An Integrated Web-Based Monitoring System For Optimizing The Supervision Of Student Internships And Final Projects

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Abstract

Background : The implementation of Field Work (PKL)/Internships and Final Projects is an important part of the academic process at universities, requiring ongoing monitoring by academic advisors and academic programs. However, at many universities, the monitoring of these two activities is still conducted through separate platforms, resulting in inefficient data management, disjointed information, and difficulties in comprehensively tracking student progress

Purpose : This research aims to develop and implement a web-based monitoring platform that integrates the supervision processes for PKL/Internships and Final Projects into a single system, so that all data, advising activities, progress, and academic documents can be managed centrally

Methodology : The system was developed using the Waterfall method, which includes requirements analysis, design, implementation, testing, and maintenance, utilizing the Laravel framework, the PHP programming language, and a MySQL database

Findings : System validation was performed through Black Box Testing on 10 test scenarios. Test results showed a 100% success rate for system functionality, meaning all key features operate as intended to meet user needs

Implications : The integration of the monitoring processes for internships and final projects into a single platform is the primary contribution of this research, as it enables unified progress monitoring, reduces data management duplication, and provides consistent academic information for all stakeholders.

Originality : The system's implementation offers benefits such as improved efficiency in the monitoring process, ease of tracking student progress in real time, accelerated academic administration, and the provision of more accurate information as a basis for evaluation and decision-making.

Keywords: *Information Systems, Monitoring, Field Work, Internship, Final Project, Waterfall, Web.*

INTRODUCTION

Advances in information technology have had a significant impact on the transformation of business processes across various sectors, including higher education. Higher education institutions are required to provide information systems capable of supporting academic processes in an effective, efficient, transparent, and well-documented manner. One academic process that requires ongoing management is the implementation of Field Work (PKL)/Internships and students' Final Projects. Both activities are an important part of the higher education curriculum because they serve as a means for

students to apply the competencies they have acquired during the learning process while also fulfilling graduate learning outcomes.

Field Work/Internships aim to provide students with real-world work experience through direct involvement in the industry, enabling them to develop professional competencies aligned with their academic fields. Meanwhile, the Final Project is a form of applying academic skills, research, and problem-solving abilities that students must complete as a graduation requirement(Satyahadewi et al., 2019). Although they have different characteristics, both activities require periodic monitoring by academic advisors and the academic program to ensure their implementation proceeds in accordance with the target timeline, learning outcomes, and applicable academic regulations.

In practice, the process of monitoring internships and final projects at various universities still faces numerous challenges. At many institutions, student data management, recording of guidance sessions, progress monitoring, and document collection are still carried out manually or using separate tools, such as spreadsheets, messaging apps, or traditional documents(Febriani et al., 2022). These conditions make it difficult to integrate information, render the monitoring process less effective, slow down evaluations, and make it difficult for faculty advisors and academic programs to obtain information on student progress quickly and accurately(Setiawan et al., 2024).

Various previous studies have developed web-based monitoring systems to support the implementation of PKL/internships, such as providing features for digital logbooks, attendance tracking, report uploads, and assessments, which have been proven to improve administrative efficiency and the transparency of the student monitoring process(Muzdalifah et al., 2025). On the other hand, there are also studies that have developed information systems for managing final projects separately, covering the processes from advising and proposal submission to the completion of the final report(Faldza Fadhillah & Yulisa Geni, 2026).

However, most research still focuses on only one of these academic processes, so universities must use different systems for internships and final projects and it is not uncommon for one of them to still be managed manually. This situation results in unintegrated student data, less efficient administrative processes, and difficulty in comprehensively monitoring student progress.

Table 1. Comparison of Previous Studies and the Proposed System

Previous Study	System Focus	Limitation	Contribution of the Proposed Study
Muzdalifah et al. (2025)	Internship Monitoring	Supports internship monitoring only; not integrated with final project management	Integrates internship and final project monitoring into a single platform
Faldza Fadhillah & Yulisa Geni (2026)	Final Project Management	Does not support internship monitoring	Provides integrated supervision and centralized academic data management
Febriani et al. (2022)	Academic Administration	Uses separate media for academic management	Eliminates data redundancy through system integration
This Study	**Integrated Internship and Final Project Monitoring**	**Unified web-based platform**	**Provides real-time monitoring, centralized data management, integrated supervision, and unified reporting**

Based on a review of previous research, there remains a research gap in the form of the lack of a platform that integrates the monitoring of field placements/internships and final projects. Most studies focus only on one academic process, so data, advising activities, and information on student progress are still managed separately. This situation hinders the supervision process, increases administrative complexity, and makes it difficult for academic programs to conduct comprehensive monitoring.

In response to this gap, this study developed a web-based academic monitoring platform that integrates the management of internships and final projects. The proposed system provides centralized data management, supervision logging, progress monitoring, document management, and reporting.

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This integration is the study's primary contribution, as it enables real-time monitoring of student progress through a single platform, reduces data duplication, improves the efficiency of academic administration, and provides more accurate information to support evaluation and decision-making.

METHODOLOGY

This study employs the Research and Development (R&D) method using the Waterfall software development model. This model was chosen because it provides a systematic development process suitable for a system whose functional requirements were defined at the outset of the study(Prasetio & Cuhenda, 2025).The research phases include requirements gathering, system design, implementation, testing, and maintenance.

Data collection was conducted through observation, interviews, and a literature review(Anggrian & Geni, 2024).Observations were made of the ongoing monitoring processes for internships and final projects, while interviews involved the Program Chair, academic advisors, administrative staff, and students to identify the system's functional and non-functional requirements. Subsequently, the results of the observations and interviews were validated through a confirmation process (member checking) with stakeholders and compared with applicable academic procedures to ensure that the identified system requirements align with the institution's business processes. The literature review was conducted by examining previous research, books, and journals related to academic monitoring systems and software development methods(Hardiansyah Putra & Ocdy Amelia, 2024).

A. System Architecture

The system was developed using a web-based client–server architecture. The application was built using the Laravel Framework as the backend, which implements the Model–View–Controller (MVC) pattern, while MySQL is used as the database management system to store user data, advising processes, documents, and student progress. The user interface was developed using HTML, CSS, JavaScript, and Bootstrap. The authentication mechanism uses a role-based authentication system so that each user is granted access rights according to their role. After successfully authenticating, users can only access features within their authority, such as data management, academic advising processes, progress monitoring, and reporting.

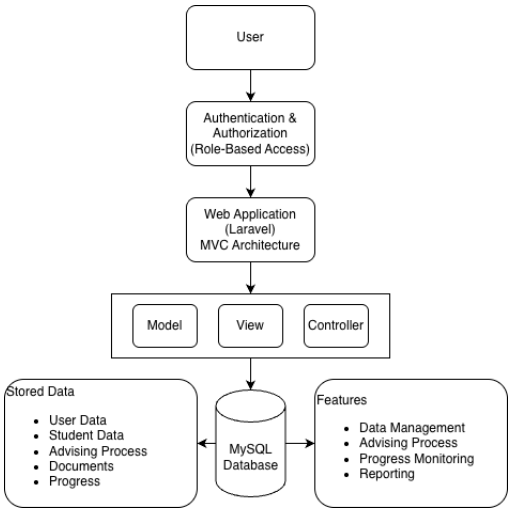


Figure 1. System Architecture

B. Database Design

The database design was carried out using the Entity-Relationship Diagram (ERD) approach with normalization principles to reduce data redundancy and maintain the integrity of relationships between entities. The main entities include students, faculty members, internships, final projects, advising,

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documents, and users. This design enables the integration of internship and final project data into a single database, allowing academic information to be managed centrally and consistently.

C. Waterfall Development Process

The system development method used the Waterfall model, which consists of five stages: requirements analysis, system design, implementation, testing, and maintenance(Vafky Ideal et al., 2024).

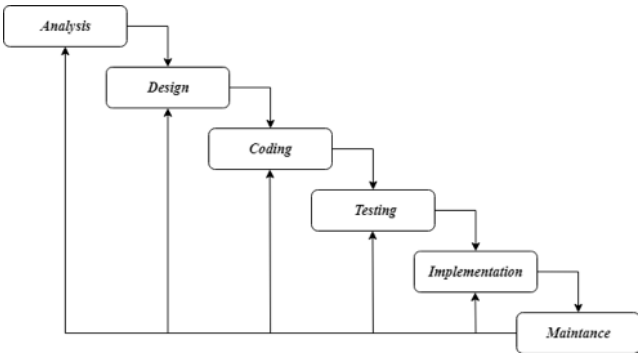


Figure 2. Waterfall Method

1. Requirements Analysis
   This phase is conducted to identify the system's functional and non-functional requirements based on the results of observations, interviews, and literature reviews. The results of this analysis serve as the foundation for developing the system to monitor field training/internships and final projects.
2. System Design
   The design phase involves creating a system model using the Unified Modeling Language (UML) in the form of a Use Case Diagram, as well as designing the database and user interface to serve as a reference for the implementation process.
3. System Implementation
   In this phase, a web-based monitoring application is developed using the Laravel framework, the PHP programming language, a MySQL database, and HTML, CSS, and JavaScript technologies in accordance with the design specifications.
4. System Testing
   Testing was conducted using the Black Box Testing method to ensure that all system functions operate according to user requirements, including authentication, data management, guidance, progress monitoring, document uploading, and reporting.
5. Maintenance
   In the Waterfall model, the maintenance phase consists of activities that take place after the system has been implemented in the operational environment. In this study, this phase has not been empirically evaluated and is described only as part of the development cycle, which includes bug fixes, adjustments to new requirements, and feature development in subsequent implementations.

The stages of the research flowchart used in this study are illustrated in Figure 2.

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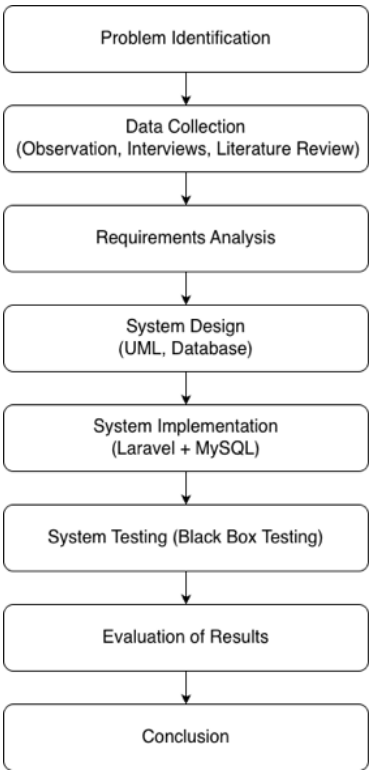


Figure 3. Research Flowchart

Figure 2 shows the research process in the development of a web-based monitoring system to support the supervision of students' field work, internships, and final projects. The research began with problem identification, followed by data collection through observation, interviews, and literature review. The data obtained was then analyzed to determine system requirements as the basis for design using UML and mockups. The next stage was system implementation using the Laravel framework and a MySQL database, followed by testing using the Black Box Testing method to ensure that all functions operated as required. The results of the implementation and testing were then evaluated as the basis for drawing the research conclusions.

RESULT AND DISCUSSION

A. Analysis of the Current System

Before this system was implemented, the monitoring process was conducted manually using spreadsheets managed separately by each academic advisor. Supporting documents such as proposals, progress reports, final reports, and administrative forms were sent via different communication channels, resulting in scattered information that was difficult to update consistently and took longer to compile. These conditions increased the potential for data inconsistencies, document duplication, and delays in tracking student progress.

In contrast, the proposed system integrates all these processes into a single web-based platform. Student data, activity logs, documents, completion progress, seminar schedules, and monitoring reports are all interconnected within a single database. Consequently, both academic advisors and the academic program can access information on student progress in real time without having to collect data from various sources. A comparison of these two approaches is presented in Table 2.

Table 2. Comparison Between the Previous Monitoring System and the Proposed Integrated Monitoring System

Aspect	Previous System	Proposed System
Data Storage	Separate spreadsheets	Centralized database
Document Submission	Email and messaging applications	Direct upload through the system

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Progress Monitoring	Performed manually	Real-time monitoring dashboard
Report Generation	Manual data compilation	Reports generated automatically from the database
Information Access	Scattered across multiple platforms	Integrated into a single web-based application
Data Consistency	Prone to data duplication and inconsistency	More consistent and synchronized data

These results show that the integrated approach is able to reduce the complexity of data management compared to previous methods. In addition to improving data consistency, the system also speeds up the information retrieval process because all academic activities are documented on a single platform.

B. Analysis of the Advantages of the Integrated Approach

The integrated approach offers several advantages over conventional monitoring systems. First, the integration of all modules into a single application allows any data changes to be immediately synchronized across all related features. For example, updates to student progress can be automatically displayed on the monitoring dashboard without requiring a manual recapitulation process. This improves the accuracy of the information used by academic advisors and program administrators. Second, the implementation of access-rights-based authentication ensures more secure data management. Administrators have authority over master data, while academic advisors can only access the students they advise. This mechanism supports data security while maintaining the integrity of academic information. Third, centralized document storage simplifies the process of tracking advising history. All student documents are stored in a single repository, thereby minimizing the risk of document loss due to the use of various communication media. Fourth, the monitoring dashboard allows for the identification of students who are behind schedule in completing their PKL/Internship or Final Project based on the progress indicators displayed.

This information can be used as a basis for faster academic decision-making. Although it offers various advantages, the developed system still has several limitations. The current system does not yet provide an automatic notification mechanism for instructors or students when there are updates to progress or new documents. Additionally, the application still focuses on internal monitoring processes and is therefore not yet integrated with the Academic Information System (SIAKAD) or the Learning Management System (LMS) used by the university. The testing conducted is also limited to functional testing using the Black Box Testing method; consequently, aspects such as system performance, security, and usability have not been comprehensively evaluated. These limitations present opportunities for development in future research, such as adding email- or WhatsApp-based notification features, integration via an Application Programming Interface (API), and the application of data analysis to predict potential delays in the completion of field work/internships and final projects.

C. Requirements Analysis

The system that has been developed has the following functional and non-functional requirements.

Table 3. Functional Requirements

No	System Requirements
1	Login based on user access rights
2	Student data management
3	Advisor data management
4	Work Placement/Internship Applications
5	Thesis Applications
6	Assignment of Advisors
7	Filling out activity logbooks
8	Monitoring student progress
9	Uploading documents

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Table 4. Non-Functional Requirements

Aspec	Description
Usability	User-friendly interface
Performance	Fast system response
Security	Authentication based on access rights
Availability	Accessible via a browser at any time
Reliability	Data stored centrally in a database

D. Database Design

The database design was carried out using the Entity-Relationship Diagram (ERD) approach, incorporating normalization principles to reduce data redundancy and maintain the integrity of relationships between entities. This database design describes the database structure and the relationships between entities used to support all of the system's business processes(Pradipta et al., 2022). This database design supports the implementation of an integrated monitoring system, ranging from user data management, the assignment of academic advisors, the tracking of progress based on indicators, the documentation of the advising process, to the storage of academic documents. With this relational structure, the system is able to accurately present information on student progress, facilitate the monitoring process by academic advisors and academic programs, and generate reports that are faster, more consistent, and easier to trace during the implementation of field training/internships and final projects.

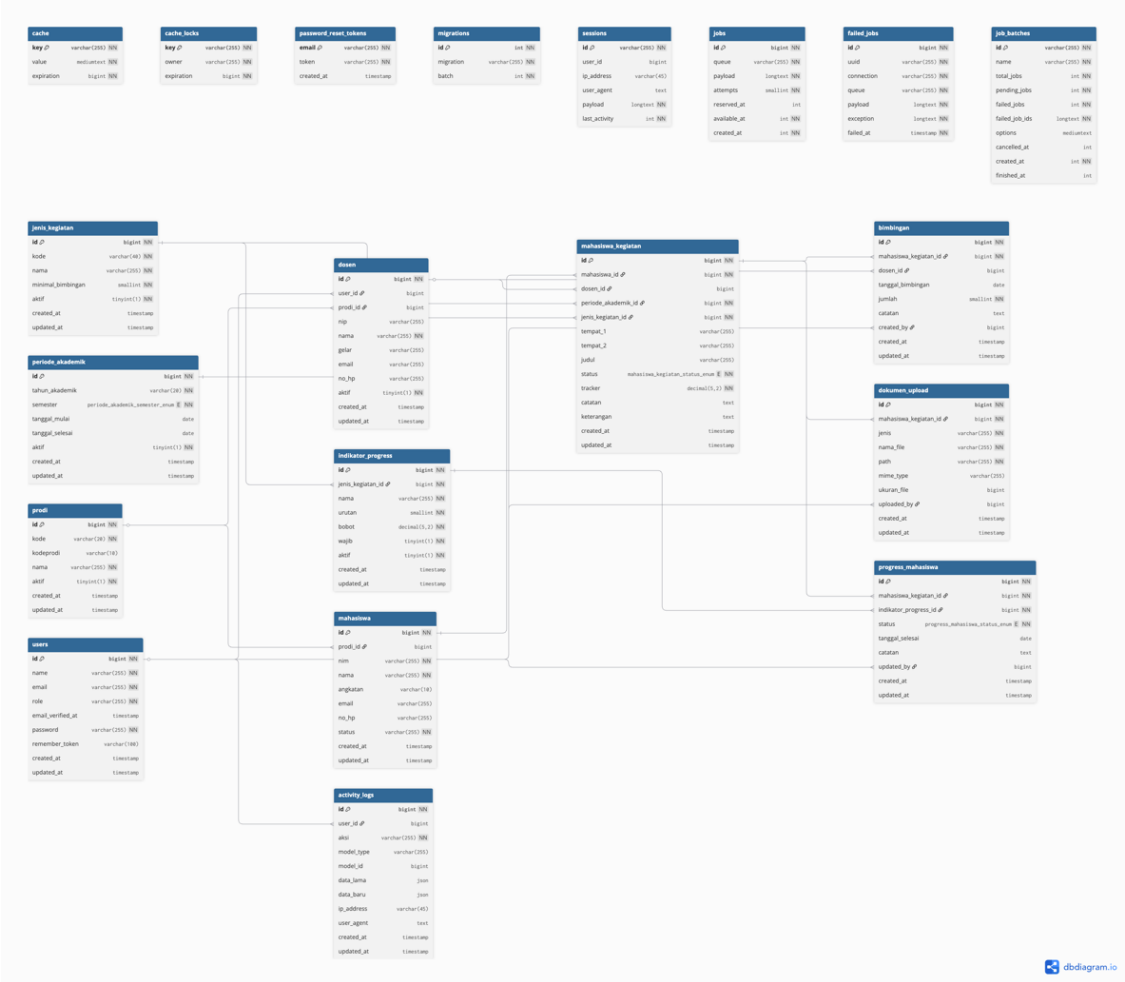


Figure 4. Database Design

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E. Use Case Diagram

A use case diagram is used to illustrate the main functions accessible to each actor according to their access rights(Jannah, 2023). In the internship and final project monitoring system, there are two main actors: the Administrator and the Academic Advisor.

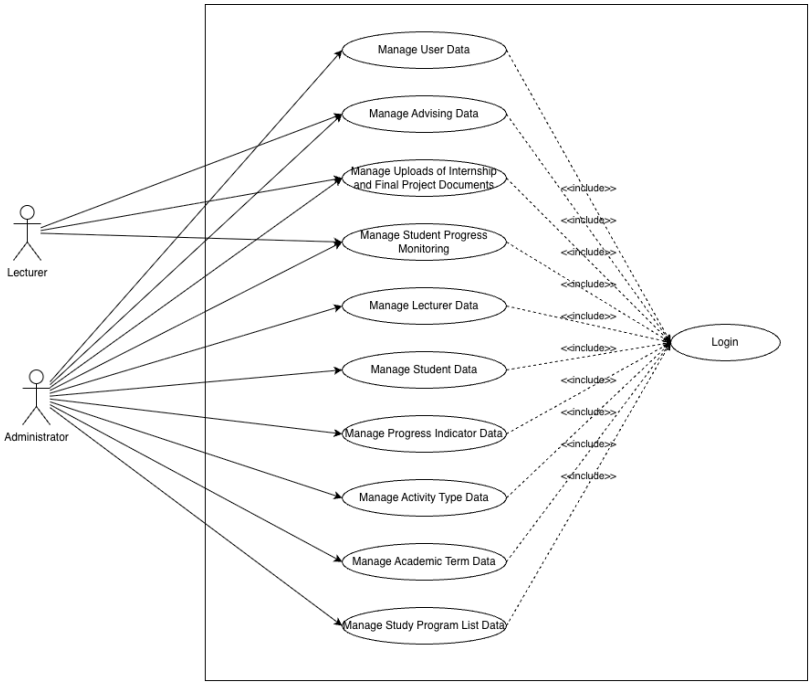


Figure 5. Use Case Diagram System

Based on the use case diagram, it is evident that the Administrator has broader access rights compared to the Academic Advisor because they are responsible for managing all the system's master data. On the other hand, the Academic Advisor is only granted access to features directly related to the student advising process, namely advising management, document uploads, and monitoring student progress. All activities within the system begin with the login process, ensuring data access security and guaranteeing that each user can only access features corresponding to their role.

F. System Implementation

System implementation is the process of applying the results of analysis and design into the developed web-based application(Tiara Pratiwi et al., 2021). The implementation of the user interface aims to demonstrate that every designed feature is operational and supports the integrated monitoring of students in their field placements/internships and final projects. Several views of the implemented system interface are shown in the following figures.

G. Login Page

The login page serves as an authentication gateway for users before they access the application. This page consists of fields for the email address and password as user credentials, along with a show/hide password feature, a "Remember Me" option to save the login session, and a "Log In" button to complete the authentication process.

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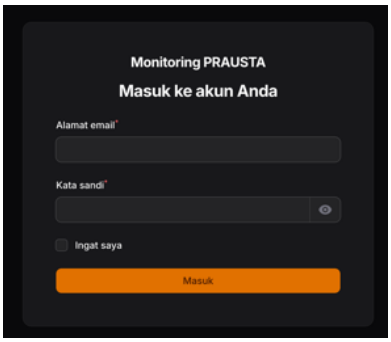


Figure 6. Login Page

H. Dashboard Page

This page displays information about students requiring attention based on the status and progress of their activities. The dashboard is equipped with search and filter features, as well as a table containing data on students, academic advisors, activity types, implementation status, progress percentage, and the number of advising sessions, thereby enabling administrators to monitor activities effectively and centrally.

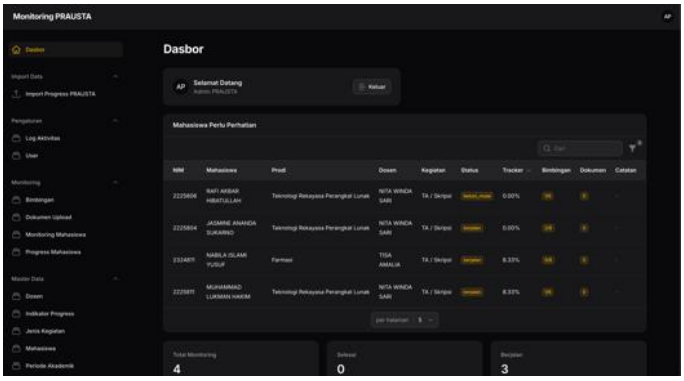


Figure 7. Dashboard Page

I. User Management Page

This page is used by administrators to manage system user data, including adding, searching for, modifying, and deleting accounts. The information displayed includes the username, email address, role, and account creation date, making it easier to centrally manage user access rights.

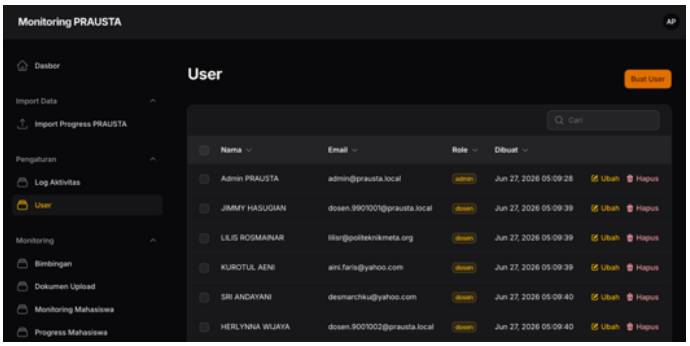


Figure 8. User Management Page

J. Advising Data Page

This page presents information in a structured, tabular format containing student data and academic advising records. Additionally, it offers features for searching, filtering data, adding advising sessions, and editing data, enabling faculty and administrators to document advising histories and monitor student progress more effectively, centrally, and in a well-documented manner.

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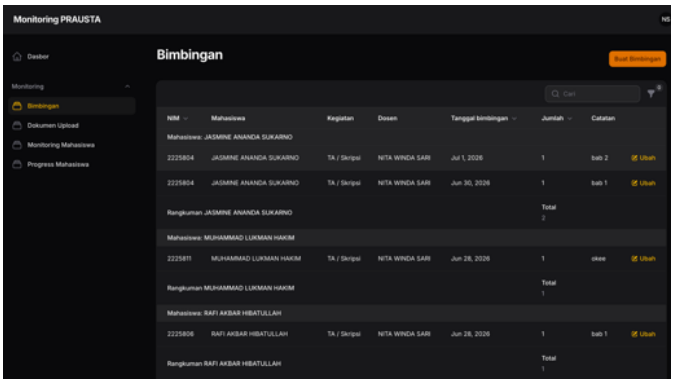


Figure 9. Advising Data Page

K. Document Upload Page

This page displays a list of uploaded documents in a table format that includes the student ID, student name, activity type, document type, file name, uploader, and upload date. In addition, features for searching, filtering data, uploading documents, and editing data are available, so that the process of managing, storing, and verifying documents can be carried out centrally, documented, and makes it easier to monitor document completeness.

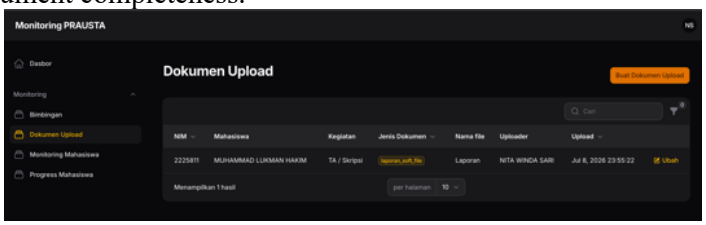


Figure 10. Document Upload Page

L. Student Monitoring Page

This page displays information in a table format containing student data, monitoring status, and progress percentage (tracker), so that academic advisors and administrators can monitor students' status and progress in real time, streamline the evaluation process, and ensure that each stage of the activity proceeds according to the established plan.

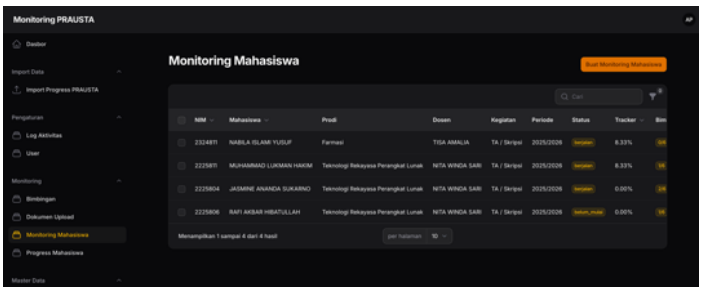


Figure 11. Student Monitoring Page

M. Student Progress Page

This page displays student data and implementation status, showing each student's progress. Additionally, it features a search function and a "Update Progress" feature that allows academic advisors to periodically update students' achievements. With these features, the monitoring process becomes more structured and transparent, and facilitates the evaluation of students' progress throughout their activities.

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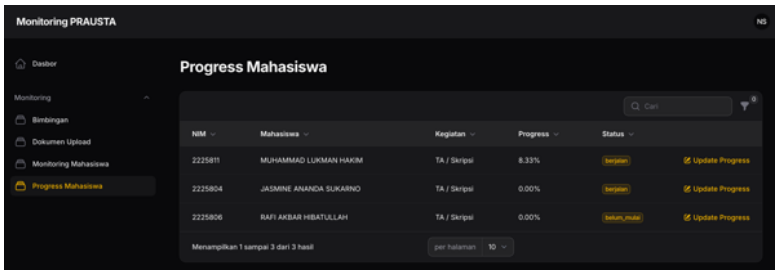


Figure 12. Student Progress Page

N. Lecturer Page

This page displays data on lecturer for students participating in field training/internships and final projects. With this page, administrators can centrally manage faculty data, ensuring that information on faculty advisors is always accurate, up-to-date, and ready for use in the student monitoring process.

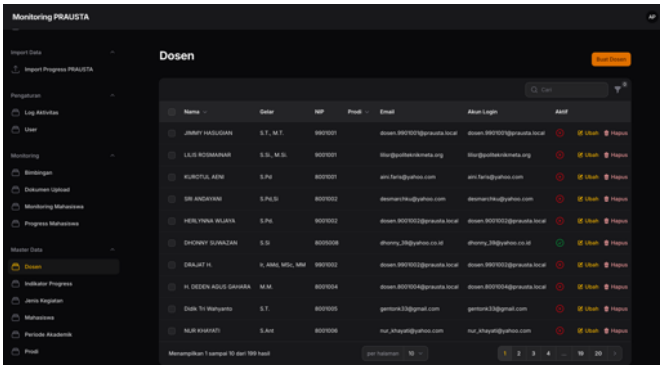


Figure 13. Lecturers Page

O. Student Data Page

This page displays information on students currently participating in PKL/Internships and Final Projects. With this page, student data can be managed centrally, accurately, and in an integrated manner, thereby supporting the monitoring process, the assignment of faculty advisors, and the reporting of academic progress more effectively.

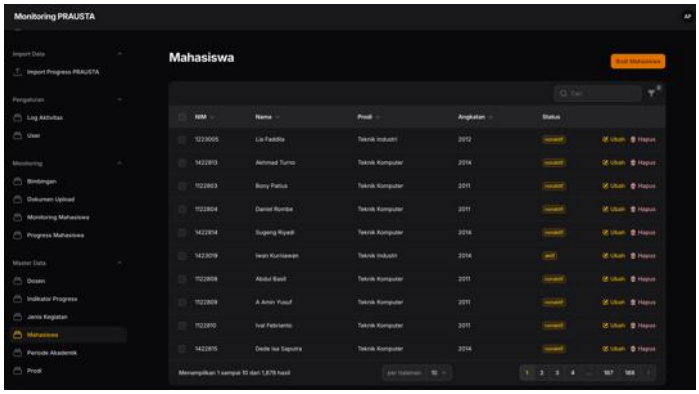


Figure 14. Student Data Page

P. System Testing

System testing was conducted using the Black Box Testing method to verify that each of the system's main functions operates in accordance with the established functional requirements. Testing focused on the system's output matching the given input, without considering the structure of the program code. The modules tested included login, dashboard, user management, faculty data, student data, advising data, document upload, student monitoring, and student progress updates.

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A total of 10 test scenarios were developed based on the system's functional requirements. Each scenario was deemed valid if the generated output matched the expected results. The test results showed that all scenarios were successfully executed without any functional errors. A summary of the test results is presented in Table 5.

Table 5. System Testing Result

No	Module/Feature	Test Scenario	Expected Result	Status
1	Login	Log in with a valid account	Successfully logged into the dashboard	Success
2	Login	Log in with an invalid account	An error message appears	Success
3	Dashboard	Display monitoring data	Data appears as per the database	Success
4	User Management	Add, edit, and delete users	Data is saved according to the process	Success
5	Lecturer Data	CRUD operations on lecturer data	Data is successfully managed	Success
6	Student Data	CRUD operations on student data	Data is successfully managed	Success
7	Advising Data	Add and edit advising records	Data saved	Success
8	Document Upload	Upload documents	Documents successfully saved	Success
9	Student Monitoring	Display monitoring status	Status and progress displayed	Success
10	Student Progress	Update progress	Progress successfully updated	Success

These results indicate that all test scenarios produced outputs that met the established functional requirements. Thus, the system is deemed to have met the functional specifications and is ready for use as a monitoring tool for internships and final projects.

Based on the results of its implementation, this system has improved the effectiveness of the monitoring process by streamlining workflows. In the previous system, administrators had to collect data from various spreadsheets and communication channels before compiling student progress reports. After the integrated system was implemented, all data became available in a single database, allowing reports to be generated more quickly and consistently.

Additionally, the monitoring dashboard allows academic programs to track each student's status in real time based on their progress percentage and academic advising history. This information helps academic advisors identify students who require more intensive support, enabling academic interventions to be initiated earlier than under the manual system.

Consequently, the effectiveness of monitoring has improved not only in terms of administrative efficiency but also in terms of the quality of decision-making, as the available information is more comprehensive, up-to-date, and easily accessible.

The implementation of this system also has practical implications for academic management at universities. Academic programs gain a centralized monitoring platform to continuously oversee the implementation of field placements/internships and final projects. The availability of integrated data simplifies the preparation of academic reports, the evaluation of academic advisors' performance, and the monitoring of student completion rates during each academic period.

CONCLUSION

This study successfully developed and implemented a web-based system for monitoring internships and final projects that integrates the entire monitoring process into a single platform. The system was developed using the Waterfall method and validated through Black Box Testing across 10 test scenarios, yielding a 100% functional success rate, which indicates that all key features functioned

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in accordance with the established functional requirements. Integrating the monitoring processes into a single system overcomes the limitations of the previous process, which relied on separate media, making data management more centralized, consistent, and easily accessible. Additionally, the system supports real-time monitoring of student progress, reduces data management duplication, streamlines academic administrative processes, and provides more accurate information to serve as a basis for evaluation and decision-making by academic advisors and academic programs.

AUTHOR'S CONTRIBUTION

Ilyas Ruhiyat contributed to conceptualization, software development, system implementation, data analysis, and manuscript preparation. Nita Winda Sari contributed to research design, methodology, supervision, manuscript review, and served as the corresponding author. Adie Kusna Wibowo contributed to software validation, testing, and data collection. Santo Wijaya contributed to methodology development, statistical analysis, and interpretation of the research findings. Manase Sahat H. Simorangkir contributed to software architecture, system evaluation, and manuscript editing. All authors have read and approved the final version of the manuscrip

ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to Politeknik META Industri Cikarang for providing institutional support and research facilities that enabled the completion of this study. The authors also appreciate all individuals who participated in the system testing and validation proc

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

FUNDING

This research received no external funding and was fully supported by the authors and Politeknik META Industri Cikarang

REFERENCES

1. Anggrian, S., & Geni, B. Y. (2024). Perancangan Dan Pengembangan Sistem Informasi Kepegawaian Menggunakan Metode Waterfall (Studi Kasus: Pt. Dola Usaha Indonesia). *Jati (Jurnal Mahasiswa Teknik Informatika)*, *8*(1).
2. Faldza Fadhillah, M., & Yulisa Geni, B. (2026). Promanageti: Integrated System For Managing Internships, Proposals, And Final Projects In Informatics Engineering Students. In *Journal Of Information System And Technology Research Journal Homepage* (Vol. 5, Number 1).
3. Febriani, R., Mary, T., & Pernanda, A. Y. (2022). Sistem Informasi Monitoring Praktik Kerja Lapangan (Pkl) Berbasis Web Di Smk Negeri 1 Sintuk Toboh Gadang. *Jurnal Pustaka Data*, *2*, 95–102.
4. Hardiansyah Putra, & Ocdy Amelia. (2024). Implementasi Metode Waterfall Pada Sistem Informasi Laporan Kinerja Berbasis Website. *Jurnal Komputer Teknologi Informasi Dan Sistem Informasi (Juktisi)*, *3*(1), 706–713. Https://Doi.Org/10.62712/Juktisi.V3i1.250
5. Jannah, N. (2023). Analisis Pengembangan Sistem Informasi Batik Madura Menggunakan Metode Waterfall Dan Black Box Testing. *Jurnal Satya Informatika*, *8*(01), 64–81. Https://Doi.Org/10.59134/Jsk.V8i01.239
6. Muzdalifah, D., Sayuti, A. M., Bisnis, A., & Negeri Bandung, P. (2025). Rancang Bangun Sistem Monitoring Peserta Praktik Kerja Lapangan Berbasis Web. In *Journal Of Information System Management (Joism) E-Issn* (Vol. 7, Number 1).

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7. Pradipta, R. A., Wintoro, P. B., & Budiyanto, D. (2022). Perancangan Pemodelan Basis Data Sistem Informasi Secara Konseptual Dan Logikal. *Jurnal Informatika Dan Teknik Elektro Terapan*, *10*(2). Https://Doi.Org/10.23960/Jitet.V10i2.2541
8. Prasetio, R. A., & Cuhenda, C. (2025). Perancangan Sistem Monitoring Dan Evaluasi Proyek Berbasis Laravel Untuk Optimalisasi Manajemen Proyek Pt. Inkaba (Perseroda). *Jurnal Informatika Dan Teknologi Pendidikan*, *5*(1), 44–53. Https://Doi.Org/10.59395/Jitp.V5i1.126
9. Satyahadewi, N., Mutiah, N., Nawawi, J. P. H., & Barat, P.-K. (2019). Sistem Informasi Monitoring Tugas Akhir (Simta) Berbasis Web Fakultas Mipa Universitas Tanjungpura. *Cess (Journal Of Computer Engineering System And Science)*, *4*(1), 2502–2714.
10. Setiawan, R., Heryanto, D., & Rifaldy, F. (2024). Optimisasi Monitoring Tugas Akhir Mahasiswa Dengan Integrasi Formasi Metode Agile Framework Scrum Dan Notifikasi Whatsapp Di Institut Teknologi Garut. *Teknika*, *13*(2), 184–191. Https://Doi.Org/10.34148/Teknika.V13i2.803
11. Tiara Pratiwi, I., Anshori Aris Widya, M., & Khawahab Hasbullah. (2021). Sistem Informasi Manajemen Paket Ekspedisi Cv. Mk Express. *Jurnal Sistem Informasi Dan Tenologi*, *4*(1). Http://Www.Jurnal.Umk.Ac.Id/Sitech
12. Vafky Ideal, M. A., Rasyid, M., & Yuda, F. (2024). Perancangan Sistem Informasi Monitoring Praktek Kerja Lapangan Dengan Menggunakan Metode Waterfall. *Jurnal Komtekinfo*, 425–435. Https://Doi.Org/10.35134/Komtekinfo.V11i4.595

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