

Wild Commons

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Abstract—This project develops a tablet-optimized application to manage library access and resource usage, adapting to different user roles. Initially, we investigated best practices for designing tablet interfaces, focusing on an intuitive and responsive user experience. Key challenges included adapting the design for larger screens and creating an easy-to-use form for external visitors. Using Constraint Layouts in Android Studio, we achieve a flexible and usable interface. The first functional views, including the main screen and role selection, were successfully developed. This phase highlighted the importance of establishing a solid UI foundation before moving to more complex features.

Keywords—Tablet application design, UI, Responsive design, Role-based, Android Studio, Constraint Layouts

I. INTRODUCTION

The project aims to develop a tablet-optimized application that manages library access and resource use, adapting to different user roles such as students, teachers, administrative staff, external visitors and the system administrator. This application is designed to facilitate the process of accessing resources, allowing users to select their role and navigate intuitively through the library system.

A. Overview of the project

During the early stages of development, we focused on creating initial functional views, including the main screen and role selection screen. We have also implemented a specific section for external users, where they must complete a form to access the library. This approach not only aims to optimize the user experience, but also ensures that each role has

a clear and efficient interaction with the application, thus laying the foundation for the next stages of development.

B. Objectives and goals

The primary objectives of this project are to:

- The primary goal of the project is to design and implement a user-friendly interface that adapts to larger tablet screens while maintaining responsiveness and accessibility.
- The application must cater to the distinct needs of each role, providing a seamless experience that facilitates library access and interaction with resources.
- For external users, an additional form-based system will be implemented, ensuring ease of use while collecting essential information.

II. WEEKLY ENTRIES

A. Week 1 (October 7 - October 13, 2024)

1) Activities:

- Design and development of a user-friendly web-based interface for administrators to monitor resource allocation and utilization.
- Implementation of a mapping system to visualize resource status in real-time.
- Creation of a logging section to track user activities.
- Development of a complaint management section to facilitate prompt issue resolution.
- Writing PHP code to connect to the database.
- Writing PHP code to perform CRUDs (Create, Read, Update, Delete) operations using SQL

statements, such as selecting data, inserting new records, updating existing records, and deleting records.

PHP and MySQL are a powerful combination for building dynamic web applications, and with the right tools and techniques, you can create robust, scalable, and secure web-based resource management systems. (1).

2) Challenges:

- Designing a user-friendly web-based interface that effectively displays resource allocation and utilization data.
- Integrating the mapping system with the database to provide real-time resource status updates.
- Ensuring the security and integrity of the database connection.
- Slowness and inefficiency were experienced in CRUD operations.

The design and implementation of a web-based admin panel system requires careful consideration of user needs, system functionality, and technical requirements.(2).

3) Solutions:

- A responsive and intuitive web-based interface was designed using HTML, CSS, and JavaScript to provide administrators with a clear view of resource allocation and utilization.
- The MySQLi extension was used to establish a secure connection to the database, ensuring the integrity of the data.
- Optimized SQL statements were used to perform CRUD operations, minimizing latency and improving user experience.

4) Reflections:

- We learned that taking the time to thoroughly plan and design each component of the project is crucial to its success.
- We realized that combining different technologies and tools can lead to innovative solutions that might not have been possible with a single approach.

B. Week 2 (October 14 - October 20, 2024)

1) Activities:

- First, we conducted extensive research on best practices for designing tablet interfaces. This included reviewing existing applications and collecting ideas on how to optimize the user experience on larger devices. The research helped

us identify effective design patterns and better understand users' expectations for usability and aesthetics.

- Then we focused on developing the first functional views for the library entry app, designed specifically for tablets in Android Studio. We created the main screen, where users will interact with the system, and the role selection screen, which allows users to choose their role (student, teacher, administrative or external).
- We also have to develop a section for external users, where they must fill out a form to access Learning Commons. These screens will serve as the basis for the next stages of application development.

Building successful software requires careful planning, architectural design, object relationship design, modular component design, database design, planning for maintainability, deployment, quality assurance, and much more. (3)

2) Challenges:

- One of the main challenges was to ensure that the application interface was intuitive and responsive across different devices, especially tablets. This involved considering how users would interact with the application on larger screens and in different orientations.
- The adaptation of the interface elements to the dimensions of the tablet screen presented difficulties. We needed to create a design that worked well in various configurations, which required careful approach on the layout and size of components.
- Designing an accessible and easy-to-fill form for external users was an additional challenge. It was crucial that the information requested be clear and concise to facilitate access to the library.

3) Solutions:

- Research into best practices in tablet interface design provided us with valuable ideas that we implemented into the design. This helped optimize the user experience and align us with the expectations of the target audience.
- To address responsiveness issues, we refined the design using Constraint Layouts in Android Studio. This allowed us to ensure compatibility with the tablet's screen size and create a more flexible and adaptable interface.

- As for the external aspects, we designed a simple and direct form. We made sure that the fields were clear and that the information required was minimal but sufficient, thus facilitating the entry process.

4) *Reflections:*

- This taught the importance of establishing a solid UI foundation before moving on to more complex functionalities. Good initial design is essential for project success.
- We learned to better structure the user experience to accommodate different roles, which is crucial for the effectiveness of the application. Each role should feel comfortable and understood when interacting with the system.
- The research not only enriched our design process, but also motivated us to continue exploring new ideas and approaches in application development. The constant search for improvements is key to success in software development.

III. CONCLUSION

A. *Summary of the overall progress*

This phase of the project involved thorough research into best practices for tablet interface design, followed by the development of the main functional views of the application. These views include the primary screen and the role selection interface, which are foundational to the user experience. Key challenges, such as ensuring the application's responsiveness and creating an intuitive form for external users, were addressed through targeted solutions, including layout refinements and a focus on usability.

B. *Final reflections*

Throughout the process, we gained a deeper understanding of how crucial a solid UI foundation is for the success of an application. The focus on responsive design and role-based user experience has taught us to prioritize flexibility and clarity. Our research efforts not only shaped the development of the interface but also encouraged us to remain curious and open to continuous improvement in our software design approach. Looking ahead, the lessons learned here will inform future iterations of the application, ensuring it remains adaptable and effective.

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