



# ACHIEVING INTERACTIVITY THROUGH UI DESIGN, INTEGRATION, AND LIBRARY SYSTEM DEVELOPMENT

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## Abstract

Integrated web application has achieved its objectives, providing a well-designed, functional, and user-friendly platform. Addressing challenges and considering future extensions will contribute to the continuous improvement of the system, ensuring it remains relevant and adaptable.

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## Technical Report: Integrated Web Application Development

### Aims and Objectives:

This comprehensive web development project aimed to create an integrated application focusing on UI/UX design, portfolio presentation, and the development of a robust library management system. The primary objectives were UI design, portfolio integration and library system development.

The main goals of UI design are to create an aesthetically pleasing and user-friendly interface, maintain a consistent design across all pages for a seamless user experience and integrate branding elements to establish a cohesive identity.

The objectives of portfolio integration were to extend and adapt selected practical tasks into a cohesive portfolio, ensure the portfolio components adhere to the established design principles and enhance the provided CV, weather data visualization, and PHP-based login system components.

The aims of library system Development are to Implement PHP web pages for submitting new library records (submit.php), Create a PHP web page to list library records (list.php) accessible to all users and develop a PHP web page to display details of a single library record (display.php).

### Design and Implementation Decisions:

The way I carried out the UI design was to apply consistent branding, a dynamic color scheme and branding elements throughout the application. As according (Nixon, 2021) states to allow for an intuitive navigation structure for seamless transitions between web pages. Which helps with the mobile-first approach adopted to ensure a responsive design catering to various devices.

The steps taken to improve the CV by extending the CV page with creative and detailed information, also took time to link module names to the Keele website for additional context and maintained a professional layout suitable for a web developer position application.

The weather data visualization was graphically and user enhanced by Utilizing Chart.js library for visualizing temperature and humidity data with line charts and implemented chart type options for users to customize their data visualization.

The login system was created and improved by developing a PHP-based login system for administrators. I took steps according to (Ashok Appu, 2002) to ensure secure session handling and validation of administrator details while also restricting access to administrators using the PHP-based login system.

### Library System Development:

The submit.php document was created as a PHP form for administrators to submit new library records. I choose to implement data validation to ensure accuracy and security. I choose restrict access to users other than administrators using the PHP-based login system.

The list.php document was developed as a PHP page to list library records, accessible to all users. I ensured a simplicity and easy interactivity in design with the application.

The display.php document was a PHP page to display detailed information about a single library record. I made sure to link the list.php document to the display.php document for easy access and navigation.

### Achievements and Challenges:

#### Achievements:

Successfully integrated UI design principles throughout the application.

Implemented an extended and adapted portfolio featuring an enhanced CV, weather data visualization, and a PHP-based login system.

Developed a functional library system with submission, listing, and detailed display features.

### Challenges:

Addressed browser compatibility issues during the responsive design phase according to (Allen and Hornberger, 2002) states to ensure a consistent experience across platforms.

Maintained a delicate balance between security and user convenience, particularly concerning the login system.

Circumvented issue of weather.html not allowing for switch between bar chart and line chart smoothly.

Login refused to take password for multiple users except admin

### Results:

Project Components and Completion Status

Tasks	Completed
1: UI/UX	Yes
2a: CV	Yes
2b: Chart.js	Yes
2c: Login system	Yes
3a: submit.php	Yes
3b: list.php	Yes
3c: display.php:	Yes

### Advantages and Limitations:

#### Advantages:

Professional Appearance: The integrated web application presents a cohesive and professional appearance.

User-Friendly Navigation: The UI design facilitates easy navigation, enhancing the user experience.

Comprehensive CV: The portfolio showcases a diverse range of skills and practical implementations.

Use of different types of chart which allow for ease of comparison of weather data.

Simplicity: Easy to understand, interact with and visually appealing.

#### Limitations:

Scalability: Consideration for future scalability, especially in managing a growing library of records, was not extensively addressed.

Complexity: The project focused on essential features; advanced functionalities could be added for further enhancement.

Lack of use of images which would allow for a more dynamic and beautiful interface.

Lack of ability to make multiple users and passwords which is unfortunate for the interactivity of the website.

## Future Enhancements:

To increase reuse and effectiveness, the web application can be extended in the following ways:

**Advanced Library Features:** Implement advanced library features, such as book categorization, searching, and borrowing functionality.

**User Accounts:** Introduce user accounts for personalized experiences and to track individual interactions with the library system.

**Images:** Use of more pictures in the CV.html, weather.html and list.php documents.

**Integration with External APIs:** Enhance the weather data visualization by integrating with live weather APIs for real-time updates.

## Conclusion

In conclusion, the integrated web application has successfully achieved its primary objectives, providing a well-designed, functional, and user-friendly platform. Addressing challenges and considering future extensions will contribute to the continuous improvement of the system, ensuring it remains relevant and adaptable to evolving needs. This project serves as a testament to the effective implementation of design principles, practical integration, and the development of a robust library management system.

## References

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