

APPLICATION OF THE SYSTEM DEVELOPMENT LIFE CYCLE (SDLC) METHOD FOR MOBILE BASED ACADEMIC INFORMATION SYSTEM DESIGN

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Abstract

This research aims to investigate the application of the SDLC (System Development Life Cycle) Method in designing and building a mobile-based Academic Information System. This is a crucial component in data management and administration in today's educational institutions. With advances in mobile technology, platform integration becomes important to increase the responsiveness of Academic Information Systems. Through the SDLC method, this research will identify systematic steps in mobile-based development, starting from analyzing user needs to implementation and evaluation. Requirements analysis will focus on a deep understanding of user needs and the expected functionality of the System. Initial prototype development will be carried out iteratively to ensure system responsiveness across various mobile platforms. Implementation of the system will involve careful end-user testing to ensure acceptance and effective use. It is hoped that the results of this research will provide guidance for educational institutions that wish to use mobile-based academic systems to increase administrative efficiency and improve the quality of academic services for staff and students.

Keywords: SDLC Method, Academic information system, Design, Mobile

INTRODUCTION

In the current digital era, Academic Information Systems have become a means of information for educational institutions in managing various administrative, academic and communication aspects. Academic systems not only facilitate the storage of student and staff data, but also enable fast and accurate access to information for all stakeholders, from administration to faculty and students. However, with the rapid development of mobile technology, the demand for easy, fast and flexible access to information is increasing. Students and academic staff are no longer limited to desktops or laptops to access academic information; but they want easy access via mobile devices such as smartphones or tablets, which offer greater flexibility and mobility.

Researchers obtained several journal literature, including; [1] Providing better service due to the speed and accuracy of information stored in a mobile-based system that supports the learning process. [2] Produces more accurate academic information

in terms of processing, searching for information on student data, teachers and student academic scores. [3] Assist the school in disseminating and conveying academic information. [4] Helps process student data and study results online to make work easier. [5] Make it easier for parents to get academic information at school and their children's assessments. [6] Efficiency in processing student letters without coming to campus and time efficiency in understanding administration.

Therefore, researchers obtained several literature, that this research aims to explore the application of the SDLC (System Development Life Cycle) method in designing and building mobile-based academic information systems. A systematic SDLC approach to software development which includes the stages of planning, requirements analysis, design, implementation, testing, maintenance. With the advantages of mobile technology with a structured software development methodology, it is hoped that the resulting mobile-based academic information system will provide significant benefits in increasing administrative efficiency, strengthening connections between educational institutions, staff and students, as well as improving the overall user experience.

RESEARCH METHODOLOGY

SDLC (System Development Life Cycle) Method

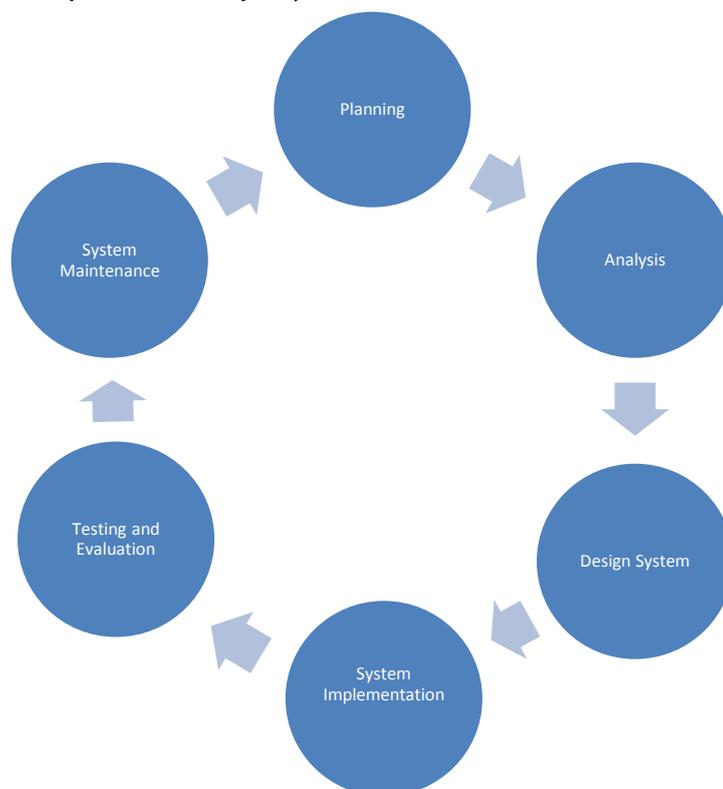


Figure 1. SDLC Method

The research stage using the SDLC method to design an Academic Information System is divided into several stages as follows:

- Research Planning
 - o Identify research objectives to be achieved by designing an academic information system.
 - o Define the scope of the research, including the features and functionality that will be discussed in the system.
- Analysis:
 - o Collect and analyze system requirements from stakeholders, such as academic staff, students, and administration.
- System planning:
 - o Design academic information system architecture, including database design, user interface, and business logic.
 - o Create a system design that includes technical implementation details.
 - o Build an initial prototype of the system based on the design that has been created.
- System Implementation
 - o Implementing academic information systems into production environments.
 - o Provide training to some early adopters on the use of the new system.
- Testing and Evaluation:
 - o Conduct thorough system testing to ensure that the system functions according to requirements and expectations.
 - o Collect feedback from users through user trials and satisfaction surveys.
- Maintenance and Support:
 - o Perform system maintenance including troubleshooting, software updates, and feature enhancements.
 - o Provide ongoing technical support to system users to ensure smooth operations.

This stage forms a structured framework for designing and developing Academic Information Systems using the SDLC Method, ensuring that research projects run efficiently and produce effective solutions.

RESULT AND DISCUSSION

Apps View

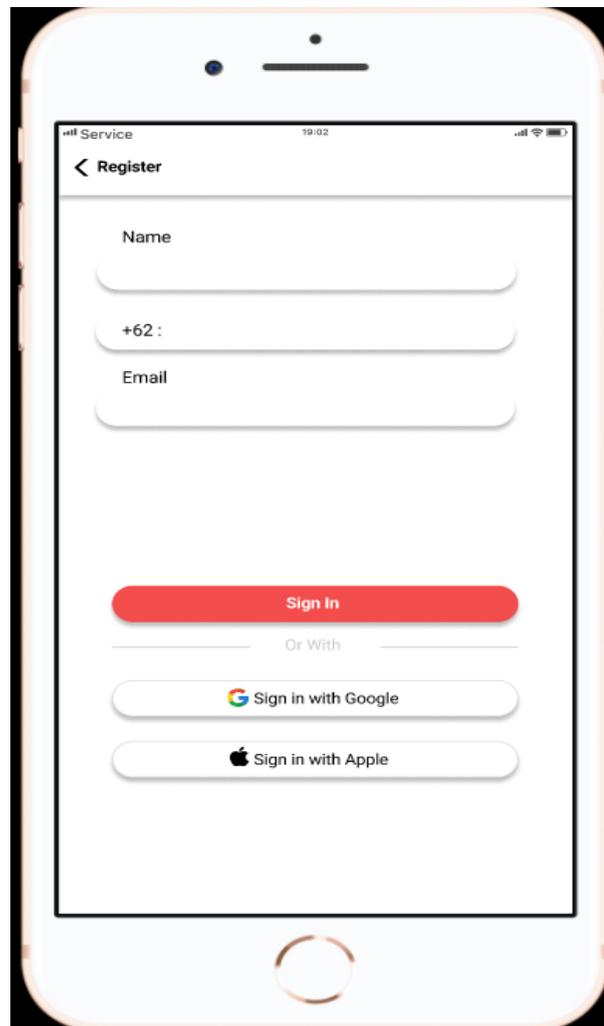


Figure 2 Register

In figure 2 is the initial display of a mobile-based system where the initial user must fill in their name, telephone number, email correctly and appropriately then click sign in to continue to the next menu.

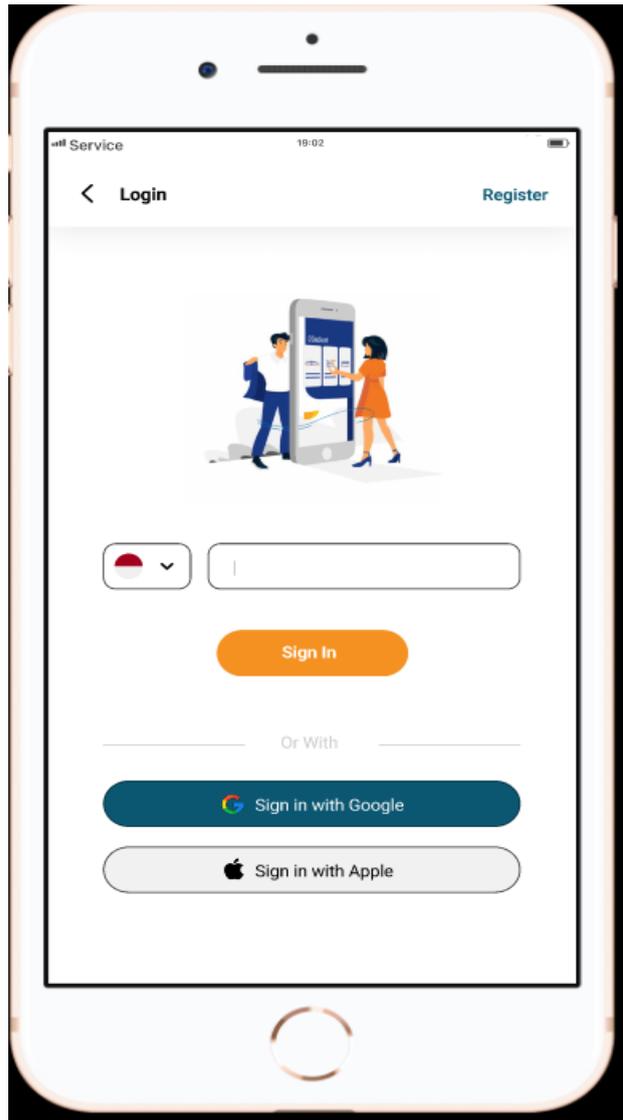


Figure 3 Menu Login

In Figure 3, the login menu here is after registering, entering your telephone number then clicking sign in

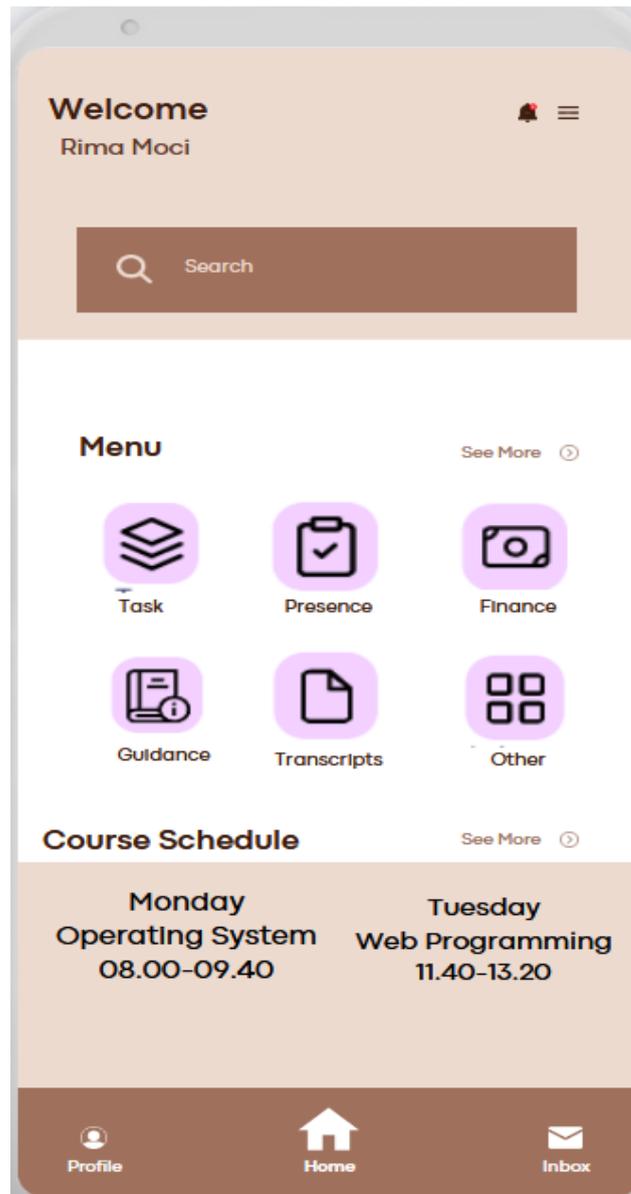


Figure 4 Menu Homepage

In Figure 4 below is the main page, here there are several menus, namely the search menu, assignments, attendance, finance, guidance, transcripts and others. There is also a course schedule

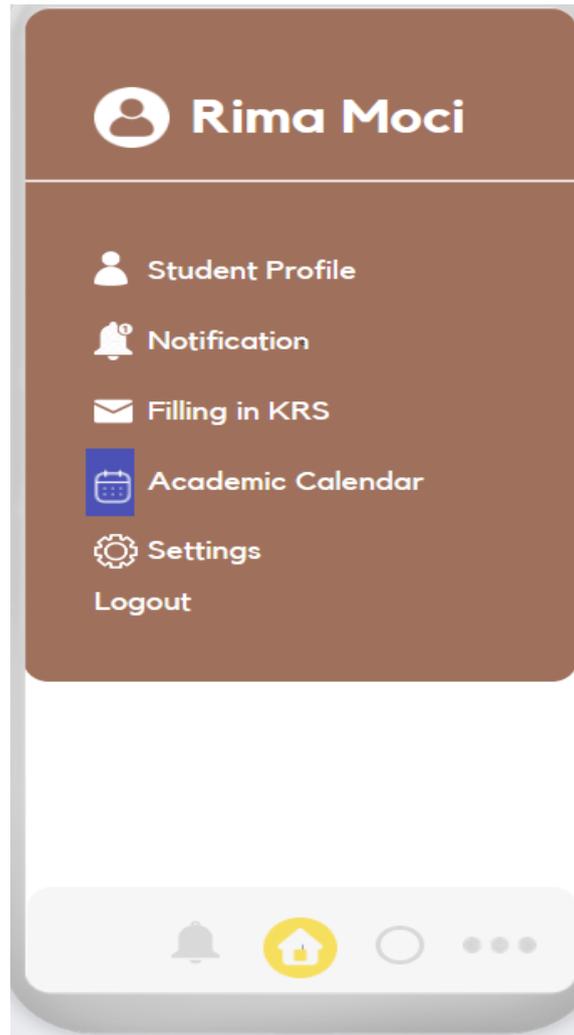


Figure 5 Menu Other

In Figure 5 here is another menu, which consists of student profile, notifications, filling in KRS, academic calendar, settings and logout system.

Results:

This research produces a mobile-based Academic Information System designed using the SDLC method. This system was built by paying attention to the SDLC stages which include planning, needs analysis, design, development, testing, implementation and maintenance.

In the planning stage, research objectives are set that are necessary for system development. Needs analysis is carried out to understand the needs of users from various parties, such as academic staff, students and administration. Furthermore, based on the results of the analysis, a system design is produced, including system architecture, user interface that suits user needs. A system prototype is developed

based on the design that has been created, and then tested to ensure the basic functionality of the system runs well.

Discussion:

The application of the SDLC method in designing a mobile-based Academic Information System provides several significant benefits. First, the systematic approach used in SDLC ensures that all stages of system development are carried out in a structured manner. This helps reduce the risk of errors and ensures that resulting system properly meets user needs.

Overall, the application of the SDLC Method in designing a mobile-based Academic Information System brings significant benefits in ensuring system development that is efficient, effective and in accordance with user needs. With a structured approach, SDLC provides a good framework for the development of responsive and high-quality academic information systems.

CONCLUSION

The application of the SDLC method in designing a mobile-based Academic Information System provides a structured approach in developing the system. This research shows that SDLC provides a clear and organized framework, enabling developers to efficiently design and develop solutions that suit user needs.

With well-defined steps, such as planning, requirements analysis, design, development, testing, implementation, and maintenance, SDLC helps reduce the risk of errors and improves the quality and success of system development projects. By designing a mobile-based Academic Information System here is a progressive step in increasing the efficiency, accessibility and responsiveness of information in the educational environment. In an era where mobile technology increasingly dominates the way we interact with information, developing an Academic Information System that can be accessed via mobile devices is important to meet the needs of education stakeholders.

By designing a mobile-based Academic Information System, educational institutions can provide easier and faster access to information for staff, students and administration wherever they are. This also makes it possible to expand the scope of academic services, such as filling in KRS, class schedules, grade transcripts, knowing the academic calendar, knowing assignments, payments or finances via mobile

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