Course Information System Using Codeigniter Framework

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Abstract

This study examines the inefficiencies encountered by a training institution in Bandung Regency that utilizes a manual handwritten ledger for managing diverse data, including student information, teacher records, class details, student learning progress, and grades. The current technique results in considerable delays in information retrieval, as perusing physical data is often time-intensive. Moreover, producing reports for institutional control becomes burdensome, eliciting apprehensions of data accuracy, potential harm, or loss of vital information.

To address these challenges, we created a course information system utilizing the CodeIgniter framework. The study utilized a descriptive methodology, and the system development applied Object-Oriented Analysis and Design (OOAD) concepts. We employed Unified Modelling Language (UML) methodologies during the software design process.

The newly created course information system aims to streamline user data management and enhance the efficiency of recording operations for all participants, including administrators and educators. The digitization of information management decreases retrieval times and enhances data accuracy and security, consequently promoting improved decision-making and reporting within the institution.

Keywords : *Information Systems, Courses, Codeigniter*

INTRODUCTION

The world has entered the digital era, characterized by information and communication that rely on computer technology. With technological growth, information has become very significant today. It is essential to recognize that information is crucial for both individuals and organizations. (Subari et al., 2020) Utilizing computer technology offers several advantages, including the processing, retrieval, storage, and retrieval of information. The use of computers in many jobs has demonstrated that numerous formerly arduous processes are now significantly simplified. Numerous solutions are engineered to enhance individual productivity. (Ratnawati et al., 2022)

The swift advancement of information technology has heightened awareness among all stakeholders regarding the future progress and success of technology. (Herdiansah, 2021) This poses a challenge and assessment for all organizations, including educational institutions, to optimize the utilization of new technology breakthroughs. The course information system is an effective tool that streamlines information management and data processing within universities. This technology significantly aids organizations in overseeing their data and operations.

The course information system is advised to assist administrators and instructors in enhancing their technological proficiency. (Alfiah et al.,

2022) The institution's course system currently relies on manual methods, indicating that record-keeping is conducted using notebooks, and computers are not employed. A course is described as the delivery of informal education or externally obtained knowledge, along with skill development, that augments a person's understanding.

Information Systems

Munawarah & Nurido (2024) defines a system as a collection of interrelated components that collaborate to achieve designated objectives.

Syakti & Hutrianto (2022) assert that "Information is the outcome of transforming data into a more beneficial format for the recipient, representing actual events and functioning as a decision-making instrument."

Sunray & Kurnia (2020) posits that "An information system is an organizational system designed to fulfill the requirements of managing daily transactions, facilitating operations, exhibiting managerial attributes, and engaging in strategic activities while delivering essential reports to specific external stakeholders."

Course

Putra et al., (2022) states, "Courses are training institutions within non-formal education units." The learning approach occurs similarly to conventional teaching and learning activities.

Framework

Aminurrohman & Firdonsyah (2021) defines a framework as a compilation of fundamental functions or instructions frequently utilized in software development aimed at enhancing the speed and structure of the resultant product.

CodeIgniter

Hidayat et al., (2023) "CodeIgniter is an open-source framework employing the MVC (Model, View, Controller) architecture for developing dynamic websites utilizing PHP."

METHOD

Research methods

This study employs the Descriptive Analysis Research Method. Descriptive research is a methodology focused on delineating the outcomes of an investigation. This research aims to offer descriptions, explanations, and validations of the phenomenon under investigation. In descriptive research, the defined problem must be appropriate for discourse, hold scientific significance, and not be excessively broad. The objectives should be concise and based on factual data rather than subjective opinions.

System Development Methods

The system development methodology underpins the design, planning, and management of data development activities. Over the years, diverse frameworks have been established, each possessing distinct advantages and disadvantages. System development methodologies may not be universally applicable to all projects. Each methodology may be suitable for particular projects depending on the diverse business, organizational, project, and team considerations.

This study employs the Object-Oriented Analysis and Design (OOAD) methodology. Mathiassen, as cited in Ibrahim (2021:102), states that "Object-Oriented Analysis and Design (OOAD) is a methodology for analyzing and designing systems through an object-oriented framework." An object is characterized as an entity possessing identity, state, and behavior.

The research elucidates that the object's identification enables users to differentiate it from other objects, while its behavior is characterized by the events it executes. During the design phase, the object's identity signifies how other objects identify it for access, while its behavior is characterized by the actions it executes. Consequently, one object can affect another object within the system.

RESULT AND DISCUSSION

System Analysis and Design

Business Process Analysis

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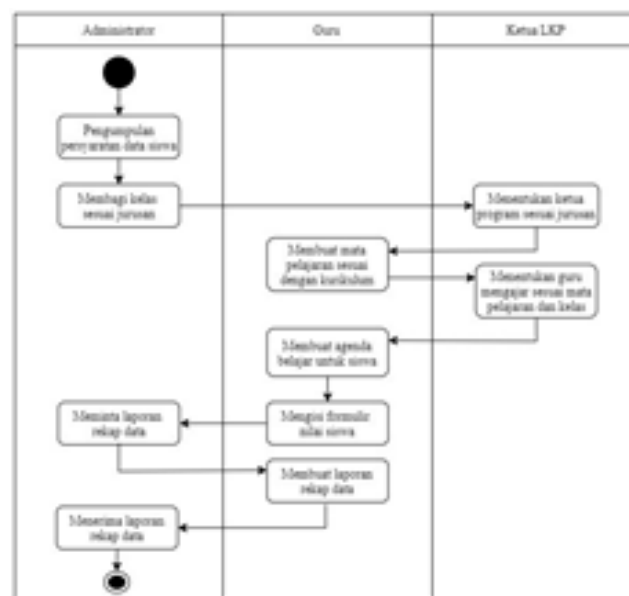

Figure 1. Business Process Analysis

SWOT Analysis

SWOT analysis is employed to evaluate the strengths and weaknesses of a current system. By understanding these elements, institutions can implement measures to optimize their current potential and overcome challenges that may

arise. In system planning, strengths and opportunities can be maximized, weaknesses can be addressed, and strategies can be formulated to mitigate potential threats. Consequently, SWOT analysis is vital in facilitating success via focused and strategic planning.

| Strength	Weakness	Opportunity	Threats
The existing course information system at a training institution in Bandung Regency efficiently administers the storage of course data through a computerized system. It specifically mitigates mistakes in data collection, prevents damage to vital data, and averts the loss of essential information.	The physical storage of course files presents a greater risk of loss and destruction; however, data kept on a computer is also susceptible to loss from viruses that may render the material unreadable.	The course data storage system streamlines the process of archiving essential files and data within the database, facilitating efficient data retrieval.	The course data storage system streamlines the process of archiving essential files and data within the database, facilitating efficient data retrieval.

New System Proposal
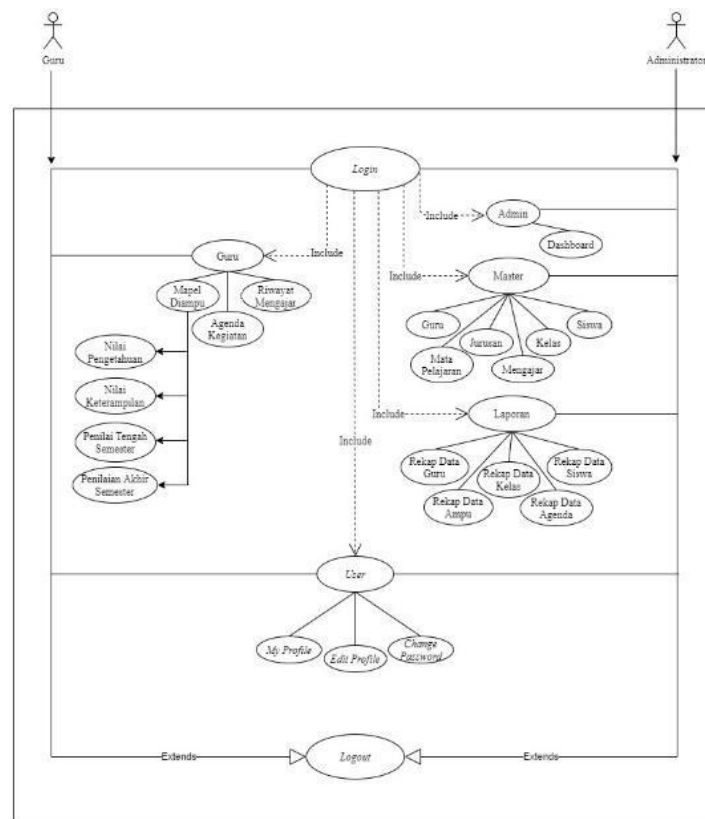
Figure 2. Usecase diagram

Usecase Spesification

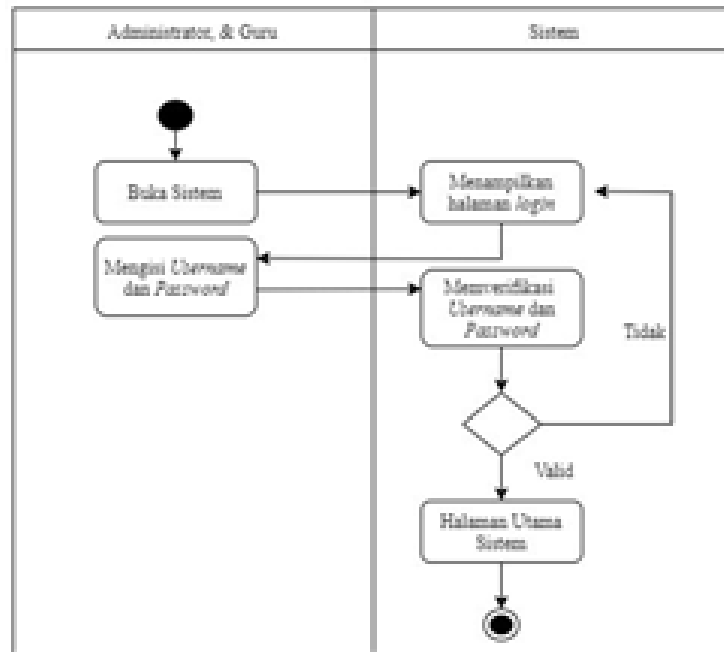| Usecase Spesication	
Usecase	Perform user login
Actor	Administrator, Teacher
Main Flow Of Event	
Pre-condition	The system displays the login page.
Actor Action	Response system
1. Open the system	2. Displaying the login page
3. Fill in username and password	4. Verify username and password
	5. Showing the main page
Exceptional Flow of Event	
	1. If the username and password are verified, you will automatically be able to access the main page.
	1. If the username and password are incorrect, the system will display a warning that the username is not registered or the password you entered is incorrect.

Figure 3. Activity diagram

System Design

Fugure 4. Interface Design

System Implementation

The implementation process consists of three primary stages: executing the implementation plan, performing the implementation activities, and conducting post-implementation follow-up.

Activities during the system implementation phase encompass translating the program logic from the design into the selected programming language, testing data to verify correct replies, and assessing the program to detect any issues or vulnerabilities.

Figure 5. Login Page View

Figure 6. Home Page/Dashboard View

CONCLUSION

The author concludes that the adoption of a computerized course information system has dramatically altered data management. This technology eliminates the need for human data recording, allowing for immediate storage in a database and significantly reducing the time required to locate files that were once housed in physical cabinets.

Moreover, the course information system is engineered to assist administrators and educators, enabling them to circumvent protracted searches for materials. This efficiency allows for the timely preparation of reports for the heads of LKP YANI 15 and Yani Pusat. Furthermore, the system streamlines the input, processing, and reporting of student and educator data. Consequently, it proficiently mitigates mistakes in data gathering, the loss of critical information, or the deterioration of essential records that may arise from manual bookkeeping.

Consequently, the author advises the organization to rectify any deficiencies in the system's utilization. Administrators and educators must have comprehensive training to proficiently navigate the functionalities of the course information system proficiently, hence ensuring effective operation and minimizing errors. Furthermore, they must safeguard the critical data housed in the database by preserving backup files. This measure will help protect against potential system difficulties. Maintaining physical copies of course-related data produced by the system is recommended to safeguard data security and integrity.

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