away with these fees.
- ❖ Other features: Different user types can be created with varying access restrictions. Articles can be rated by the user and discussion forums can be created.

Work Plan

Task	Activity	Days to Complete
Task 01	Project Selection	02
Task 02	Planning how to do the project	02
Task 03	Gathering Information from Libraries	02
Task 04	Designing main UI/UX of the website	03
Task 05	Building the front end of website	05
Task 06	Create and Database to the website	02
Task 07	Building the back end of website	04
Task 07	Testing and debugging	02
Task 08	Deployment	01
Task 09	Further modifications	02

System Requirements

1. Non-Functional Requirements

1.1. Efficiency Requirement

When a library management system will be implemented librarian and user will easily access library as searching and book transaction will be very faster.

1.2. Reliability Requirement

The system should accurately perform member registration, member validation, report generation, book transaction and search

1.3. Usability Requirement

The system is designed for a user-friendly environment so that student and staff of library can perform the various tasks easily and in an effective way.

1.4. Implementation Requirements

In implementing whole system, it uses HTML in front end with PHP as server-side scripting language which will be used for database connectivity and the backend is the database part is developed using MySQL.

2. Functional Requirements

2.1. User Login

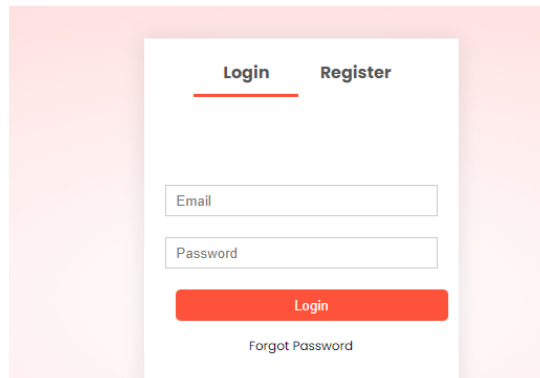
A screenshot of a user login form. At the top, there are two tabs: 'Login' (selected with a red underline) and 'Register'. Below the tabs are two input fields: 'Email' and 'Password'. Under the 'Password' field is a red 'Login' button. Below the button is a link that says 'Forgot Password'.

Figure 1-User Login

This feature used by the user to login into system. They are required to enter user id and password before they are allowed to enter the system. The user id and password will be verified and if invalid id is their user is allowed to not enter the system.

- ✓ User id is provided when they register.
- ✓ The system must only allow user with valid id and password to enter the system.
- ✓ The system performs authorization process which decides what user level can access to.
- ✓ The user must be able to logout after they finished using system.

2.2. Register New User

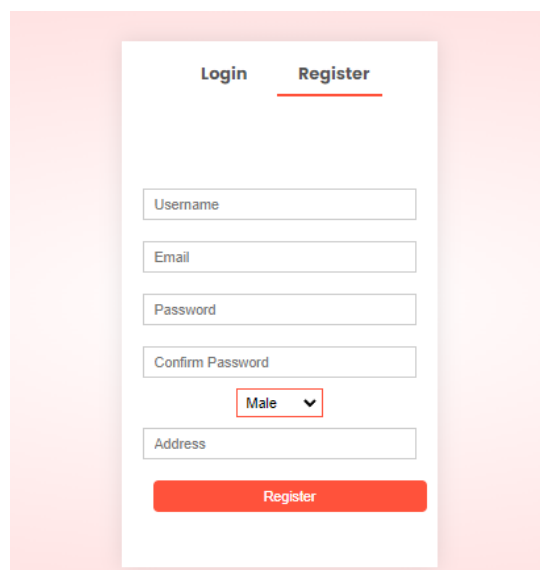
A screenshot of a user registration form. At the top, there are two tabs: 'Login' and 'Register' (selected with a red underline). Below the tabs are five input fields: 'Username', 'Email', 'Password', 'Confirm Password', and 'Address'. Between the 'Password' and 'Confirm Password' fields is a dropdown menu with 'Male' selected. At the bottom is a red 'Register' button.

Figure 2-Register New User

This feature can be performed by all users to register new user to create account.

- ✓ System must be able to verify information.
- ✓ System must be able to delete information if information is wrong.

2.3. Search Book

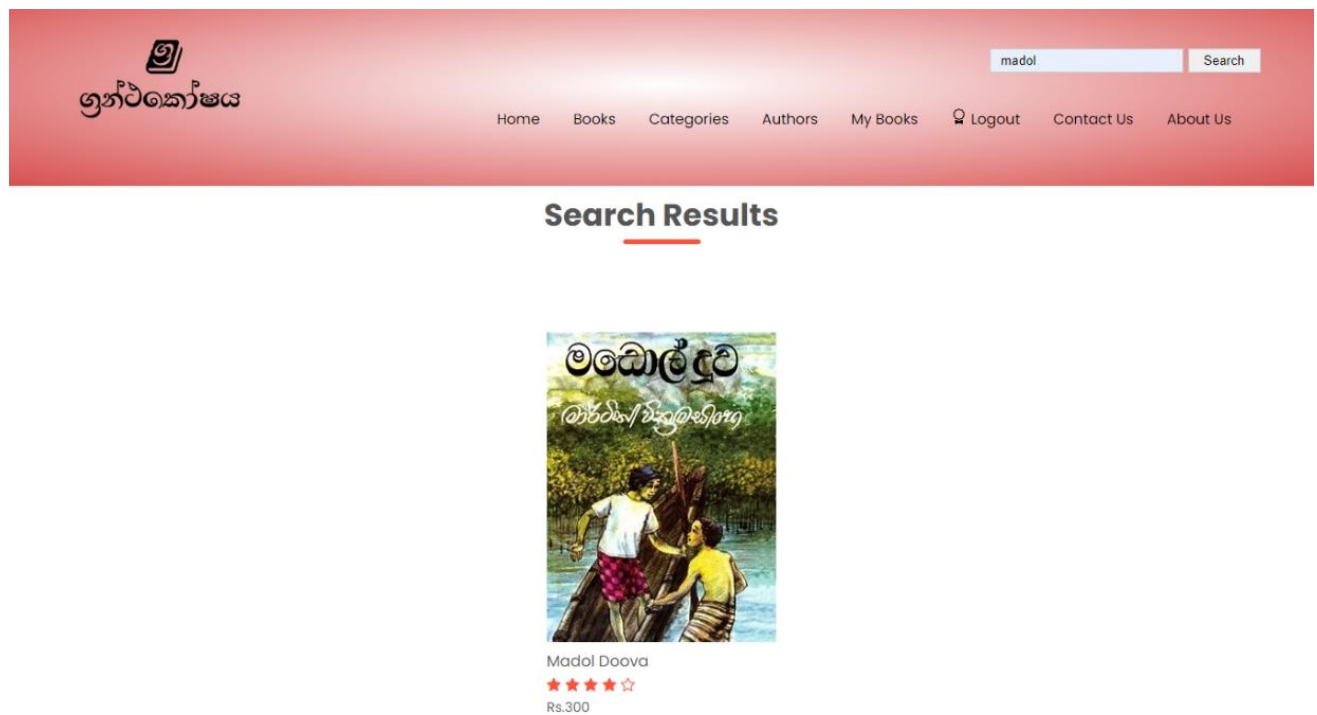


Figure 3-Search

This feature is found in book maintenance part. we can search book based on book id, book name, publication or by author name.

- ✓ System must be able to search the database based on select search type.
- ✓ System must be able to filter book based on keyword entered.
- ✓ System must be able to show the filtered book in book view.

2.4. Add New Book

Add New Book

Book Name:

Book Description:

Book Category:

Figure 4-Add New Book

This feature allows to add new books to the library. Only administrators can use this feature.

- ✓ System must be able to verify information.
- ✓ System must be able to enter number of copies into table.
- ✓ System must be able to not allow two books having same book id.

2.5. Add New Author

Add New Author

Author's Name:

Author's Image:

Choose File No file chosen

Add

Figure 5-Add new author

This feature allows to add new authors to the library. Only administrators can use this feature.

- ✓ System must be able to verify information.
- ✓ System must be able to not allow two authors having same authors id.

Used Technologies

- Front end
 - ✓ HTML
 - ✓ CSS
 - ✓ Bootstrap CSS Framework
 - ✓ PHP
 - ✓ JavaScript
- Apache with XAMPP (For local)
- (For online)
- Database - MySQL
- Code Editor – Microsoft Visual Studio Code 2022
- Version Controller – GitHub
- Bootstrap Icons

System Design

The system is divided into two parts, the first part is Admin side with database represent the server, and the second part is the User Interface side that represents the client by using PHP, MYSQL and APACHE with XAMPP server. System diagram and system database diagram are illustrated in Figure.

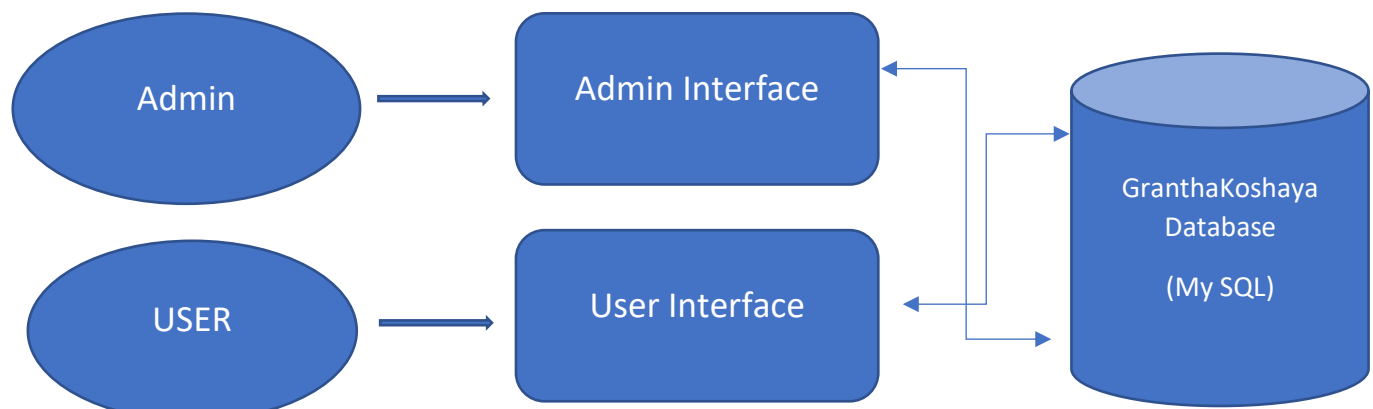


Figure 6-Structure

❖ Table Design

➤ Database

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> author	★ Browse Structure Search Insert Empty Drop	6	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> category	★ Browse Structure Search Insert Empty Drop	3	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> company	★ Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> customer	★ Browse Structure Search Insert Empty Drop	6	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> customer_product	★ Browse Structure Search Insert Empty Drop	7	InnoDB	utf8mb4_general_ci	32.0 KiB	-
<input type="checkbox"/> feedbacks	★ Browse Structure Search Insert Empty Drop	5	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> product	★ Browse Structure Search Insert Empty Drop	10	InnoDB	utf8mb4_general_ci	48.0 KiB	-
7 tables	Sum	38	InnoDB	utf8mb4_general_ci	160.0 KiB	0 B

Figure 7-database

➤ Company Table from Database

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 2	name	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 3	email	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 4	password	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 5	address	varchar(200)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Figure 8-company table

➤ Author Table from Database

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	Author_ID	int(25)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 2	Author	longtext	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 3	About	longtext	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 4	author_img	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Figure 9-author table

➤ Category Table from Database

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	cat_id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 2	cat_name	text	utf8mb4_general_ci		No	None			Change Drop More
<input type="checkbox"/> 3	cat_img	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Figure 10-category table

➤ Customer Table from Database

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 2	name	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 3	email	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 4	password	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 5	gender	varchar(50)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 6	address	varchar(200)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Figure 11-customer table

➤ Product Table from Database

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 2	name	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 3	description	varchar(500)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 4	category	varchar(50)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 5	cat_id	int(11)			Yes	NULL			Change Drop More
<input type="checkbox"/> 6	Author	varchar(11)	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 7	Author_ID	int(11)			Yes	NULL			Change Drop More
<input type="checkbox"/> 8	stars	int(11)			Yes	NULL			Change Drop More

Figure 12-product table

➤ Customer-Product Table from Database

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	customer_id	int(11)			No	None			Change Drop More
<input type="checkbox"/> 2	product_id	int(11)			No	None			Change Drop More
<input type="checkbox"/> 3	qty	int(11)			Yes	NULL			Change Drop More
<input type="checkbox"/> 4	bill_date	datetime			No	None			Change Drop More
<input type="checkbox"/> 5	is_shipped	int(11)			Yes	NULL			Change Drop More
<input type="checkbox"/> 6	is_received	int(11)			Yes	NULL			Change Drop More






Figure 13-customer product table

➤ Feedback Table from Database

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	feedback_id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 2	name	text	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 3	feedback	text	utf8mb4_general_ci		Yes	NULL			Change Drop More
<input type="checkbox"/> 4	rating	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Figure 14-feedback table

❖ Front End Design

File Name	File Type	What is this File?
index	PHP	Home page
aboutus	PHP	About of the site
adminproducts	PHP	Administrators can manage books
author-details	PHP	Details of selected author
authors-add	PHP	add authors
authors	PHP	All authors
cart	PHP	User cart
categories	PHP	All Categories
categories-add	PHP	Category add
category-details	PHP	Details of selected category
contact	PHP	Contact granthakoshaya
ebook-view	PHP	Read ebook online
error	PHP	Error page
granthakoshaya	SQL	Main database file
product-details	PHP	Details of selected book
product-add	PHP	add books
products	PHP	All books
readme	MD	Main readme file
search-results	PHP	Display search results
style	CSS	Main style sheet
 .github		Contains files and issue templates of GitHub repositories
 components		
/ footer	PHP	Footer of the site
/ header	PHP	Header of the site
 ebooks		Contains all pdf file of the books.
 resources		
flickity	CSS	Feedback gallery css
flickity.pkgd	JS	Feedback gallery JS
 images		Contains all images
 mail		Contains mailing files of contact us page
 src		
/ conn	PHP	Server connection
/ functions	PHP	Contains all functions
/ server	PHP	

System Implementation

If this is used in a school library, it can first be tested with its existing manual system and then completely switch to this new system. Otherwise, only one section (e.g. - primary section) can be implement using this new system after checking section by section.

If this is used in a bookshop, it is best to use this new system over time after using it in parallel with the existing manual system.

 Online - <https://granthakoshaya.000webhostapp.com/>

 Local

1. Install XAMPP or another cross-platform web server to your computer.
2. Start MY SQL & Apache from Control Panel.
3. Then, Move the main project folder to this folder. "C:\xampp\htdocs"

4. <http://127.0.0.1/phpmyadmin/> go to phpMyAdmin.
5. Create New Database and Enter "granthakoshaya" for Database Name & Create.
6. Open the "granthakoshaya.sql" file & Copy text on it.
7. Go to SQL Tab in phpMyAdmin & paste text that you have copied.
8. Finally, Run "index.php" File from <http://127.0.0.1/GranthaKoshaya/index.php>

Conclusion

This website provides a computerized version of library management system which will benefit the students as well as the staff of the library. It makes entire process online where student can search books, staff can view reports and do book transactions. It also has a facility for student/customer login where student/customer can login and can order books to doorstep.

Future Scope

There is a future scope of this facility that many more features such as short notes can be added by the school teachers as well as online assignments submission facility, a feature of students can request books from chat with admins and requesting notes from chat with teachers. And also give support for audiobooks. I expected to GranthaKoshaya is best library system of Sri Lanka.

Sources & References

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