



Design and Development of Letter Management System to Enhance Student Services in Distance Learning Program

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Abstract: Distance education has emerged as a primary choice for individuals facing geographical constraints but aspiring to pursue higher education. The Distance Learning Program for Islamic Education at IAIN Syekh Nurjati Cirebon strives for continuous improvement in service quality amidst dynamic advancements in information technology. The research concentrates on document management within the administrative process, aiming to enhance efficiency through a designed information system. Given the dispersed nature of students across regions, managing letters becomes intricate, emphasizing the need for an innovative solution. The proposed system aims to provide a robust technological foundation for simplifying, managing, and monitoring the entire correspondence process. Its significance lies in reducing administrative burdens and improving service quality, facilitating faster, accurate, and transparent letter processing. The system's adaptability and responsiveness are crucial for sustaining distance education, supporting the academic community's unique needs. The design encompasses system architecture, appropriate technology selection, and an intuitive user interface, specifically tailored to the Distance Learning Program's characteristics. The successful implementation is anticipated to benefit administrative staff, students, and lecturers by enhancing efficiency in letter processing and management. This research illuminates the needs and advantages of the designed document management information system, emphasizing its role in advancing the correspondence service within the Distance Learning Program for Islamic Education at IAIN Syekh Nurjati Cirebon. Keywords: Distance Education, Document Management, Efficiency.

Keywords: Management Information System, Academic Document, Distance Learning.

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INTRODUCTION

Distance education has emerged as the primary alternative for many individuals who face geographic limitations yet aspire to pursue higher education [1]. Amidst the dynamics of information technology development, the Distance Education Program in Islamic Religious Education at IAIN Syekh Nurjati Cirebon continues to strive for the enhancement of its service quality. The management of correspondence, as an integral part of the administrative process within this program, becomes the focal point of research, aiming primarily to enhance efficiency and effectiveness through the design and implementation of a letter management information system [2].

Letters constitute one of the formal communication tools that play a crucial role in information exchange within academic environments. In the context of the Distance Education Program in Islamic

Religious Education, where students are dispersed across various regions, letter management becomes increasingly complex and demands innovative solutions. The design and implementation of a letter management information system are anticipated to provide a robust technological foundation for streamlining, managing, and monitoring the entire correspondence process [3].

The significance of designing and implementing a letter management information system within the Distance Education Program in Islamic Religious Education not only lies in reducing administrative burdens but also in improving service quality. With an integrated information system in place, it is expected that the processes of drafting, archiving, and distributing letters can be conducted more swiftly, accurately, and transparently. The sustainability of desired distance education outcomes necessitates a system that is adaptive and responsive to the needs of the academic community [4]. The design and implementation of the letter management information system as a correspondence enhancement service encompass architectural system planning, the selection of appropriate information technology, and the design of intuitive user interfaces. Tailored to the unique characteristics of the Distance Education Program in Islamic Religious Education, this system is designed to support the correspondence process from letter creation to digital archive storage, ensuring the security and integrity of information throughout the letter's lifecycle.

The successful implementation of this letter management information system will yield positive contributions not only to administrative staff but also to students and faculty members. With enhanced access and monitoring of letter statuses, students can focus more on the learning process without administrative hindrances. Faculty members will also benefit from more efficient processing and management of teaching assignment letters. Through this research, it is expected to present a clear picture of the needs and benefits of designing and implementing a letter management information system as a correspondence enhancement service within the Distance Education Program in Islamic Religious Education at IAIN Syekh Nurjati Cirebon. Thus, the improvement of correspondence quality can become a key factor in supporting the sustainability and success of this Distance Education Program.

RELATED WORK

Web-based letter management information system was developed in [5] in East Kalimantan Plantation Department. The research affirms the system's success in delivering correspondence information, with 75.83% agreeing and 22.95% strongly agreeing with its effectiveness among test respondents. Minimal dissent suggests suitability for plantation office use, with potential for enhancing visual appeal and addressing correspondence challenges in East Kalimantan Province for better usability.

The Website-Based Administration Management system demonstrates several key benefits and outcomes in [6]: Firstly, it efficiently manages document storage through database integration, ensuring secure and organized document handling. Secondly, it accelerates the process of outgoing mail publication, involving submission by administrators and heads, followed by secretaries adding and supervisors approving mail, streamlining operations. Thirdly, it addresses various administrative challenges, including numbering emails, optimizing attendance tracking, establishing work program timelines, and generating required reports. Lastly, the system exhibits strong validity, as evidenced by a 100% validity rate across 102 test items, indicating flawless operational performance without errors or failures. These findings highlight the system's effectiveness in enhancing administrative processes and document management tasks.

The study in [7] concludes that implementing a Letter Archive Information Management System at Bhayangkara University Surabaya enhances the quality of letter archives by improving the storage and retrieval processes of data. The digital system aids lecturers and end users in accessing data securely, without concerns about loss or damage. Looking ahead, there is hope that the system's

design will evolve to be more comprehensive and adaptable to future dynamics, considering it is an initial system with existing shortcomings that can be further developed and improved.

The research in [8] aims to develop an Administration System for Letter Submission and Issuance at FEBI using the Laravel framework and MySQL database. This technology allows for online correspondence management, enhancing productivity and efficiency. The study adopts the Research and Development version of the Pressman waterfall model, implementing Visual Studio Code for development with Laravel as the backend and CSS bootstrap for the frontend. Ultimately, this system aims to assist students in effectively managing correspondence processes at the faculty.

A web-based family planning participant data collection information system was developed in [9] using the Waterfall model, with implementation facilitated by the CodeIgniter framework. The system underwent testing using Blackbox testing methods, yielding valid results. This study concludes that employing the Waterfall method involves analyzing system requirements, designing systems using UML, implementing systems with the CodeIgniter framework, conducting trials with Blackbox testing, and performing system maintenance. This system is intended to serve as a recommendation for improving family planning data reporting in Labuhanbatu Regency, aiming to enhance administrative efficiency and user convenience in managing family planning data.

The study in [10] aims to develop a data management information system for assisted patients at the Sinergi Atap Negeri Foundation using PHP, the CodeIgniter 3 framework, and MySQL database. This system is expected to streamline data entry, enhance security, and improve accuracy, benefiting foundation employees and supporting efficient patient submissions and transparency in identity and hospital financing reports. The application aims to ensure accurate and timely data storage and management, meeting the foundation's operational needs effectively.

METHODS

The approach employed to address the identified issues involves the utilization of the waterfall methodology. Essentially, the waterfall methodology encompasses various stages including requirements definition, system and software design, implementation and unit testing, integration and system testing, and operation and maintenance [11], [12], [13]. Nonetheless, the current phase of the information system design extends only up to the integration and system testing stage. The subsequent section presents a framework for system design, adhering to the principles of the waterfall methodology, as depicted in Figure 1 below.

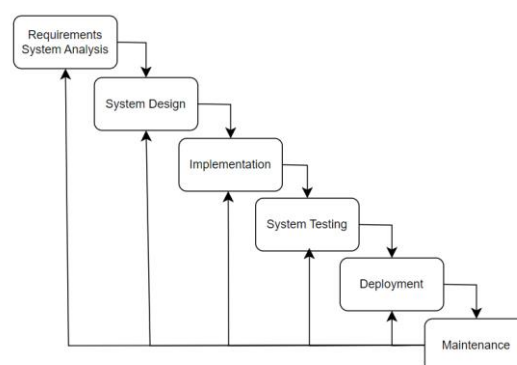


Figure 1 Waterfall Methodology.

1. Requirements System Analysis

The active enrolment certificate is a document affirming a student's current enrolments status at a tertiary institution, specifying their enrolments in a particular academic program within said institution. Typically, this document serves as a prerequisite for various purposes such as scholarship

applications, study permits, among others. Consequently, there arises a necessity for specialized services dedicated to facilitating the procurement of active enrolment certificates.

The Distance Learning Program in Islamic Education (PJJ PAI) caters to students dispersed across various regions of Indonesia. Presently, the process of obtaining active enrolment certificates remains offline within the faculty, thereby failing to adequately accommodate the needs of PJJ PAI students. The provision of active enrolment certificates is imperative for all PJJ PAI students, illustrating the high degree of exigency associated with this issue, as it directly impacts the fundamental necessities of a significant number of individuals.

Considering the foregoing, the absence of an efficient online system for obtaining active enrolment certificates poses significant challenges for PJJ PAI students, whose geographical dispersion complicates physical access to the university's administrative facilities. The lack of streamlined processes further exacerbates the burden on students, potentially impeding their academic pursuits and access to opportunities requiring such documentation.

Furthermore, given the widespread necessity for active enrolment certificates among PJJ PAI students, the implementation of an online service for procuring these documents is not only a matter of convenience but also one of equity and inclusivity in education. By ensuring equitable access to essential administrative services, the university can uphold its commitment to fostering a conducive learning environment for all students, regardless of their geographical location or mode of study.

Hence, the establishment of an online platform dedicated to the efficient processing and issuance of active enrolment certificates for PJJ PAI students is imperative. Such a system would not only enhance administrative efficiency but also contribute to the overall academic experience and success of students enrolled in the distance learning program.

1.1 Current Operational System Analysis

The existing operational system necessitates analysis to comprehend the ongoing processes thoroughly and delineate the nuanced disparities between the current operational framework and the proposed system. Presented herewith is an activity diagram delineating the operational procedures for managing correspondence within the Faculty of Education and Teacher Training at IAIN Syekh Nurjati Cirebon. Flow of current operational system is depicted in Figure 2.

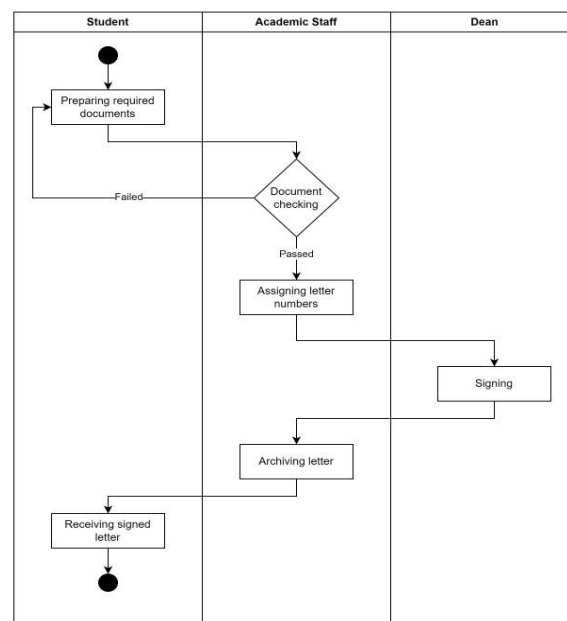


Figure 2 Flow of current operational system.

In the management of academic correspondence within the aforementioned faculty, students are mandated to physically visit the academic office, bearing the requisite documentation. Subsequently, the academic personnel will meticulously scrutinize the completeness of the submitted documentation. Upon verification of the requisite completeness, the academic office shall proceed to draft the requested correspondence, followed by soliciting approval from the pertinent leadership authority by means of obtaining their signature. Flow of proposed system is illustrated in Figure 3.

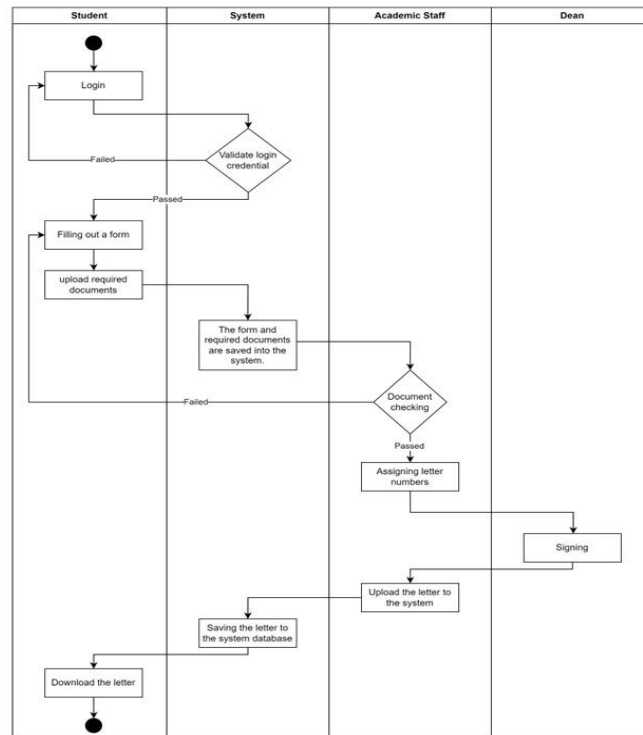


Figure 3 Flow of Proposed System

1.2 Proposed System Analysis

The intended system analysis serves the purpose of comprehensively understanding the proposed system's processes and providing a clear depiction of the system's design. The ensuing activity diagram represents the envisioned system. The Distance Learning Program in Islamic Education (PJJ PAI) operates as a remote learning program, where students do not physically attend campus for academic activities. Consequently, within the proposed system, students are not required to visit the faculty's academic office in person but can instead engage with the system remotely.

2. System Design

The development of this management information system for correspondence entails a systematic progression through multiple phases. These stages encompass the design of user interaction, database architecture, and system interface.

2.1 User Interaction

The design of user interaction in the system, employing use case diagrams, aims to provide a visual representation of the system's functionality from the user's perspective. This approach facilitates a detailed delineation of system functionalities, identification of user requirements, and comprehension of how various system elements interact. Furthermore, it fosters a deeper understanding of user-system interactions and supports the development of effective user interface designs.

In this context, system users consist of students and system administrators. Presented below is the use case diagram illustrating the correspondence management system. The user interaction in this system is depicted in the use case diagram, as illustrated in Figure 4.

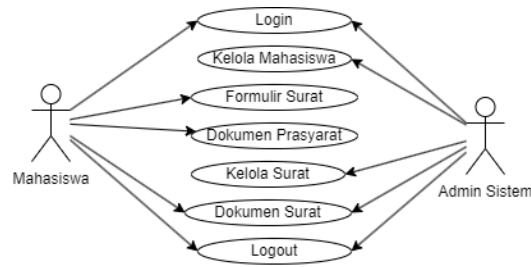


Figure 4 Use Case Diagram

The use case diagram depicts the various interactions between users and the system, showcasing the essential functionalities and the roles of each user type. For instance, students may initiate actions such as requesting letters or checking the status of their requests, while system administrators may undertake tasks like processing requests, managing user accounts, and generating reports. The explanation of the use case diagram can be found in Table 1.

Table 1 Description of Use Case Diagram

No	System Process	Actor	Use Case
1	This use case is the first step in the system. Users must enter their username and password in order to log in. Once they have logged in, they will be able to access the other use cases in the system.	Mahasiswa, System Administrator	Login
2	This use case allows administrators to manage student records. They can add, edit, and delete student records. They can also view student information, such as their name, address, and major.	System Administrator	Kelola Mahasiswa
3	This use case allows students to create letter forms. Students can select the type of letter form they want to create	Mahasiswa	Formulir Surat
4	This use case allows students to upload required documents according to the type of letter they want to create	Mahasiswa	Dokumen Persyaratan
5	This use case allows administrators to generate letters based on student data and include a letter number	System Administrator	Kelola Surat
6	This use case allows students and administrators to view and download generated letter documents	Mahasiswa, System Administrator	Dokumen Surat
7	This use case allows users to log out of the system	Mahasiswa, System Administrator	Logout

By delineating these interactions, the use case diagram serves as a foundational blueprint for system development, guiding the implementation of features and ensuring alignment with user needs. Additionally, it facilitates effective communication between stakeholders, enabling comprehensive understanding and refinement of system requirements throughout the development process.

2.2 Entity Relationship Diagram

Designing the database using an Entity-Relationship Diagram (ERD) aids in detailing the structure and relationships between entities within the database. This enables the database designer to comprehensively visualize how data will be stored, interact, and be organized within the system. A well-designed ERD can help ensure consistency, integrity, and efficiency in data management within the system. Presented below is the database design for the correspondence management system using an ERD. The design of the ERD diagram for this system can be seen in Figure 5.



Figure 5 Entity Relationship Diagram

RESULT AND DISCUSSION

The Results and Discussion section delineates the implementation of the designed system, as elucidated in the Methods section, along with a comprehensive examination of the system's testing procedures. This section provides a detailed analysis of the practical application of the developed system, highlighting its functionality, efficacy, and adherence to predefined specifications. Additionally, it delves into the outcomes of the system testing phase, encompassing both functional testing and user acceptance testing, to assess the system's performance, usability, and alignment with user requirements. Through a meticulous examination of the implemented system and its testing outcomes, this section aims to provide valuable insights into the system's effectiveness and its potential implications for enhancing organizational processes and service delivery.

1. Implementation

The correspondence management information system is developed using the PHP programming language and the CodeIgniter framework. Based on the system design, it features several main menus, including the login menu, letter data import menu, admin menu, official menu, and student menu. The source code for the implementation of the system design can be viewed in Figures 6, 7, and 8.

```
function aksi_login(){
    $username = $this->input->post('username');
    $password = $this->input->post('password');
    $where = array(
        'username' => $username,
        'password' => md5($password)
    );
    $cek = $this->m_login->cek_login("user",$where)->num_rows();
    if($cek > 0){
        $data_session = array(
            'id' => $id,
            'nama' => $username,
            'status' => "login"
        );
        $this->session->set_userdata($data_session);
        redirect(base_url("Dashboard"));
    }else{
        echo "Username dan password salah !";
    }
}

function logout(){
    $this->session->sess_destroy();
    redirect(base_url('Login'));
}
```

Figure 6 Source code of Login Page

Figure 7 Source Code of Manage Letter

Figure 8 Source Code of Admin Page

Administrators have access to the admin menu, where they can manage system settings, user accounts, and overall system configurations. The official menu is dedicated to managing official data and correspondence, while the student menu provides students with access to their letter requests, status updates, and other related features. With regards to the types of letters supported by the system, it accommodates requests for various purposes. Students can apply for active enrolment certificates to attest to their current enrolment status, request graduation certificates upon completion of their studies, or submit study leave letters when taking a temporary break from academic activities. The user interface of the implementation based on the system design can be seen in Figures 9, 10, and 11.



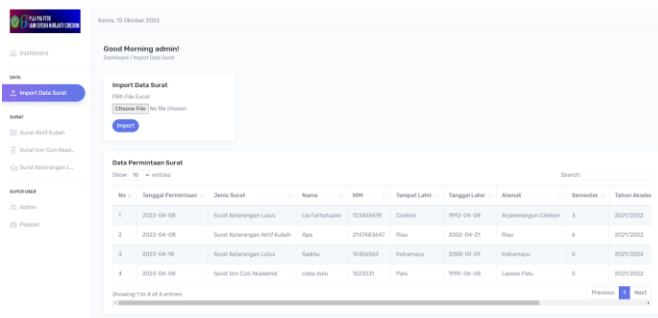


Figure 10 UI of Manage Letter

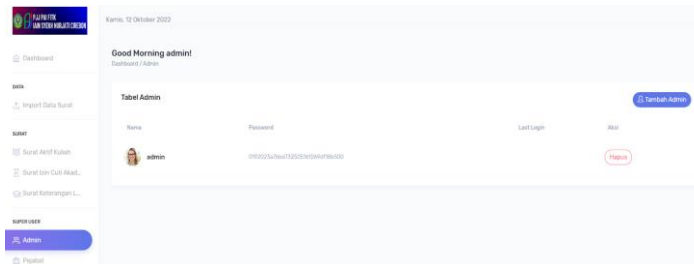


Figure 11 UI of Admin Page

2. System Testing

Application testing is a critical process in the software development lifecycle aimed at ensuring that the application functions properly, meets business requirements, and maintains high quality. The testing conducted involves both functional testing and user acceptance testing (UAT). Functional testing ensures that the application's functions operate according to specified requirements, while UAT is performed by end-users or stakeholders, in this case, the administrators of the Distance Learning Program in Islamic Education (PJJ PAI) at IAIN Syekh Nurjati Cirebon, to ensure that the system meets their needs and expectations and to validate its readiness for use in the PJJ PAI program environment.

The following are the results of the functional testing and user acceptance testing that have been conducted depicted in Figure 12 and 13.

PENGLAN APLIKASI SURAT KETERANGAN AKADEMIK
PRODI PJJ PAI IAIN SYEKH NURJATI CIREBON

Peng uji : Dr. Mun. Al. M. Pd.
Tanggal : 18 Oktober 2022

No	Fungsi yang diuji	Hasil Pengujian (Berfungsinya dengan Benar)		Catatan Penguji
		Ya	Tidak	
1	Login	✓		
2	Memeriksa jumlah surat yang telah dibuat di halaman Dashboard	✓		
3	User dapat mengunggah dokumen excel ke halaman Import Data Surat	✓		
4	Memeriksa data surat yang telah diunggah di tabel pada halaman Import Data Surat	✓		
5	Memeriksa data surat dengan jenis surat keterangan aktif surat pada halaman surat aktif surat	✓		
6	Memeriksa data surat dengan jenis surat izin cuti akademik pada halaman surat izin cuti akademik	✓		
7	Memeriksa data surat dengan jenis surat keterangan lulus pada halaman surat keterangan lulus	✓		

Figure 12 UAT Result page 1.

8	Mengedit No surat pada setiap jenis surat	✓		
9	Mengupload file surat pdf pada setiap jenis surat	✓		
10	Bulan dan tahun pada nomor surat sesuai	✓		
11	Menghapus data surat pada setiap halaman jenis surat	✓		
12	Menampilkan data admin pada halaman admin	✓		
13	Mengedit data admin pada halaman admin	✓		
14	Menghapus data admin pada halaman admin	✓		
15	Menampilkan data pejabat pada halaman pejabat	✓		
16	Mengedit data pejabat pada halaman pejabat	✓		
17	Logout	✓		

Mengetahui Penguji



Dr. Muh. Ali, M.Pd.

Figure 13 UAT Result page 2.

CONCLUSION

The development of the Letter Management Information System represents a tangible contribution by the author towards the institutional advancement, particularly within the Distance Learning Program in Islamic Education (PJJ PAI) at IAIN Syekh Nurjati Cirebon. This initiative aims to significantly enhance service accessibility for PJJ PAI students, who are geographically dispersed across 37 provinces in Indonesia. Specifically, the system streamlines the process of acquiring academic certificates, including active enrolment certificates, academic leave permits, and graduation certificates, through online channels.

Beyond facilitating ease of access for students, the implementation of the Letter Management Information System is poised to streamline and expedite the certificate issuance process within the PJJ PAI program. Given the substantial student enrolments within the program, this system is anticipated to considerably reduce administrative burdens while ensuring timely and efficient service delivery.

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