Journal of Artificial Intelligence and Engineering Applications

Website: https://ioinformatic.org/

June 2026. Vol. 5. No. 3; e-ISSN: 2808-4519

Development of a Web-Based Employee Task and Evaluation System Using the Prototype Method

Desy Ramadhan Dita[1]*, Yudo Bismo Utomo[2], Harso Kurniadi[3], Iin Kurniasari[4]

[1,2,3,4]*Universitas Islam Kadiri*

ditadesyr@gmail.com[1]* , yudobismo@uniska-kediri.ac.id[2] , harsokurniadi@uniska-kediri.ac.id[3], iin.kurniasari@uniska-kediri.ac.id[4]

Abstract

Administrative activities in employee management require a system that can record tasks, attendance, clock-out time, and sick leave or permission requests in a structured manner. Manual recording can slow down data retrieval, increase the risk of errors, and make reporting less effective. This study was designed and developed a web-based employee task and performance evaluation application for Bank Jatim Cabang Pembantu Berbek using the prototype method. The development stages consisted of requirement identification, initial planning, system design, prototype development, evaluation, improvement, and final implementation. The application provides three access roles, namely administrator, management, and employee. The main features include login, registration, account approval, employee data management, attendance, clock-out time recording, sick leave or permission request submission with supporting evidence, task management, reports, announcements, notes, notifications, and performance visualization. System validation was conducted using Black-Box Testing and User Acceptance Testing involving 15 respondents. The UAT result reached 683 out of 750 points, equal to 91.07%, and was categorized as very good. Therefore, the proposed application is feasible for supporting employee task management, attendance, leave administration, and performance evaluation processes in a more efficient and documented manner.

Keywords: *Web-based Application, Employee Evaluation, Prototype Method, Employee Task Management, Black Box Testing, User Acceptance Testing*

1. Introduction

Employee task management is an important factor in supporting organizational effectiveness and efficiency. In many organizations, employee tasks, attendance, and leave administration are still handled using spreadsheet files or physical documents. This condition can cause data duplication, delayed reporting, and difficulties when management needs to monitor employee work progress. Therefore, information systems are needed to improve data accuracy, transparency, and accessibility in daily administrative activities [1]. Previous studies have shown that web-based personnel systems can support employee administration and improve the management of employee data [1]. Web-based task management applications can also help organizations monitor work progress and support employee performance assessment [2]. In addition, web-based decision support systems have been used to assist employee performance assessment more objectively [3]. Web-based leave applications have also been developed to simplify leave administration and reduce manual recording problems [4].

However, most previous studies still focus on separate functions, such as employee administration, task management, performance assessment, or leave management. Therefore, this study proposes an integrated web-based application that combines employee task management, attendance recording, sick leave or permission requests, and performance evaluation in one system. Bank Jatim Cabang Pembantu Berbek requires a structured prototype system that can be used as a model for managing employee activities.

The system developed in this study focuses on three user roles: administrator, management, and employee. Each role has specific access rights so that the data flow can be controlled. Employees can record attendance, record clock-out time, request sick leave or permission, and report task progress. Management can monitor task reports and evaluate performance, while the administrator can manage users and overall data. The prototype method was selected because the development process required iterative interaction between the developer and potential users. Through this method, initial requirements could be converted into a working prototype, evaluated by users, and then improved according to feedback [3]. This study aims to develop and evaluate a web-based employee task and performance evaluation application using the prototype method.

2. Research Method

2.1. Research Design

This research used a system development approach with the prototype method [3]. The method was applied because the application required clear communication between the developer and users, especially for features related to task reporting, attendance, leave requests, and employee performance evaluation. The prototype approach allowed users to review the initial model and provide feedback before the final implementation was completed.

The research was conducted as a case study at Bank Jatim Cabang Pembantu Berbek. The research stages included preparation, literature study, requirement analysis, system design, prototype development, implementation, testing, and final reporting. The data collection methods consisted of observation, literature study, and user questionnaires. Observation was used to understand the simulated workflow of employee administration because the original institutional data were confidential. Literature study was used to support the theoretical basis and previous research, while questionnaires were used to evaluate user acceptance. The overall development flow is presented in Fig.1.

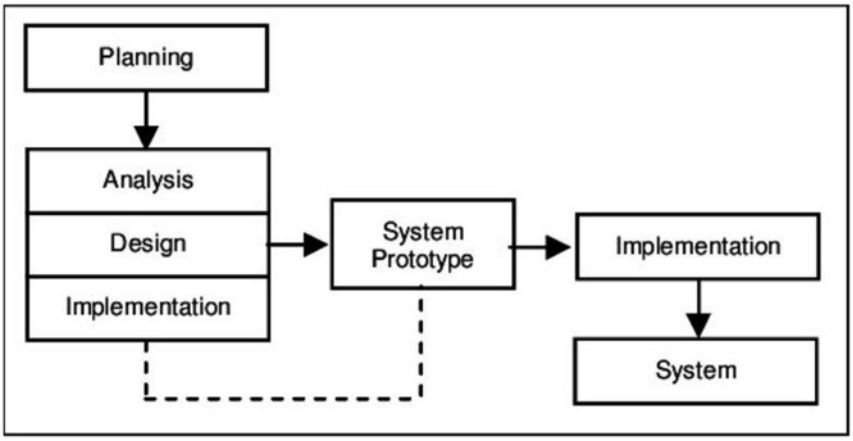

Fig. 1 : Prototype development flow used in the research.

2.2. System Development Stages

The first stage was requirement identification. In this stage, the main problems and user needs were analyzed. The system needed to support login, registration, account approval, employee data management, attendance, clock-out time recording, sick leave or permission requests, task management, announcements, notes, notifications, reports, and performance evaluation.

The second stage was initial planning and system design. The design phase produced use case diagrams, flowcharts, interface designs, and database design. The third stage was prototype development, in which the main visible features were developed into a functional model. The fourth stage was user evaluation and improvement. User feedback was used to refine the prototype before it was implemented as the final system.

2.3. System Roles and Features

Table 1 : User roles and main functions

No	User role	Main functions
1	Administrator	Verifies user accounts, manages employee data, monitors attendance, sick leave or permission requests, tasks, reports, and overall system data.
2	Management	Reviews task reports, verifies sick leave or permission requests, assigns tasks, monitors attendance, and evaluates employee performance.
3	Employee	Logs into the system, records attendance and clock-out time, views assigned tasks, submits task progress, requests sick leave or permission, and views personal reports.

The role division was designed to keep the data management process structured. Each user can only access features related to their responsibilities, reducing unauthorized access and supporting more organized monitoring. The use case diagram of the proposed system is shown in Fig. 2.

Fig. 2 : Use case diagram of the proposed system

2.4. Testing t\Technique

The system was tested using Black Box Testing and User Acceptance Testing (UAT). Black Box Testing was used to verify whether each application function produced the expected output without examining the internal program code [5]. The tested functions included login, registration, account approval, attendance, clock-out time recording, sick leave or permission request submission, task management, announcements, reports, and performance evaluation.
User Acceptance Testing was conducted using a questionnaire completed by 15 respondents [6]. The questionnaire assessed three main aspects: functionality, ease of use, and system reliability. The score was calculated by comparing the obtained score with the maximum possible score and converting it into a percentage.

3. Results and Discussion

3.1. System Implementation

The research produced a web-based employee task and performance evaluation application. The application was developed to support employee task management, automatic attendance recording during login, clock-out time recording, sick leave or permission requests, user management, notifications, and report printing. The system was designed according to the access rights of administrator, management, and employee users. The administrator dashboard provides access to employee data, attendance data, sick leave or permission requests, employee tasks, task reports, and performance evaluations. This dashboard is intended to help the administrator manage and monitor employee activities. The employee dashboard allows employees to view tasks, record attendance, record clock-out time, request sick leave or permission, and view personal reports. The management dashboard is used to monitor attendance, tasks, employee performance, announcements, and notes. Management can also review task details, download supporting files, and print reports in PDF format. The implementation examples are shown in Fig. 3, Fig. 4, and Fig. 5.

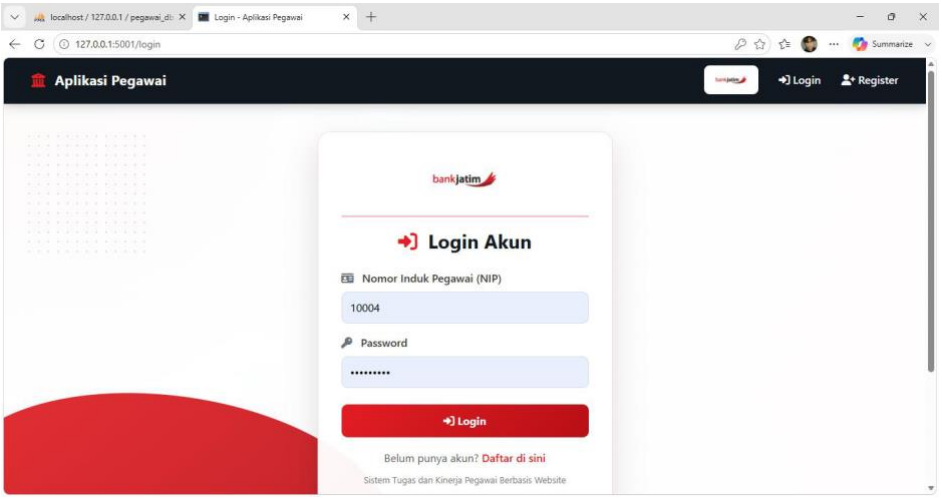

Fig. 3 : Implementation of the login page.

Fig. 3 shows the login page used by all users before accessing the system. Users must enter their employee identification number and password, and then the system directs them to the dashboard according to their access role.

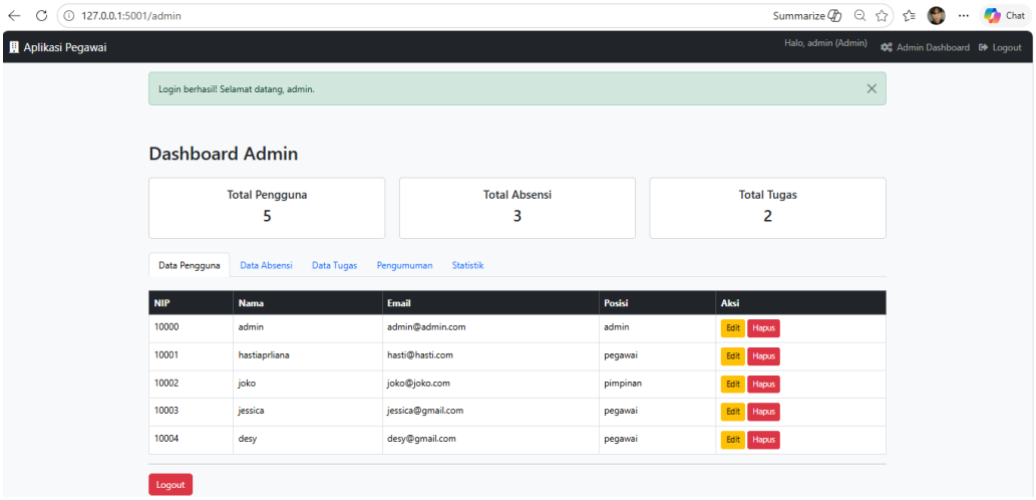

Fig. 4 : Implementation of the administrator dashboard.

Fig. 4 shows the administrator dashboard, which provides access to user data, attendance data, sick leave or permission requests, task data, and reports. This page helps the administrator manage system data and monitor employee activities.

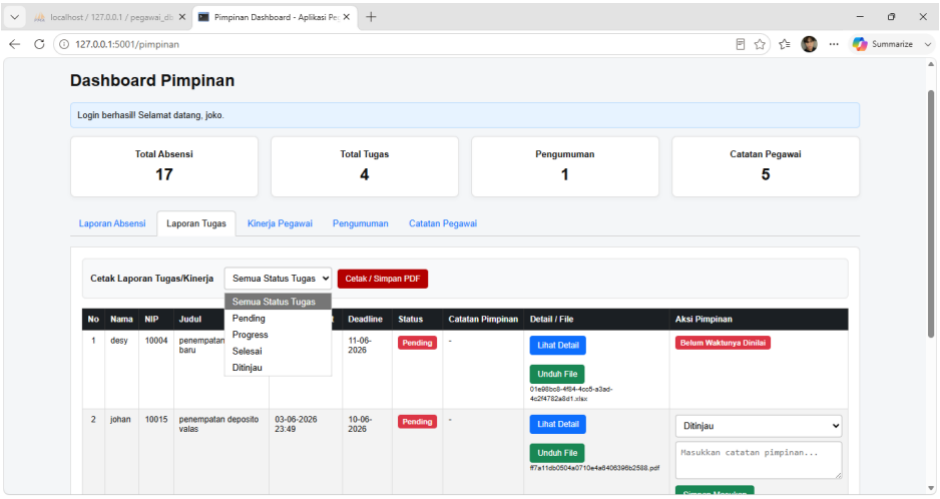

Fig. 5 : Implementation of the management dashboard for task and performance monitoring.

Fig. 5 shows the management dashboard used to monitor employee attendance, task reports, announcements, notes, and performance evaluations. Through this page, management can review task progress and print reports when needed.

3.2. Database Implementation

The database was implemented using MySQL [7]. The database used in the application was named pegawai_db and consisted of several main tables, including absensi, pemberitahuan, pesan, pimpinan_task_notification, tugas, and users. These tables store user data, task data, attendance data, sick leave or permission requests, messages, announcements, and task notifications. Python was used as the main programming language to develop the web application logic [8]. The database implementation is shown in Fig. 6.

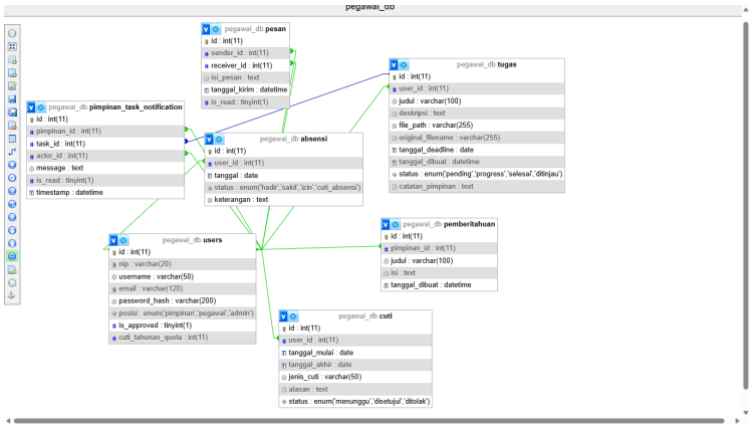

Fig. 6 : Database implementation of the employee task and evaluation system.

Fig. 6 shows the database implementation used in the application. The database consists of several related tables that support user management, attendance recording, task management, announcements, messages, and task notifications.

3.3. Black Box Testing Result

Table 2 : Summary of black box testing

No	Tested feature	Expected result	Result
1	Login and registration	The system verifies registered users and prevents unauthorized access.	Valid
2	Account approval	The administrator can approve registered accounts before users access the system.	Valid
3	Attendance and clock-out time	Employees can record attendance and clock-out time digitally.	Valid
4	Sick leave or permission request	Employees can submit sick leave or permission requests, and management can verify them.	Valid
5	Task management	Tasks can be created, viewed, updated, reported, and monitored according to access rights.	Valid
6	Reports and evaluation	The system displays and prints attendance, task, and performance reports.	Valid

The black box testing result showed that the main features operated according to the designed functions. This indicates that the application can support the basic workflow of employee task management, attendance, leave administration, and performance evaluation.

3.4. User acceptance testing result

Table 3 : User accpetance testing result

Respondents	Obtained score	Maximum score	Percentage
15	683	750	91,07%

The UAT result obtained a score of from a maximum score of 750. The percentage was 91,07%, which was categorized as very good. This result indicates that users considered the application acceptable in terms of functionality, ease of use, and reliability. The recapitulation chart of the UAT result is shown in Fig.7.

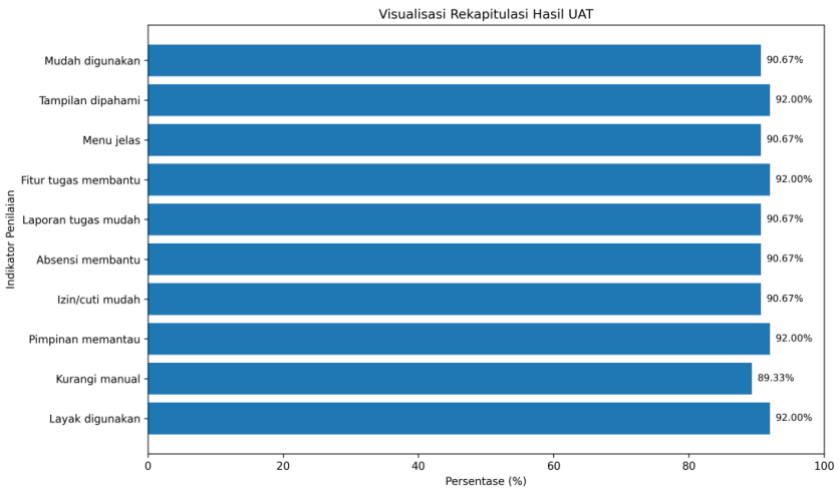

Fig. 7 : Recapitulation chart of user acceptance testing results

The high user acceptance score indicates that the developed prototype can help users manage employee administration more efficiently. The integration of task management, attendance recording, clock-out recording, sick leave requests, and performance evaluation supports a more structured and well-documented work process. In addition, the system reduces dependence on manual records and assists management in monitoring employee activities through the available dashboards and reports.

3.5. Discussion

The developed application provides a practical solution for managing employee tasks and administrative activities through an integrated web-based system. The previous study in [1] focused on employee administration, whereas the study in [4] focused on leave management. Unlike those studies, this research integrates task reporting, attendance recording, leave requests, notifications, and performance evaluation into a single prototype application. This integration is the main contribution of the study.

The prototype method was effective because user requirements could be evaluated throughout the development process. Features that were initially designed as mockups could be improved based on user feedback, making the final prototype more aligned with the workflow of the case study. The use of black box testing and UAT also ensured that the system was not only functional but also acceptable to users.
This finding is in line with previous research that applied a prototyping model in employee performance application development, showing that iterative user feedback can help produce a system that better matches user needs [9].
Nevertheless, the application still has several limitations. Future development can include e-mail notifications, automatic database backup, more complete user activity history, and a more detailed model of employee performance indicators. Data security is important in web-based systems because employee data and supporting documents need to be protected from unauthorized access [10].

4. Conclusion

This study successfully developed a web-based employee task and performance evaluation application using the prototype method. The application supports employee task management, attendance recording, clock-out recording, leave requests, sick leave requests, reports, notifications, and employee performance evaluation. The system also implements three access roles: administrator, management, and employee, allowing each user to access functions according to their responsibilities.
The testing results show that the main features of the application functioned as designed. The UAT result reached 91.07% based on responses from 15 respondents and was categorized as very good. Therefore, the application is feasible as a prototype to support employee task management, attendance, leave, and performance evaluation processes at Bank Jatim Cabang Pembantu Berbek. Future studies may develop e-mail notifications, automatic database backup, user activity history, and more comprehensive performance assessment indicators.

Acknowledgement

The author would like to thank the Department of Computer Engineering, Faculty of Engineering, Universitas Islam Kadiri, Bank Jatim Cabang Pembantu Berbek, and all parties who provided support during the research and system development process.

References

[1] M. Anwar, "Rancang bangun sistem informasi kepegawaian dan pencatatan pekerja migran Indonesia di BP3MI Riau dengan metode prototyping," *(Proye Politeknik Caltex Riau),* 2024.

[2] A. B. Pratomo, "Pengembangan website manajemen tugas berbasis web untuk pengukuran kinerja sumber daya manusia," *Teknimedia,* 2023.

[3] M. C. Ramadhan, J. Wiratama, and A. A. Permana, "A Prototype Model on development of web-based decision support system for employee perfo assessments with simple additive weighting method," *Jurnal Sistem Informasi,* 2023.

[4] M. A. K. Rizki and A. F. O. Pasaribu, "Rancang Bangun aplikasi e-cuti pegawai berbasis website (Studi kasus: Pengadilan Tata Usaha Negara)," *Jurnal Te dan Sistem Informasi ,* 2021.

[5] A. Maspupah, "Literature Review: Advantages and Disadvantages of Black Box and White Box Testing Methods," *Jurnal Techno Nusa Mandiri,* vol. 2 pp. 151-162, 2024.

[6] A. Aliyah, N. Hartono, and A. A. Muin, "Penggunaan User Acceptance Testing (UAT) Pada Pengujian Sistem Informasi Pengelolaan Keuangan," *Switch Sains dan Teknologi Informasi,* vol. 3, no. 2, pp. 42-58, 2025.

[7] Oracle, "What is MySQL?," MySQL 8.4 Reference Manual, 12 May 2026. [Online]. Available: https://dev.mysql.com/doc/refman/9.7/en/ mysql.html?utm_source=chatgpt.com. [Accessed 12 May 2026].

[8] P. S. Foundation, "Python 3.14.5 documentation," Python Documentation, 12 May 2026. [Online]. Available: https://docs.python.org/3/. [Accessed 12 Ma

[9] S. J. Bagastio, G. Anisa, S. Suakanto, and T. F. Kusumasari, "A Prototyping Model for Self-Appraisal Employee Performance Application Develop Cooperative," *Sinkron: Jurnal dan Penelitian Teknik Informatika,* vol. 7, no. 4, pp. 1-10, 2023.

[10] N. Astahadi, R. N. Sarbini, I. Kurniasari, and H. Mukminna, "Implementasi Keamanan Formulir Data Siswa Pada Web Pendaftaran Dengan Metode AES, *Minfo Polgan,* vol. 14, no. 1, pp. 702-712, 2025.