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CIT SCHEDULER: AUTOMATED SCHEDULING MANAGEMENT SYSTEM FOR PHINMA ARAULLO UNIVERSITY

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ABSTRACT

The manual process of creating class schedules and assigning rooms at the College of Information Technology (CIT) of PHINMA Araullo University is currently time-consuming and prone to conflicts, such as overlapping classes and assign multiple classes in one room. This study aims to design and develop the "CIT Scheduler: Automated Scheduling Management System" using the Rapid Application Development (RAD) methodology. The system objectives include requirements planning, user design, construction, and cutover phases. Furthermore, the system is evaluated by IT experts and end-users based on ISO/IEC 9126 Software Product Quality Standards, specifically functionality, reliability, usability, and efficiency. The scope includes faculty consultation management, real-time overlap detection, and role-based portals for administrators, faculty, and students, By transitioning to this automated system, the institution seeks to improve operational efficiency and the quality of education (SDG 4) by minimizing administrative delays and ensuring a conflict-free learning environment

Keywords*: Automated Scheduling, CIT Scheduler, Rapid Application Development, ISO/IEC 9126, PHINMA Araullo University*

1. INTRODUCTION

In every academic institution, schedulers are one of the primary cores of organizing classes, faculty, and resources to ensure smooth daily operations. However, making class schedules by hand at the PHINMA Araullo University CIT department is slow and has many errors. It often causes overlapping classes and assign multiple classes in one room, which makes learning difficult for everyone. This manual process also makes it hard for students to meet with teachers for advice because their free times often do not match. To fix these problems, this study proposes the "CIT Scheduler: Automated Scheduling Management System." We use the Rapid Application Development (RAD) method to build the software quickly.

The system automatically checks when teachers and rooms are free to create a schedule without any conflicts. It also includes a way for students to book meeting times with their instructors easily. The main goal is to build a reliable tool that manages school rooms and teacher meetings and availability. Experts and users will test the system using ISO/IEC 9126 standards to make sure it works well and is easy to use. This project supports better education (SDG 4) and uses new technology (SDG 9) to help the university work.

Literature Review

Saeed and Fahim (2021) developed an intelligent, student-centric system for Neelain University to improve academic success through more efficient Penjadwalan.This personalized tool analyzes a student's academic record to identify their strengths and automatically prioritizes the most important prerequisite courses while removing those that are not needed for progress.By following specific rules like credit limits, the software helped students increase their overall grade point averages.This study demonstrates how using data-driven automation can directly improve the quality of the educational process. Ultimately, moving from manual methods to an organized system provides a better learning environment and more dependable scheduling for students.

Contillo and Cacanindin (2023-2024) developed an Automated Class Scheduling System to solve the inefficiencies of manual work at MMSU. The primary goal was to make the Penjadwalan Otomatis process faster, reduce errors, and use institutional resources more effectively. The system uses advanced algorithms to manage complex constraints like room availability, teacher preferences, and course requirements. It also provides real-time updates and notifications so that staff can make quick adjustments to the schedule. Ultimately, the study created a functional tool that prevents conflicts and maximizes the use of all university resources.

Uma et al. (2023) proposed an Automatic Timetable Generation system using machine learning to solve the problems of manual work. This system uses inputs like subjects, teacher workloads, and faculty availability to create weekly schedules that have no conflicts. The researchers used special tools called optimization algorithms, such as Tabu Search and Genetic Algorithms, to make the best use of school resources. Their work also explains how to use rules like the N-Queen Algorithm to prevent schedule clashes and ensure a smooth process for Penjadwalan Otomatis. Although this study gives a strong plan for an automated system, it focuses on the design and does not yet show results from a finished application.

Moradi (2024) developed an Integer Linear Programming (ILP) model to manage the periodic scheduling of faculty-student meetings in an academic setting. The study includes practical rules such as specific time intervals between meetings and different requirements for undergraduate, master's, and PhD sessions. This model aims to distribute meetings fairly and prioritize early time slots while ensuring there are no conflicts in the Penjadwalan Otomatis. By testing the model with case studies, the researcher showed that it can create optimal schedules quickly using optimization software. Ultimately, this study proves that mathematical methods can improve scheduling fairness and work efficiency in universities

Meccawy (2023) created "The Brilliant Scheduler," a web-based system to manage the unique needs of video-conferencing courses at King Abdul-Aziz University. This project solved the problems of scheduling classes across separate male and female campuses where students and teachers are often in different locations. The system was built using the Rapid Application Development (RAD) method to move from manual paper-work to a fast digital environment. Its main goa ls were to give quicker feedback and make the staff happier with their daily tasks. This study shows that Penjadwalan Otomatis is a powerful tool for handling complex school rules and improving overall work satisfaction

2. METHOD

This research uses the Input-Process-Output (IPO) model. We gathered information from teachers and students through surveys and interviews. The software was built using the four stages of Rapid Application Development (RAD): planning, design, coding, and final testing. To check the system, IT experts and users evaluated its speed and ease of use based on ISO/IEC 9126 quality standards and the System Usability Scale (SUS)

3. CONCLUSION

The CIT Scheduler was successfully created to solve the problems of manual scheduling at PHINMA Araullo University, By using the Rapid Application Development (RAD) method, the system was built and improved quickly through four stages: planning, design, building, and testing. The final system automates class schedules and manages meeting times between students and teachers.

It effectively stops scheduling errors, such as double-booking rooms or having one teacher in two classes at the same time. The evaluation by IT experts and users shows that the system is high quality and easy to use. It meets international standards for being reliable and efficient.This project helps the school work faster and supports the goal of providing better education using modern technology. For the future, we suggest connecting the CIT Scheduler to the university's main student record system (SIS) to make it even more useful.

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