



Building a Cyber Library: From Web Scraping to User Interface

241531, 241587, 241551, 241553

Application of ICT Project

Air University, Islamabad E-9

Technical Report

Content

1 Abstract	2
2 Introduction	2
3 Procedure	2
3.1 Webscraping	3
3.2 Backend	4
3.3 Frontend and Integration	6
4 Conclusion	7

1 Abstract

The Cyber Library project is a digital platform designed to provide users with a vast repository of knowledge through an intuitive and accessible interface. This report details the project's development lifecycle, including web scraping using Python to gather book data, data processing into structured formats like JSON and Excel, and frontend and backend integration using HTML, PHP, and XAMPP. Key features include search functionality, browsing categories, and personalized recommendations. The platform bridges technology and literature, demonstrating the seamless integration of modern tools to create a robust and user-centric application.

2 Introduction

The advent of digital platforms has revolutionized the way information is accessed and consumed. The Cyber Library project is an endeavor to harness this potential by creating a comprehensive repository of book data that is both searchable and user-friendly. Combining web scraping techniques, database integration, and a polished user interface, the library seeks to make vast literary resources accessible at users' fingertips.

This report outlines the technical journey behind the development of the Cyber Library, focusing on its architecture, from data acquisition to user interaction. Python was employed for web scraping and data structuring, while HTML and PHP powered the frontend and backend functionalities. XAMPP provided a local server environment to test and refine the library's features. The ultimate goal is to offer a digital solution that empowers users to explore and access books effortlessly.

3 Procedure

The whole procedure is explained below:

3.1 Webscraping

For web scraping, we utilize Python code integrated with the Google Books API to efficiently fetch book data. The script extracts key details such as the Title, Author, Description, ISBN, and Direct Link for approximately 500 books. This approach ensures accuracy and reliability while adhering to ethical data usage practices.

The extracted data is systematically processed and saved in both JSON and Excel formats, making it versatile for further use in database integration and analysis. These files are stored in the same directory as the source code, ensuring easy access and organization. For transparency and reproducibility, the source code, along with the JSON and Excel files, has been uploaded to a shared drive.

Json Format:

```
{  
    "Sr. No": 4,  
    "Title": "Cyber Security",  
    "Authors": "John G. Voeller",  
    "Description": "Cyber Security features articles from the Wiley Handbook of Science and Technology for Homeland Security covering topics related to cyber security metrics and measure and related technologies that meet security needs. Specific applications to web services, the banking and the finance sector, and industrial process control systems are discussed.",  
    "ISBN": "9781118651681",  
    "URL": "https://books.google.com/books?id=aT6fAgAAQBAJ"  
},  
{  
    "Sr. No": 5,  
    "Title": "International Guide to Cyber Security",  
    "Authors": "Jody R. Westby",  
    "Description": "The book discussess the categories of infrastructure that require protection. The issues associated with each, and the responsibilities of the public and private sector in securing this infrastructure.",  
    "ISBN": "9781590313329",  
    "URL": "https://books.google.com/books?id=Vmqe6qlTbB0C"  
}
```

Excel Format:

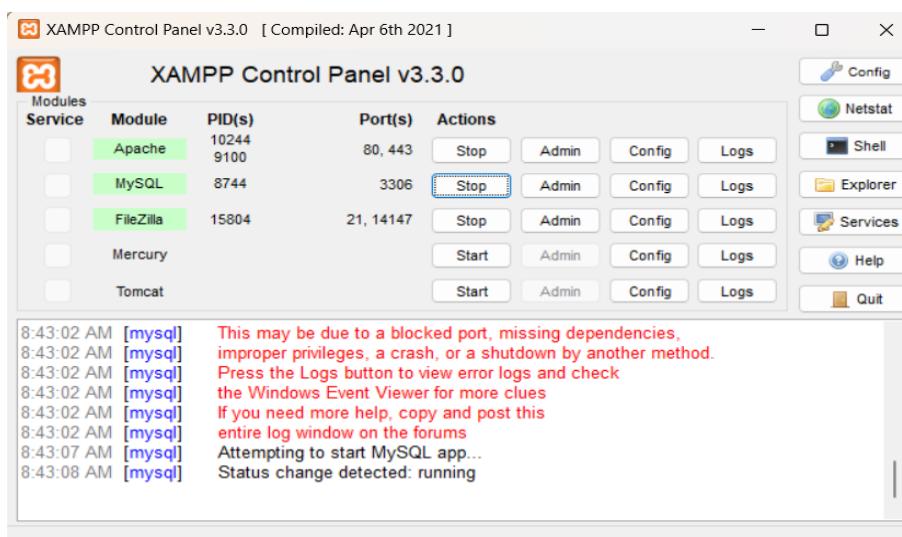
Sr. No	Title	Authors	Description	ISBN	URL			
1	1 Introduction to Cyber Security	Anand Shinde	Introduction to Cyber Security is a handy guide to the work	9781637816431	https://books.google.com/books?id=VLEcEAAAQBAJ			
2	2 FUNDAMENTAL OF CYBER SECURITY	Mayank Bhushan/Rajkumar Singh Rathore/Aati Description	The book has been written in such a way that it covers the basics of cybersecurity.	9789387284807	https://books.google.com/books?id=BY1jwAAQBAJ			
3	3 Cybersecurity For Dummies	Joseph Steinberg	Protect your business and family against cyber attacks	9781119560326	https://books.google.com/books?id=qbCuDwAAQBAJ			
4	4 Cyber Security	John G. Voelker	Cyber Security features articles from the Wiley Handbook	9781118651681	https://books.google.com/books?id=aT6fAgAAQBAJ			
5	5 International Guide to Cyber Security	Jody R. Westby	The book discusses the categories of infrastructure that may be affected by cyber attacks.	9781590313329	https://books.google.com/books?id=Vmqe6qTb0C			
6	6 Cyber Security and Threats: Concept Management Association, Information Resou	Cyber security has become a topic of concern over the past few years.		9781522556350	https://books.google.com/books?id=v35TDwAAQBAJ			
7	7 Cyber Security	James Andrew Lewis	"This volume looks at the challenges of cyberspace in an im	9780892064267	https://books.google.com/books?id=m4HxJ9hwC			
8	8 Cybersecurity	Quinn Kiser	If you want to discover how to protect yourself, your family,	9788680515051	https://books.google.com/books?id=_0_zCEACAAU			
9	9 Introduction to Network & Cybersec	Hardik A. Goel	The network is no more trustworthy if it is not secure. So,	9783659744723	https://books.google.com/books?id=Ak3mDwAAQBAJ			
10	10 Research Methods for Cyber Securit	Thomas W. Edgar, David O. Manz	Research Methods for Cyber Security teaches scientific me	9780128129302	https://books.google.com/books?id=aR12DQAAQBAJ			
11	11 Cyber Security: Power and Technolo	Matti Lehto, Peikka Neittaanmäki	This book gathers the latest research results of scientists	9783331975072	https://books.google.com/books?id=fR2DwAAQBAJ			
12	12 Cyber Security	Avantika Yadav	Cyber security is a combination of technologies, processes,	9781783323500	https://books.google.com/books?id=HGY1tAEACAAU			
13	13 Cyber Security Essentials	James Graham, Ryan Olson, Rick Howard	The sophisticated methods used in recent high-profile cyber	9781439851265	https://books.google.com/books?id=h4ublo5v3dsC			
14	14 Cyber Security: The Lifeline of Infor	Ramjee Prasad, Vandana Rohokale	This book discusses a broad range of cyber security issues	9783030317034	https://books.google.com/books?id=aY23DwAAQBAJ			
15	15 Confident Cyber Security	Dr Jessica Barker	Understand the basic principles of cyber security and future	9781789663426	https://books.google.com/books?id=nVSyAEACAAU			
16	16 The Cybersecurity Dilemma	Ben Buchanan	This book examines how cyber conflict could happen—even	9780190665012	https://books.google.com/books?id=dE8j0gAAQBAJ			
17	17 Cyber Security and Network	Sabyasachi Pramanik, Debraj Samanta, M.	CYBER SECURITY AND NETWORK SECURITY Written and ed	9781119812494	https://books.google.com/books?id=b8V6EAAAQBAJ			
18	18 Cyber Security Policy Guidebook	Jennifer L. Bayuk, Jason Healey, Paul Rohmey	Drawing upon a wealth of experience from academia, indu	9781118027806	https://books.google.com/books?id=E8UPu42xCc			
19	19 Essential Cybersecurity Science	Josiah Dykstra	If you're involved in cybersecurity as a software developer,	9781491921074	https://books.google.com/books?id=xRsowCwAAQBAJ			
20	20 Strategic Cyber Security Manager	Peter Trin, Yang-Im Lee	This textbook places cyber security management within an	9781000636338	https://books.google.com/books?id=qjZEAQBAJ			
21	21 Advances in Cyber Security	D. Frank Hsu, Dorothy Marinucci	As you read this your computer is in jeopardy of being hacked	9780823244560	https://books.google.com/books?id=XemMUzG1vKc			
22	22 Cyber Security and Global Informati	Knapp, Kenneth J.	"This book provides a valuable resource by addressing the	9781605663272	https://books.google.com/books?id=zphkCSJN6hQC			
23	23 Deep Learning Applications for Cybe	Mamoun Alazab, Menglian Tang	Cybercrime remains a growing challenge in terms of securi	9783030130572	https://books.google.com/books?id=Wl-pDwAAQBAJ			
24	24 Psychological and Behavioral Examii	McAlaney, John, Frumkin, Lara A., Benson, Vla	Cyber security has become a topic of concern over the past	9781522504540	https://books.google.com/books?id=IEFNDwAAQBAJ			
25								

3.2 Backend

Now that we have the data in JSON format, the next step is to utilize XAMPP to set up the backend infrastructure for the Cyber Library. The process involves the following key tasks:

Setup the MySQL Database:

1. Open XAMPP and start the Apache and MySQL services.



2. Go to <http://localhost/phpmyadmin> to access phpMyAdmin.

3. Create a new database called cyber_library.

4.Create a table named finalbook with the following structure:

- id (Primary Key, Auto Increment, INT)
- title (VARCHAR)
- author (VARCHAR)
- description (TEXT)
- isbn (VARCHAR)
- url (TEXT)

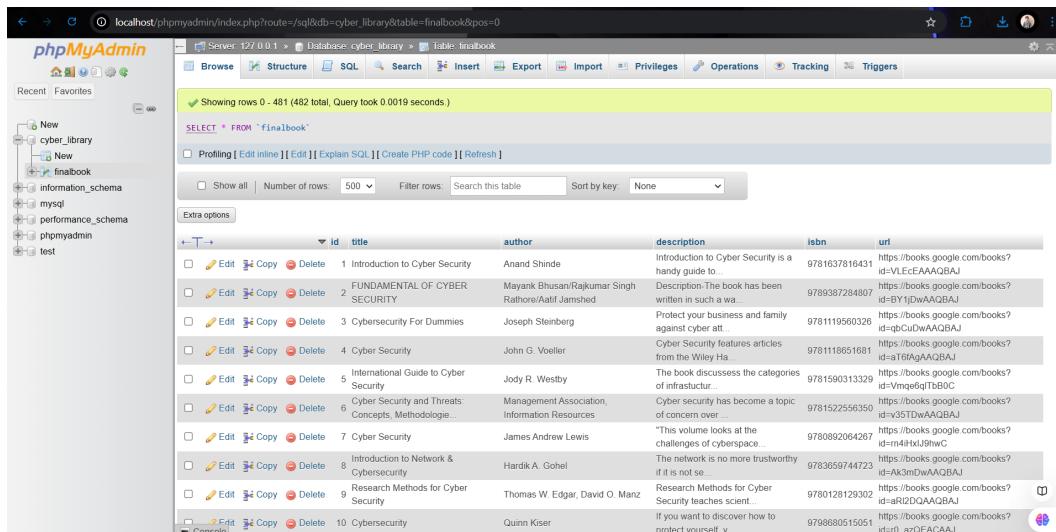
Name	Type	Length/Values	Default	Collation	Attributes	Null	Index	A_I	Comments
id	INT	11	None				PRIMARY	<input checked="" type="checkbox"/>	PRIMARY
title	VARCHAR	255	None					<input type="checkbox"/>	
author	VARCHAR	255	None					<input type="checkbox"/>	
description	TEXT	2000	None					<input type="checkbox"/>	
isbn	VARCHAR	13	None					<input type="checkbox"/>	
url	VARCHAR	255	None					<input type="checkbox"/>	

5.Import your JSON data into the finalbook table.

This import is done by using PHP code, the json data and this PHP code (Availabe on drive) should be saved in separate folder (import_json) in htdocs folder of xampp installation.

Testing and Debugging: Using XAMPP's local server environment, the functionality of the backend system will be tested to ensure proper handling of queries,

retrieval, and display of data.



3.3 Frontend and Integration

Now we will connect the MySQL database with HTML (Frontend) by using PHP.

HTML and PHP code is available on the drive.

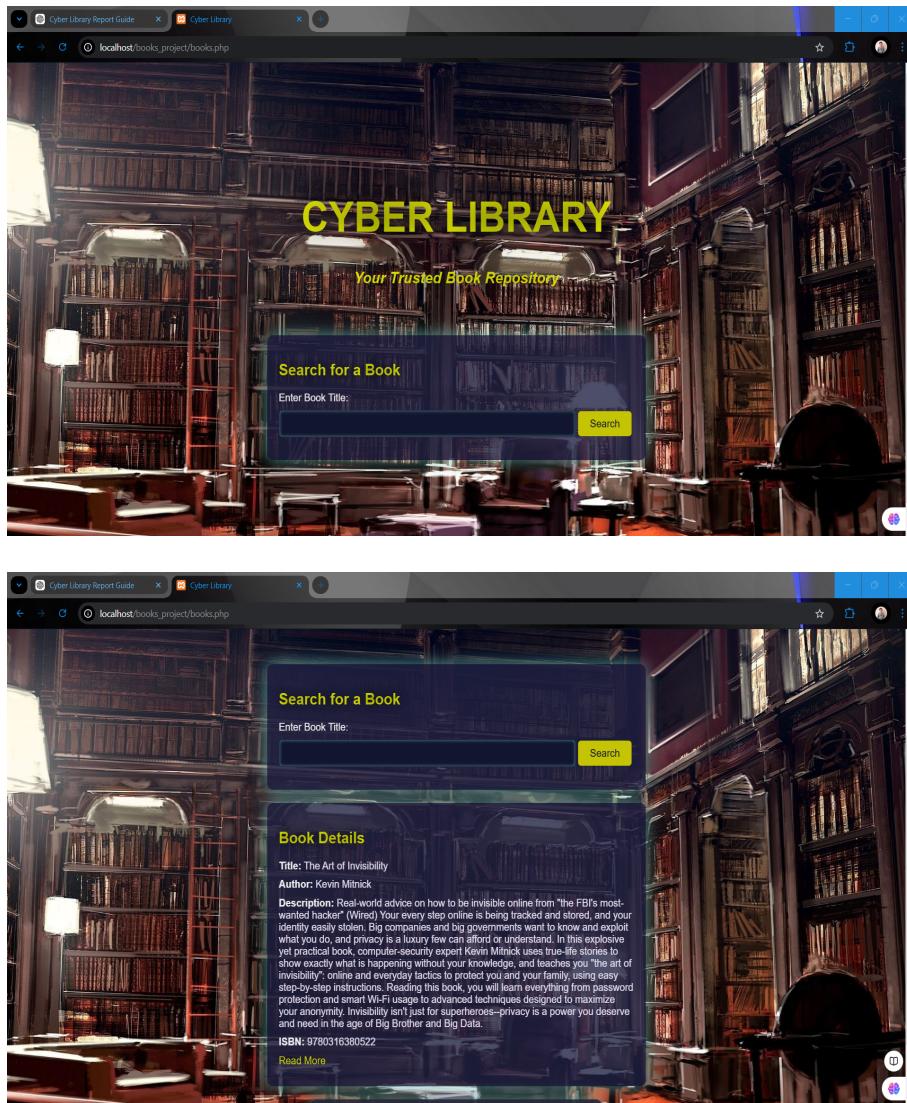
Testing the Integration:

Save the PHP and HTML code as books.php in the htdocs folder of XAMPP installation.

Access it in your browser via http://localhost/books_project/books.php

Search for a book title. Ensure:

- The data is fetched correctly from the database.
 - Book details and suggestions are displayed dynamically.



4 Conclusion

The Cyber Library project exemplifies the integration of cutting-edge technologies to address the growing need for accessible digital knowledge repositories. From web scraping with Python to creating a seamless frontend and backend connection, the development process has highlighted the importance of combining technical expertise with user-centric design. The project serves as a testament to the potential of leveraging tools like XAMPP, Google Books API, and structured database systems to transform raw data into a functional and engaging digital platform. Moving forward, the Cyber Library has the potential to grow into a more dynamic resource, incorporating advanced features like AI-driven recommendations and global user access, further bridging the gap between readers and knowledge.