**EGERTON**  **UNIVERSITY**

**ONLINE LIBRARY SYSTEM PROJECT**

**PROPOSAL**

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**MOURICE ADERO**

# **Table Of contents**

**Table of Contents**

[**Table Of contents** i](#_Toc130940320)

[**Abstract** iii](#_Toc130940321)

[**Introduction** 1](#_Toc130940322)

[**Problem Statement** 2](#_Toc130940323)

[**Justification** 2](#_Toc130940324)

[**Research Objectives** 3](#_Toc130940325)

[**Chapter 2** 4](#_Toc130940326)

[**Proposed Solution** 4](#_Toc130940327)

[**Planning:** 4](#_Toc130940328)

[**Planning** 4](#_Toc130940329)

[**Project Scope:** 5](#_Toc130940330)

[**Requirements:** 5](#_Toc130940331)

[**Milestones:** 5](#_Toc130940332)

[**Architectural Design** 5](#_Toc130940333)

[**Presentation Layer:** 5](#_Toc130940334)

[**Application Layer:** 5](#_Toc130940335)

[**Data Layer:** 5](#_Toc130940336)

[**Software Development** 6](#_Toc130940337)

[**PHP:** 6](#_Toc130940338)

[**Bootstrap 5:** 6](#_Toc130940339)

[**MySQL:** 6](#_Toc130940340)

[**Git:** 6](#_Toc130940341)

[**Testing** 7](#_Toc130940342)

[**System testing:** 7](#_Toc130940343)

[**Acceptance testing:** 7](#_Toc130940344)

[**Deployment** 7](#_Toc130940345)

[**Staging environment:** 7](#_Toc130940346)

[**Production environment:** 7](#_Toc130940347)

[**Security:** 7](#_Toc130940348)

[**Chapter 3** 8](#_Toc130940349)

[**Final Results** 8](#_Toc130940350)

[**User Sign-up and Log-in:** 8](#_Toc130940351)

[**Book Upload and Management:** 8](#_Toc130940352)

[**Article Writing and Management:** 8](#_Toc130940353)

[**Google Books Integration:** 8](#_Toc130940354)

[**Responsive Design:** 8](#_Toc130940355)

[**Testing and Deployment:** 8](#_Toc130940356)

[**Chapter 4** 9](#_Toc130940357)

[**Challenges, Obstacles and Risks** 9](#_Toc130940358)

[**Security Risks:** 9](#_Toc130940359)

[**Technical Challenges:** 9](#_Toc130940360)

[**Data Management:** 9](#_Toc130940361)

[**User Experience:** 9](#_Toc130940362)

[**Time Constraints:** 9](#_Toc130940363)

[**Chapter 5** 10](#_Toc130940364)

[**Schedule** 10](#_Toc130940365)

[**Project Schedule:** 10](#_Toc130940366)

[**Resource Allocation:** 10](#_Toc130940367)

[**Monitoring and Control:** 10](#_Toc130940368)

[**Chapter 6** 11](#_Toc130940369)

[**Conclusion** 11](#_Toc130940370)

[**Future Works** 11](#_Toc130940371)

[**References** 12](#_Toc130940372)

# **Abstract**

This proposal outlines development of an online library system using PHP, Bootstrap 5, and JavaScript. The system provides users with an efficient and user-friendly platform to access variety of digital books and articles, and contribute to a community of readers and writers.

Due to the need for a centralized platform for online reading and access of resources, the system will facilitate a centralized point of access to such resources such as books, articles, newspapers and other kinds of documents that readers are interested in. This proposal justifies importance of the proposed solution in facilitating access to knowledge and promoting reading.

There is need for a user-friendly access point for library resources – which this proposal seeks to address by facilitating easy access, navigation and interaction with library resources through design of a user-friendly online interface.

The system will provide a user interaction interface where users can request for items that they are interested in that may have not been made available through the platform. Integration of Google Books will be implemented to increase scope of access to materials through a reliable search interface for readers’ ease for information and resources.

The system will implement blogs for users to engage in the system and clear monotony of reading through long contents from texts of book.

The system should be a functional and user-friendly online library system, that promote community of readers, and the facilitation of access to knowledge and resources. There should be a reliable interface for requesting resources such as books and other items the user may wish to get directly.

There might be few challenges during the development of the proposed system, including timeline given for the solution to be implemented. The proposal identifies potential challenges and risks, as well as detailed schedule for the project. Finally, the conclusion discusses the significance of the project and suggests future work to expand and improve the system.

**CHAPTER ONE**

## **Introduction**

The internet has revolutionized the way we access information and knowledge. With just a few clicks, we can access vast amounts of data on almost any topic. This has led to a surge in online education, and the need for online libraries is more critical than ever before. In response to this growing demand, we propose the development of an online library system.

This project aims to create a web-based platform where users can sign up, log in, and browse through a vast collection of books and articles, including Google books. The online library system will serve as a repository of knowledge and a platform for sharing ideas and insights.

However, there are several challenges associated with developing an online library system. One of the most significant challenges is designing a platform that is easy to use, and scalable. Moreover, the platform must be capable of handling a large volume of data and traffic.

This proposal outlines our proposed solution for developing an online library system. The proposed system will be designed to meet the needs of modern-day learners and readers. We will discuss the research questions, research objectives, and the justification for the project in detail in the following sections. Additionally, we will provide an overview of the planning, architectural design, software development, testing, and deployment phases of the project. Finally, we will discuss the budget and schedule for the project, as well as the challenges and obstacles that we expect to encounter.

Overall, this project has the potential to revolutionize the way we access and share knowledge. We believe that this proposal will serve as a roadmap for the successful development and deployment of an online library system.

### **Problem Statement**

The world is rapidly changing, and so is the way we access and consume information. With the rise of the internet, people no longer need to rely solely on traditional libraries to access books and other resources. However, most online libraries are not user-friendly, and users find it challenging to navigate through them. Moreover, the current online library systems available in the market are monetized and still does not meet the needs of modern-day learners and readers.

To address these challenges, we propose the development of an online library system that is user-friendly, modern, and accessible to all for free. The proposed system will be developed using PHP, Bootstrap 5, and JavaScript, which are popular and reliable technologies for web development.

The main problem that this project aims to solve is the lack of a user-friendly and modern online library system that meets the needs of modern-day learners and readers. The proposed solution will provide a platform for users to access books and other resources from anywhere in the world, at any time.

### **Justification**

The development of an online library system is justified for several reasons. Firstly, the internet has revolutionized the way we access information, and more people are turning to online resources to access books and other learning materials. With the global pandemic, the need for online education has become more critical than ever before. An online library system will provide a platform for learners and readers to access books and resources from anywhere in the world, at any time, without the need for physical libraries.

Secondly, traditional libraries have several limitations that an online library system can overcome. Physical libraries have limited capacity, and users need to be physically present to access the resources. Additionally, traditional libraries are limited to the books and materials they can hold, while an online library system can offer a vast collection of books and other learning materials.

Lastly, the proposed online library system will be developed using PHP, Bootstrap 5, and JavaScript, which are reliable and widely used technologies for web development. This will ensure that the system is robust, secure, and scalable, with a user-friendly interface.

### **Research Objectives**

The primary objectives of this research are as follows:

* To identify the user requirements for an online library system that meets the needs of modern-day learners and readers.
* To design a user-friendly, secure, and scalable online library system using PHP, Bootstrap 5, and JavaScript.
* To integrate Google books into the proposed online library system.

Achieving these research objectives will result in the development of a robust, user-friendly, and modern online library system that meets the needs of modern-day learners and readers.

# **Chapter 2**

## **Proposed Solution**

The proposed solution is an online library system that provides users with access to a vast collection of books and other learning resources. The online library system will offer the following features:

**User authentication and authorization:** The online library system will provide a secure platform for users to sign up, log in, and manage their profiles. Users will be able to upload books, write articles, and comment on other users' articles.

**Integration with Google Books:** The online library system will integrate with Google Books, allowing users to search and preview books from the Google Books database.

**Access to books and article resources:** The online library system will provide a platform for users to write and publish articles on various topics related to books and education.

The development process will involve the following stages:

**Planning:** The planning stage will involve defining the project scope, requirements, and milestones.

**Architectural design:** The architectural design stage will involve defining the system architecture, database design, and user interface design.

**Software development:** The software development stage will involve implementing the system features using PHP, Bootstrap 5, and JavaScript.

**Testing:** The testing stage will involve testing the system to ensure that it is reliable, robust, and meets the user requirements.

**Deployment:** The deployment stage will involve deploying the system to a hosting platform and ensuring that it is accessible to users worldwide.

## **Planning**

Planning stages are crucial in the development of online library system. It involves defining the project scope, requirements, and milestones.

### **Project Scope:**

The scope of online library system project includes the development of a web-based application that allows users to access a vast collection of books and resources. The application will have features such as user authentication and integration with Google Books.

### **Requirements:**

Requirements will include functional and non-functional requirements.

### **Milestones:**

Milestones for the online library system project include the completion of the following stages:

System design and architecture: This milestone involves the development of the system architecture, database design, and user interface design.

Software development: This milestone involves the implementation of the system features using PHP, Bootstrap 5, and JavaScript.

**Testing:** This milestone involves testing the system to ensure that it is reliable, robust, and meets the user requirements.

**Deployment:** This milestone involves deploying the system to a hosting platform and ensuring that it is accessible to users worldwide.

## **Architectural Design**

The architectural design of the online library system project will be based on a three-tier architecture. The three-tier architecture comprises the following layers:

### **Presentation Layer:**

It is responsible for presenting the information to the users in a user-friendly and interactive way. The presentation layer will be developed using Bootstrap 5 and JavaScript.

### **Application Layer:**

It is responsible for processing user requests, executing business logic, and interacting with the database. The application layer will be developed using PHP.

### **Data Layer:**

It is responsible for storing, retrieving, and updating the data. The data layer will be developed using MySQL.

The three-tier architecture has several advantages, including:

**Scalability:** The three-tier architecture allows for easy scaling of the system. Each layer can be scaled independently, allowing the system to handle more users and requests.

**Maintainability:** The three-tier architecture makes it easier to maintain the system. Each layer can be updated and maintained independently without affecting the other layers.

**Security:** The three-tier architecture enhances the security of the system.

## **Software Development**

The development will be done using the following tools:

### **PHP:**

PHP is a server-side scripting language that is widely used for web development. It will be used to develop the application layer of the system.

### **Bootstrap 5:**

Bootstrap is a popular CSS and JavaScript framework that is used to design responsive and mobile-first web pages. It will be used to develop the presentation layer of the system.

### **MySQL:**

MySQL is an open-source relational database management system that is widely used for web applications. It will be used to develop the data layer of the system.

### **Git:**

Git is a version control system that will be used to manage the source code of the system.

The software development phase will involve the following activities:

* Implementation of the user registration and login module.
* Implementation of the book upload module.
* Implementation of the article writing module.
* Integration with the Google Books API.
* Development of the system administration module.

Overall, the software development phase will involve implementing the proposed solution and the architectural design using the above-mentioned tools and techniques.

## **Testing**

The testing phase of the online library system project is crucial to ensure that the system functions as expected and meets the user requirements. The testing phase will be carried out in the following stages:

### **System testing:**

System testing involves testing the entire system as a whole. It will ensure that the system functions as expected and meets the user requirements. System testing will be performed manually.

### **Acceptance testing:**

Acceptance testing is the final stage of testing, which involves testing the system with real-world scenarios and data. It will ensure that the system meets the user requirements and is ready for deployment. Acceptance testing will be performed by the end-users of the system.

The testing phase will also involve test planning and execution.

Testing phase of the online library system project will ensure that the system functions as expected and meets the user requirements.

## **Deployment**

The deployment phase of the online library system project involves making the system available to the end-users. The deployment process will be carried out in the following stages:

**Staging environment:** Before deploying the system to the production environment, a staging environment will be set up to test the system in a production-like environment. The staging environment will be used to ensure that the system is working correctly and to identify any issues that need to be fixed before deployment to the production environment.

**Production environment:** Once the system has been thoroughly tested in the staging environment and all issues have been fixed, the system will be deployed to the production environment.

**Security:** These measures will include user authentication and authorization and data encryption.

# **Chapter 3**

## **Final Results**

Online library system project has been successfully developed, tested, and deployed. The final results of the project are as follows:

### **User Sign-up and Log-in:**

The system allows users to sign up and log in to their accounts. The user authentication mechanism has been implemented to ensure the security of user accounts.

### **Book Upload and Management:**

Admin can upload books to the system and manage their books.

### **Article Writing and Management:**

The system also allows admin to write and manage their articles. Admin can publish their articles and manage them through their account dashboard.

### **Google Books Integration:**

The system has been integrated with the Google Books API to provide users with a vast collection of books to search from.

### **Responsive Design:**

The system has been developed using Bootstrap 5, ensuring that the website is responsive and can be accessed from different devices, including mobile phones, tablets, and desktops.

### **Testing and Deployment:**

The system has been thoroughly tested in the staging environment before being deployed to the production environment. The system has been deployed to a cloud hosting service to ensure its availability and reliability.

Online library system project has been a success, achieving all the objectives set out in the proposal. The system provides users with a platform to upload and manage books, write and manage articles, and search for books using the Google Books API. The system has been developed with a responsive design, ensuring that it can be accessed from different devices. The system has been thoroughly tested and deployed to a reliable hosting service, ensuring its availability and reliability.

# **Chapter 4**

## **Challenges, Obstacles and Risks**

Throughout the development of the online library system project, several challenges, obstacles, and risks were identified, which are described below:

### **Security Risks:**

The online library system deals with sensitive information, such as user account information and book files. Therefore, the system is vulnerable to various security risks, such as data breaches, hacking attempts, and cyber-attacks.

### **Technical Challenges:**

The development of the online library system involves working with complex technologies, such as PHP, JavaScript, and Bootstrap. Therefore, I face several technical challenges, such as bugs, compatibility issues, and code complexity.

### **Data Management:**

The online library system deals with a large amount of data, including user account information, book files, and article data. Therefore, the system requires an efficient and reliable data management system to store and retrieve data efficiently.

### **User Experience:**

Providing a seamless user experience was one of the primary objectives of the online library system project. Therefore, ensuring the website's responsiveness and intuitive navigation were a significant challenge.

### **Time Constraints:**

The online library system project has a strict deadline. Therefore, efficient project management and time management are crucial to ensuring the project's success.

Despite the challenges and obstacles faced during the development of the online library system, the project was successful.

# **Chapter 5**

## **Schedule**

### **Project Schedule:**

Development of online library system project will be completed over a period of 5 months, as described below:

Phase 1: Requirements Gathering and Analysis (2 weeks)

Phase 2: Design and Planning (4 weeks)

Phase 3: Development and Testing (10 weeks)

Phase 4: Deployment and Maintenance (6 weeks)

### **Resource Allocation:**

Resource allocation plan for the online library system project is as follows:

Development Team: 1 developer, 1 project supervisor.

Hardware and Software: High-performance local server and a PC.

### **Monitoring and Control:**

Project supervisors will be responsible for monitoring and controlling the project. Project supervisors will regularly review the project’s financial performance and ensure that the project is completed within the allocated time.

# **Chapter 6**

## **Conclusion**

Online library system project aims to provide a platform where users can sign up, log in, and access Google books. The proposed solution for the project involves using PHP, Bootstrap 5, and JavaScript technologies to develop a web-based platform that is user-friendly, secure, and scalable. The project has been justified based on the need for an online library system that offers a wide range of books and articles that can be accessed from anywhere at any time.

Research objectives were formulated to guide the project's development, testing, and deployment phases. The project's architecture was designed to ensure that it is scalable, modular, and maintainable. The software development phase involved implementing the project's features, testing, and bug fixing. The testing phase was crucial in ensuring that the platform is reliable, secure, and user-friendly. The deployment phase involved deploying the platform to a production environment and maintaining it.

## **Future Works**

Online library system project can be improved in several ways. More features can be added to the platform to enhance user experience, such as recommendation systems, social media integration, and personalized content.

Online library system can be enhanced with more security features to protect user data and prevent cyber-attacks. Third, the platform can be optimized for performance to reduce load times and improve the user experience.

The platform finally can be integrated with more third-party services to expand its functionalities.

Online library system project has the potential to revolutionize the way people access and consume information. With its user-friendly interface, wide range of books and articles, and easy accessibility, the platform can serve as an invaluable resource for students, researchers, and book lovers alike.

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