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The Employee Leave Monitoring Web-Based System Using Incremental Method at PT PP (Persero) Tbk

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ABSTRACT

Leave is one of the rights of employees in an agency or company. Good and effective leave data processing can make it easier for administrative officers to monitor. However, leave data processing at the PT Pembangunan Perumahan field office has not used an information system so that administrative officers have difficulty in monitoring employees on leave. This causes employees who have completed their leave period but have not returned to duty. The purpose of this study is to design a system for monitoring leave. By implementing the incremental method, it is easier for the author to design a leave monitoring system according to the needs of the institution. Administrative officers can monitor leave more easily because the system is equipped with a recapitulation feature.

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1. INTRODUCTION

Leave is one of the rights of employees in an agency or company. Leave can be used by employees to not come to work for certain reasons, such as refreshing, sick leave, giving birth, fulfilling religious obligations, and other needs in accordance with the leave provisions in each organization. With good leave management, an organization is expected to be able to maintain the performance of its employees. With good employee performance, an organization can run its business processes and achieve organizational goals.[1]. Agencies or companies that provide leave to employees need to carry out monitoring so that the employees can immediately return to work after the leave period has finished..

PT Pembangunan Perumahan (Persero) Tbk or abbreviated as PT PP is a State-Owned Enterprise engaged in providing building and civil construction services including buildings and infrastructure; engineering, procurement and construction, property and housing, and investment.[2]. Currently, PT PP (Persero) Tbk has been trusted to be involved in the construction of the National Strategic Project (PSN), especially the construction of the Trans Sumatra Toll Road Section Indrapura - Kisaran. Therefore, PT PP built a temporary field office to coordinate employees because most

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employees work in the construction area and employee attendance supervision is still by signing. In addition, the employee leave application process is still carried out from the instant messaging application (messenger) so that it is not recorded properly and orderly. This makes it difficult for the admin to monitor leave so that employees who have expired their leave period often have not returned to work in the field.

The use of information technology allows companies to operate effectively and efficiently. Through the use of computer-based information technology, the process of completing work will be easier to do and access to the process of organizational activities can also be done quickly.[3]. With the existence of computers as a data management tool, all areas in an agency can be computerized and well integrated and the results of a computerized information system can have more value compared to a system that is processed manually.[4]. The purpose of this study is to design a web-based system that can monitor field employee leave to overcome the problems faced by PT PP Tbk. The system is a network of interrelated work processes that come together to achieve a goal and carry out an activity.[5]. An information system is a system that consists of a collection of system components, namely software, hardware and brainware that processes information into an output that is useful for achieving a certain goal in an organization.[6]. A website is an application that contains multimedia documents (text, images, sound, animation, video) in it, using HTTP (hyper text transfer protocol) to access it and using software called a browser[7].

2. RESEARCH METHODS

Research methods are basically a scientific way to obtain data for certain purposes and uses. [8]. The stages of this research can be seen in Figure 1.

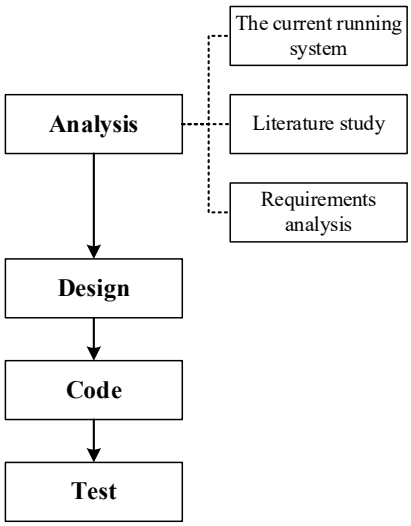

Figure 1. Research Flow

1. Analysis
   The author divides the analysis stage into 3 parts, namely :
   a. Analysis of the current running system
      the process of looking at the system that is already running, the parts that will be used, and then documenting the needs that will be met in designing the new system. [9]. The data collection techniques that the author uses in this section are observation and interviews with the aim of identifying problems that occur in the field. Observation is the observation of work procedures that run directly at the research location.[10]. Interviews are a data collection technique that is carried out through face-to-face meetings and direct questions and answers with the source/data informant. [11].

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b. Literature study
Literature studies were conducted to obtain theoretical support in building a system.[12]. The author quotes from previous research, namely research conducted by Rizki and Pasaribu, which designed a web-based leave application to make it easier for employees to apply for leave without having to come to the office, find out the remaining leave, reduce the time for procedural leave applications, and recapitulate leave data.[13]. Research conducted by Wijayanto et al. developed an employee leave application that makes it easier for employees to apply for leave and check their leave history independently and makes it easier for HRD and division heads to approve leave.[14]. Research conducted by Yuni and Saepudin designed a leave information system that makes it easier for administrative staff to process employee leave application data[15].

c. equirements analysis
This section is the section that determines the requirements for fulfilling a proposed new system[16]. This analysis is very important in creating new information systems, where new systems are evaluated continuously, especially regarding the requirements met by the system[17].

2. Design
In the system design stage, the author uses Unified Modeling Language (UML) diagrams including use case diagrams, activity diagrams, class diagrams, and sequence diagrams. UML is one of the tools/models for designing object-oriented software development.[18].

3. Code
This stage is the process of compiling program codes and creating databases from systems built according to the design stage. The author uses the PHP programming language for writing program codes and MySQL for creating databases. PHP stands for Hypertext Preprocessor which is used as a server-side scripting language in web development that is inserted into HTML documents[19]. MySQL is a database server program that is capable of receiving and sending data very quickly, is multi-user and uses standard SQL commands[20].

4. Test
Testing is the process of finding gaps or errors (bugs) in each software element, then recording the results and continuing with fixing the errors[21]. At this test stage the author uses the Blackbox method. The Blackbox method is a software test in terms of functional specifications without testing the design and program code to find out whether the function, input and output are in accordance with the required specifications[22].

The Incremental Model is a system development model in software engineering based on software requirements which are broken down into several functions or parts so that the development model is gradual[23].

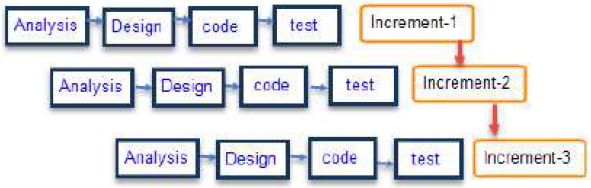

Figure 2. Incremental Model Flow[24]

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3. RESULTS AND DISCUSSION

In this study, the interactive learning application aims to introduce healthy lifestyles to elementary school students at SD Panca Budi Medan.

1. Analysis

The author carried out the analysis process based on the results of data collection and obtained the results of the functional requirements analysis of the system to be designed as in table 1.

Table 1. Functional Requirements Analysis Results

Users	Requirements
Admin	1. Login data handling for staff 2. Handling of leave types 3. Approval of leave application 4. Leave monitoring
staff	1. Update profile 2. Leave application 3. Leave monitoring

2. Design

a. Use case diagrams describe the interaction between one or more actors and the system to be built, what functions are in a system and who has the right to use it[25].

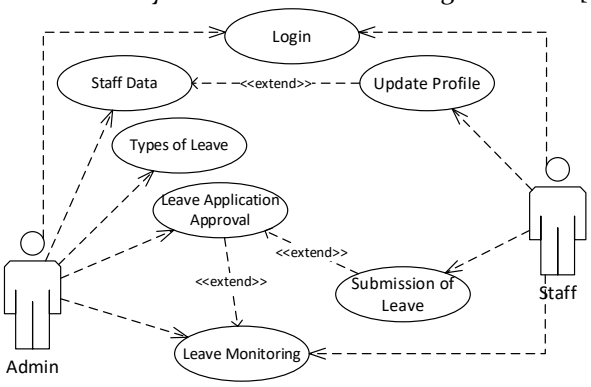

Figure 3. Use Case Diagram Design

b. Activity Diagram is a type of UML used to describe the flow of work or activities in a system or process. This diagram presents a series of activities, actions, and decisions that occur over time[26]. The activity diagram design for this research can be seen in Figure 4.
c. Class diagram is a visual of the structure of a program system in the types that are formed. Class diagram is the flow of a database in a system that will be built or created[27]. The class diagram design for this research can be seen in Figure 5.
d. Sequence diagrams specifically describe the behavior of a single scenario. They show a number of example objects and the messages that pass through these objects in a use case[28]. The sequence diagram design for this research can be seen in Figure 6.

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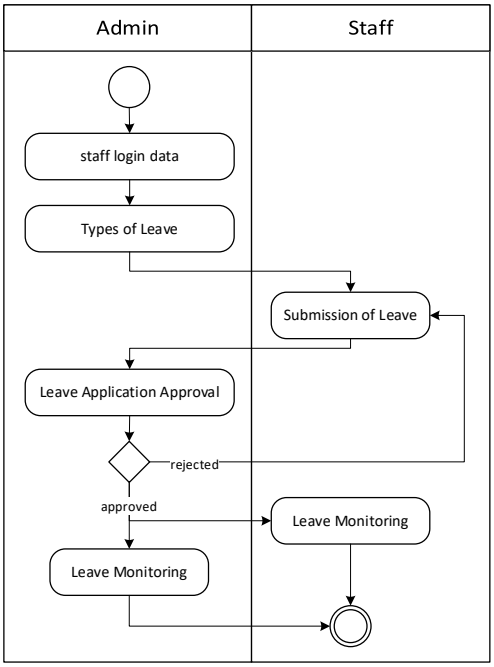

Figure 4. Activity Diagram Design

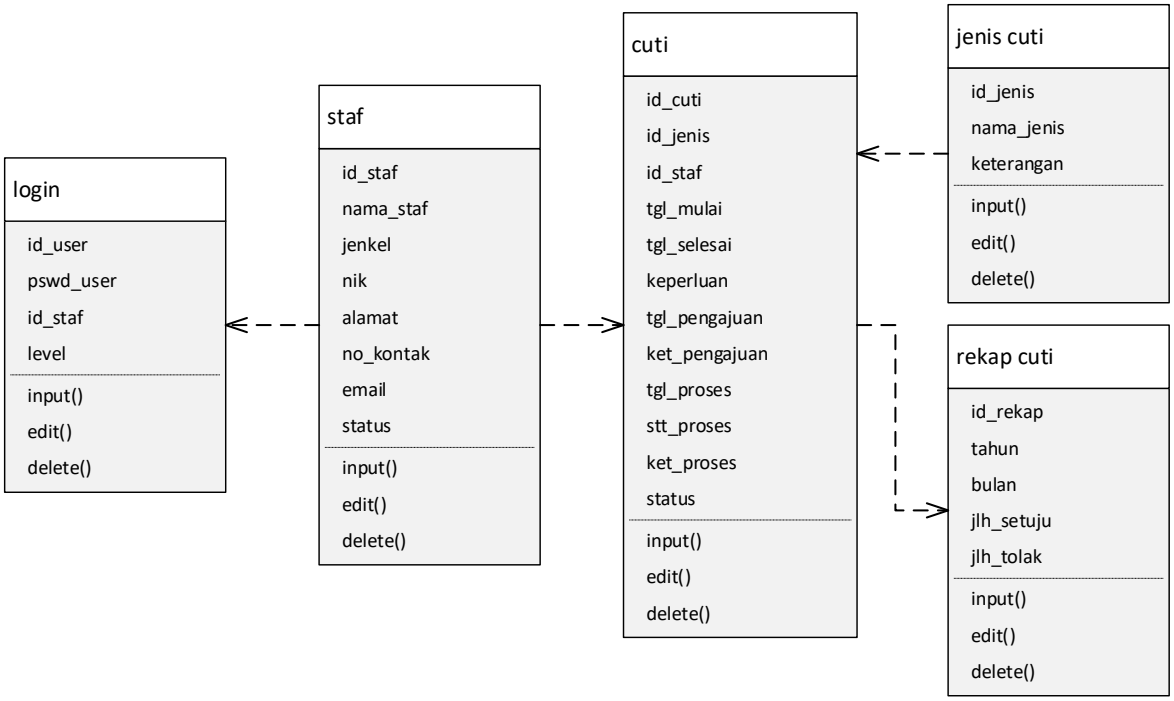

Figure 5. Class Diagram Design

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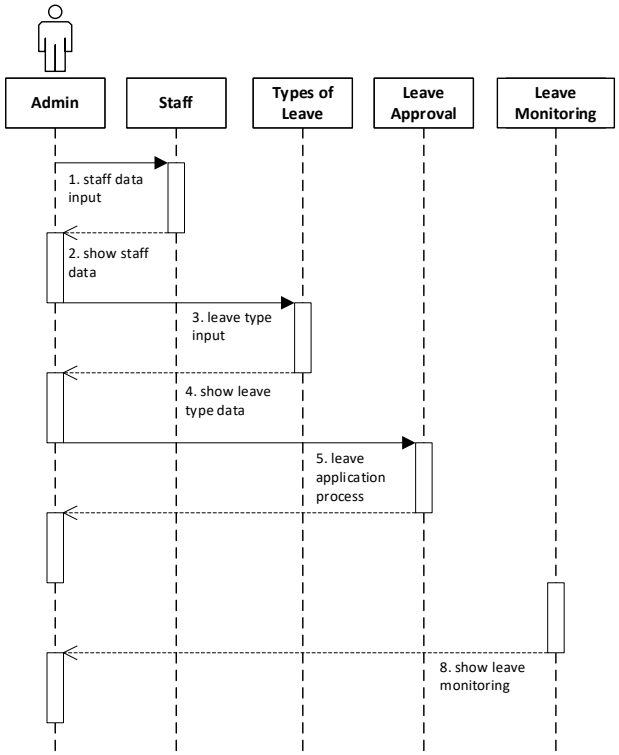

Figure 6. Sequence Diagram Design

3. Code

Based on the design results, the author wrote the program code and produced several pages on this system.

a. The login page (fig. 7) is used to identify the user level of this system. Users of this system must be registered in the database first. In this system, the user level can only see the history of leave applications that have been made.

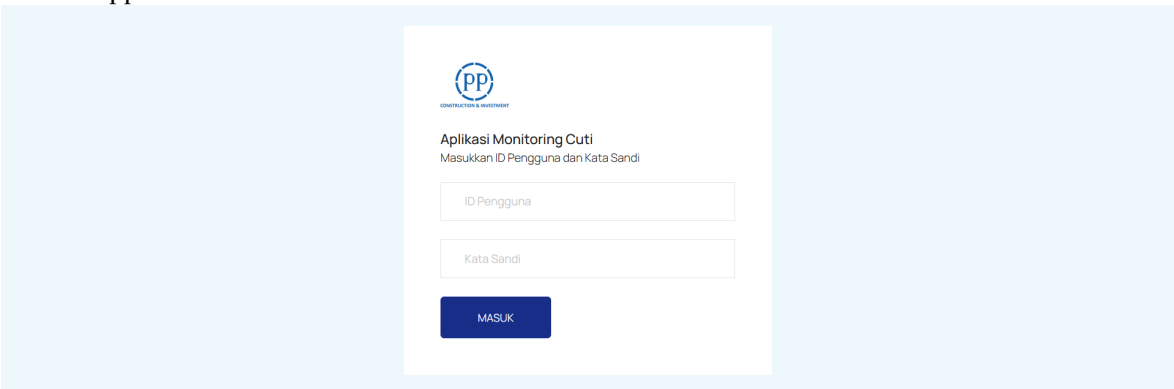

Figure 7. Login Page

b. The recapitulation page (fig. 8) is the first page that appears for the administrator level, while for the user level, they will be directed directly to the leave application page.

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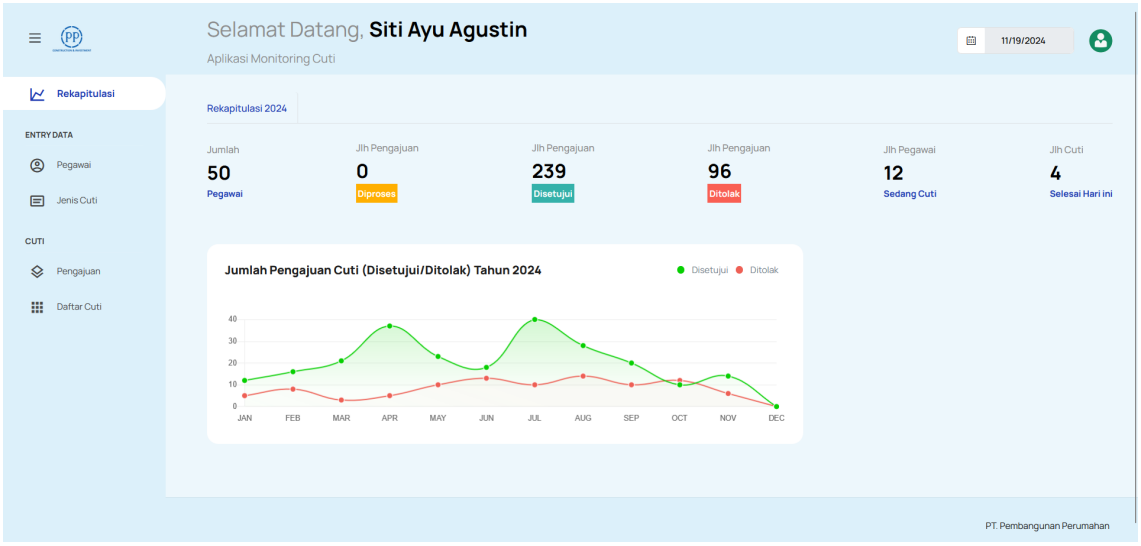

Figure 2. Recapitulation Page

c. The employee data page (fig. 9) displays employee data that has been stored in the database. On this page, the administrator level can add and delete data, while data changes are made by each user via the change profile menu.

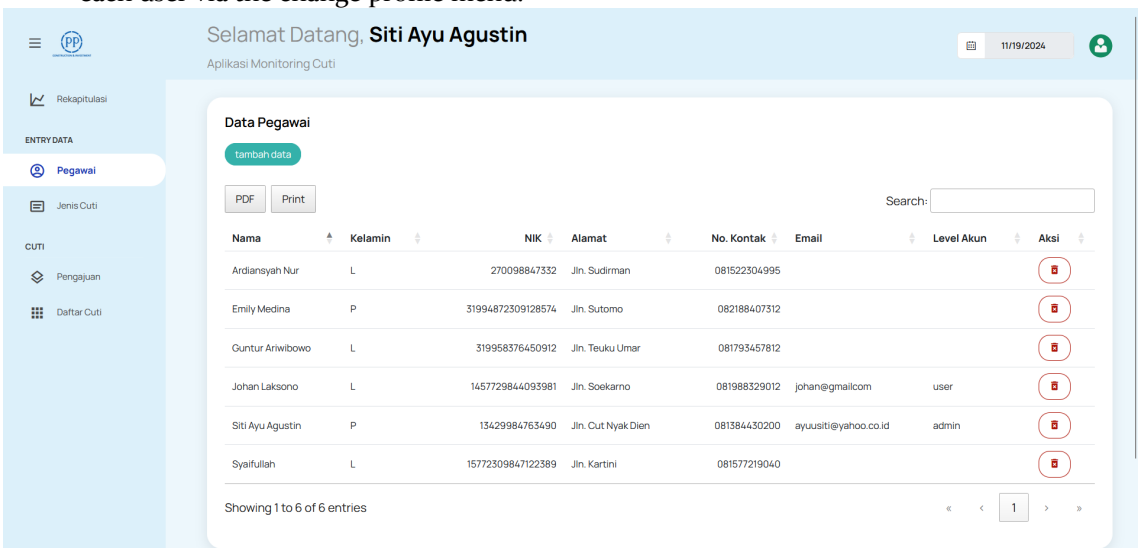

Figure 9. Employee Data Page

d. The leave type page (fig. 10) displays data on the type of leave that will be used by employees to apply for leave. On this page, the administrator level can add, change, and delete data.

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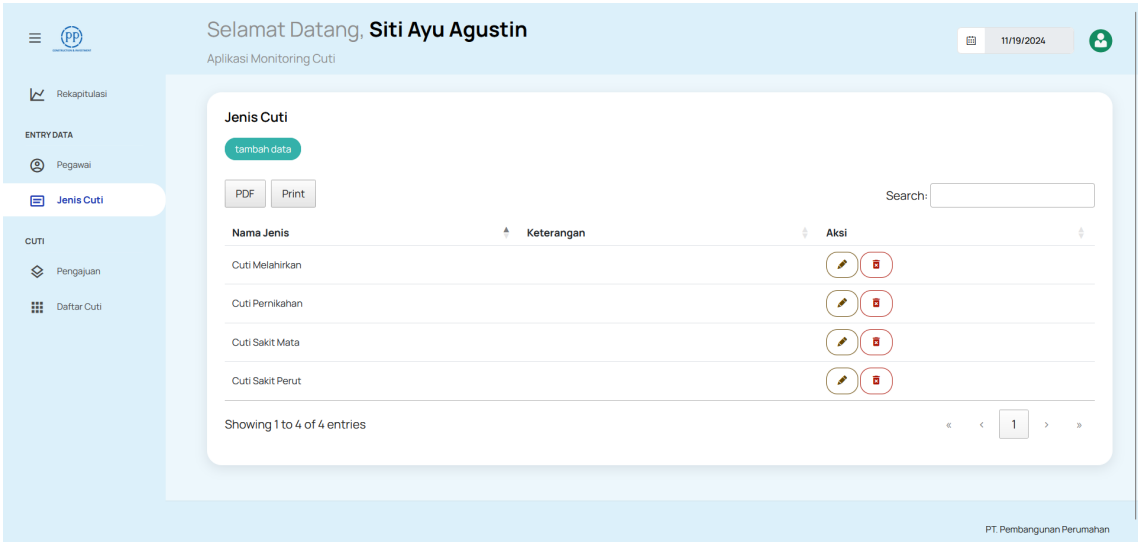

Figure 3. Leave Type Page

e. The leave application page (fig. 11) displays data on leave applications submitted through each employee's account. The administrator can approve or reject leave applications. Leave that has not been processed by the administrator can still be changed or deleted by the employee who applied for leave. However, if it has been done, the leave application cannot be changed or deleted.

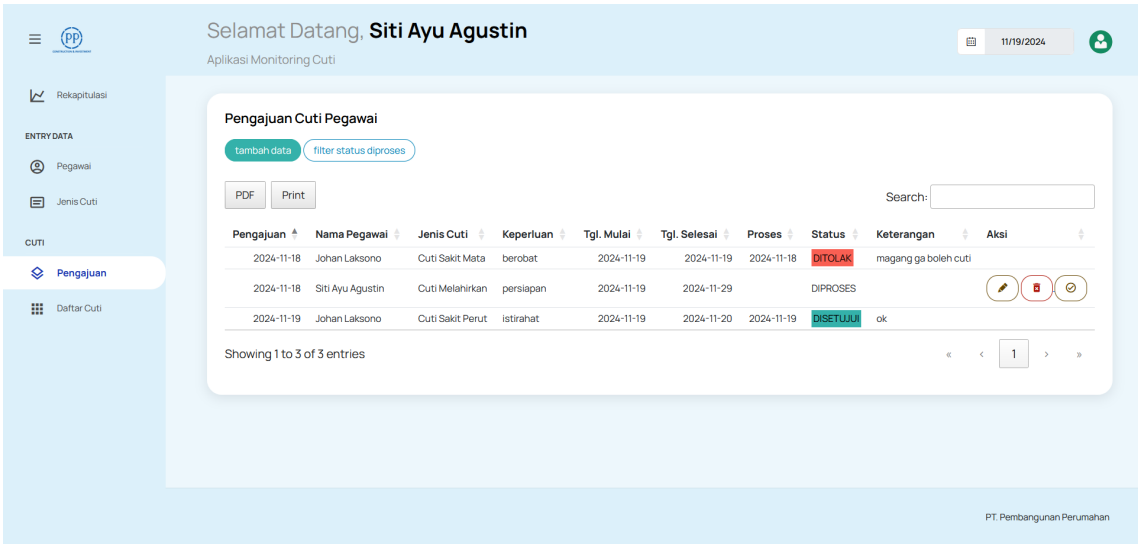

Figure 11. Leave Application Page

f. The employee leave list page (fig. 12) only displays data on employee leave that has been approved.

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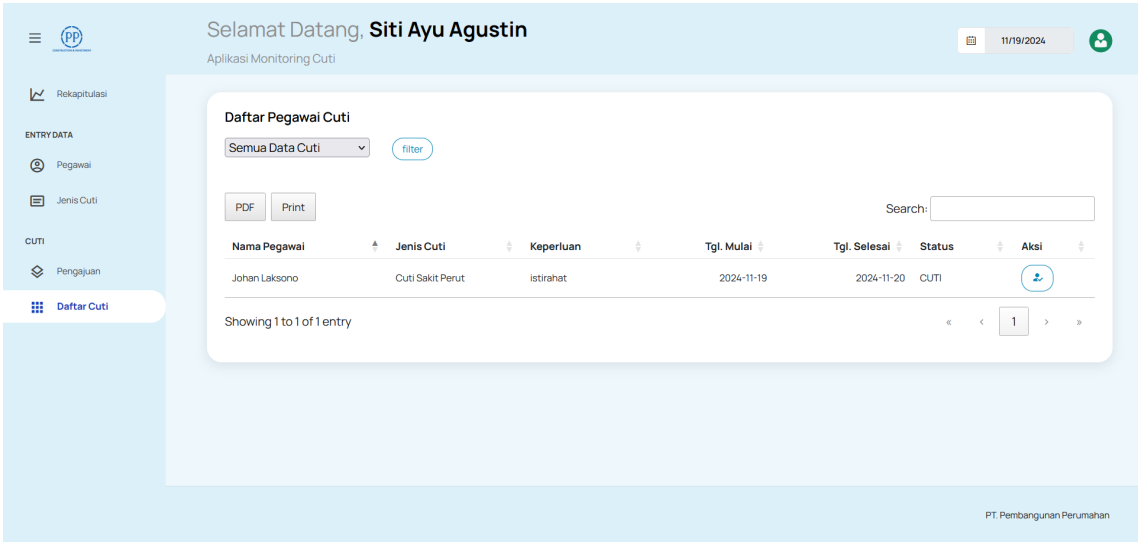

Figure 4. Page For The List Of Employees On Leave

4. CONCLUSION

The current unsystematic processing of leave data makes it difficult for administrative officers at the PT PP field office to monitor leave. The application of the incremental method used makes it easier for the author to design a leave monitoring system according to the needs of the agency. Employees find it easier to apply for leave and administrative officers can approve and monitor employee leave because this system is equipped with a recapitulation feature.

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