
Application Prototype Attendance System Garuda Indonesia's Premium Service Assistant Employees Use The Waterfall Model

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ABSTRACT

In the era of information technology which has developed rapidly, it becomes a challenge for users of information technology and encourages every activity of the organization to be able to use it as a support for work activities so as to produce fast and accurate information. PT Garuda Indonesia Tbk as a company engaged in commercial air transportation services that requires good management in employee attendance, special data collection needed to record attendance that can be well organized. The employee attendance process still uses the manual method even though it has been assisted by existing technology, namely using WhatsApp group media every day with a predetermined format and making chat results that have been carried out without a report recap for one month which risks losing attendance data and failures that have occurred. can harm the company. Based on these problems, an attendance system application prototype was made in order to minimize errors. The research method used includes observation, interviews, and literature study. While the system development method using the Waterfall model includes analysis, design, manufacture, testing and system maintenance. The prototype system application that will be developed is expected to be able to build this attendance system more quickly and precisely.

Keywords: Prototype, system, attendance, waterfall

INTRODUCTION

Attendance is an important thing in a government or private agency. With a good attendance system, it is hoped that it can assist in controlling the work completion process so that maximum results are obtained and are in accordance with the goals set. To achieve a good attendance information system, information technology is needed which includes computer technology, telecommunications technology and any technology that can provide added value to manage the system. Premium Service Passenger Assistant Garuda Indonesia Terminal 3 Soekarno Hatta has approximately 53 employees so that employee data must be well organized, especially in the field of employee attendance.

To improve discipline, image, work and agency performance towards professionalism, one of the effective ways to improve the quality of human resources is to implement high regulations and discipline by each employee, as applied in agencies or bureaucracies. work that many people do.

According to(Supriyono, 2014), there are several types of absenteeism which are distinguished based on how they are used and the level of usefulness. In general, the types of attendance are divided into two, namely: Manual attendance, namely how to enter attendance or arrival by using a pen through a signature and paper. using a computerized system such as the use of a card with a barcode (barcode) and taking fingerprints (fingerprint).

According to (Malayu S.P Hasibuan, 2009), this Human Resource development effort is an activity that must be carried out by every organization so that the capabilities and attitudes of Human Resources are increasing in accordance with the demands of the job and the needs of the agency.

The problem of attendance is still done by hand recording using and using photo media via WhatsApp. Employees are absent by taking their own photos and writing down the hours of arrival in their respective WhatsApp groups, if there are employees who are late to arrive and write down the arrival hours correctly and do not write down the delay, it is difficult to know which employees are active and who are not working hard, so that employees who arrived 3 times late could not get a warning letter. When the employee attendance process is not known to be late or not when the employee arrives due to forgery during the absence, it will result in the office being greatly harmed by fraud in the employee attendance process. Team leaders have difficulty knowing whether their subordinates are really working hard or not.

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The purpose of this study is to provide a solution by designing and implementing a prototype that has been made to support the process of collecting employee attendance data at the agency and to describe the current system processes related to employee attendance with the waterfall model including analysis, design, manufacture, testing and system maintenance, It is hoped that with the prototype it can be proposed to make an attendance application so that the attendance system is better and stored in the database.

LITERATURE REVIEW

System

The system can be defined as a collection of various kinds of components or subsystems that form a unity, where each of these components is ordered regularly, interacts with each other, and works together to achieve the same goal according to (Gobai Engelbertus, Zulkarnain, 2020), explaining that a system can be interpreted as a collection or set of component elements, or variables that are organized, interacting with each other, depending on each other and integrated.

System Features

(Arisandy, 2017), mentions that there are several characteristics of the system which is divided into 8 (eight) parts, namely:

a. System components

Components A system consists of a number of components that are interconnected, which means they can work together to form a single unit.

b. System boundaries (Boundary)

System boundaries are included in the area that limits one system to another or to the external environment

c. System outside environment

The environment outside the system is outside the boundaries of the system that has affected the operation of the system.

d. System interface (Interface)

The system liaison is a media liaison between one subsystem with other subsystems.

e. System input (Input)

Energy that is entered into a system which can be in the form of maintenance or maintenance input and signal input or signal input.

f. System output (Output)

The system output is a result of energy that has been processed and classified into useful output from waste disposal.

g. System processor

Processing system here, meaning a system that will be a part of the processor that can convert input into an output.

System Life Cycle

(Sutabri, 2016), the system life cycle is an evolutionary process followed in implementing a computer-based information system or subsystem. The system life cycle consists of a series of tasks that closely follow the steps of the systems approach because these tasks follow an orderly pattern and are performed on a top-down basis. The system life cycle is often referred to as the waterfall approach for system development and development.

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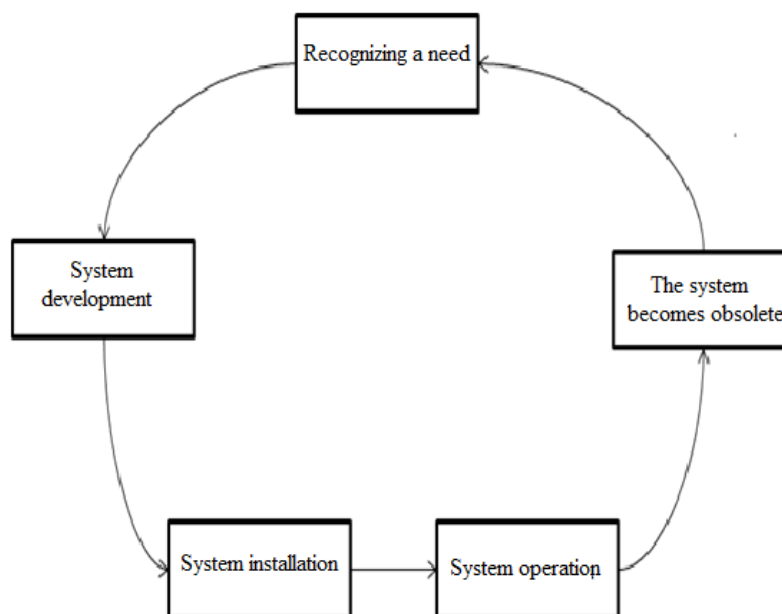


Figure 1 System Lifecycle Source: Sutabri (2016:72)

Prototype

Prototype is a model or simulation of all aspects of the actual product to be developed, this model must be representative of the final product. In system development, there is often a situation where the system user has actually defined the general or purpose of the software even though it has not yet defined in detail the inputs, processes and outputs. Meanwhile, in the system development process, it is not uncommon to face doubts about the effectiveness, efficiency and quality of the algorithm being developed, the adaptability of the system to the operating system or the display that is being designed.

Attendance

(Simonna, 2013), attendance is a form of data collection on the presence or absence of a person or employee who is part of the reporting of an institution that contains attendance status data that is arranged and arranged neatly and easy to find, and used when needed by the interested party.

According to (Supriyono, 2014), there are several types of absenteeism that are distinguished based on how they are used and the level of usefulness. In general, the types of absenteeism are divided into two, namely:

Attendance manually, which is a way of entering attendance or arrival by using a pen through a signature and paper.

Non-manual attendance, namely how to enter attendance or arrival by using a tool or by using a computerized system such as the use of a card with a barcode (barcode) and taking fingerprints (fingerprint).

Software Development Model (Waterfall)

The Waterfall method provides systematic and sequential approaches to the development of information systems, also has several stages of the model in it. According to (Muthia, Nurul;Amalia, Hilda;Puspita,Ari;Fitria Lestari, 2019), explaining that the waterfall model used is communication, by conducting the initial project and the requirements needed in this research data collection method is carried out. The second stage is planning, which is planning in this research planning is done by analyzing system requirements. The third stage is modeling by analyzing the design using UML diagrams. The fourth stage of construction is typing the program code and testing the program. The last stage is development, namely feedback from the program based on the testing carried out.)

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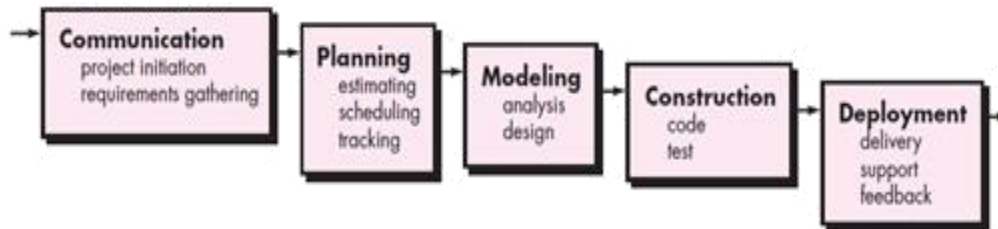


Figure 2 Waterfall ModelSource:(Pressman, 2010)

Programming language

Researchers use software to create prototypes with visual basic.net, according to (Raharjo, 2018), (Raharjo, 2018) Visual Basic is a development tool (tool/software for application development) that uses the BASIC programming language as the controller language. It can be concluded that Visual Basic is a high-level programming language (High Level Programming) using the BASIC (Beginners All-Purpose Symbolic Instruction Code) language as a control language with a procedural and object-oriented approach introduced by Microsoft.

Database

According to(Kadir, 2014), defining a database (database) is an organization of a set of interrelated data so as to facilitate activities to obtain information.

(Fathansyah, 2018),From the definition of the database stated above, it can be concluded that the database is a collection of several processed data components that interact with each other for convenience.

The database itself can be defined in a number of ways, such as:

1. A collection of interconnected data groups or archives that are organized in such a way that they can be reused quickly and easily.
2. A collection of interconnected data stored simultaneously that is designed in such a way and without unnecessary repetition or redundancy, to meet various needs.
3. A collection of related files or tables or archives stored in electronic storage media.

Entity Relationship Diagram (ERD)

According to(Efrinaldi, Saputra;Ropianto, 2020), explaining that ERD or Entity Relationship Diagram is a technique used to model the data needs of an organization, usually by system analysis in the requirements analysis stage of a system development project.

ERD components:

- Entities
A collection of objects that can be uniquely or distinctly identified. The symbol of the entity is usually represented by a rectangle. In addition, there is also a "Weak Entity" which is symbolized by the image of a small rectangle inside a larger rectangle. It is called a weak entity because it must relate directly to other entities because it cannot be uniquely identified.
- Attributes
Each entity must have elements called attributes that function to describe the characteristics of the entity. Key attributes are things that distinguish attributes from entities.
- Connection
between a number of entities that come from different entity sets. The relationship image is represented by the rhombus symbol.
- Line
The line that connects the attributes to show the relationship between the entities on the ER diagram.

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Relationship Cardinality

- One to one (One to One) Each element of Entity A relates at most to an element in Entity B. Likewise, each element of B relates to at most one element in Entity A.
- One to many (One to Many) Each element of Entity A corresponds to a maximum number of elements in Entity B. And conversely, each element of Entity B corresponds to at most one element in Entity A.
- Many to one (Many to One) Each element of Entity A corresponds to at most one element in Entity B. And vice versa each element of Entity B corresponds to a maximum of many elements in Entity A.
- Many to many Each element of Entity A relates maximally to Entity B and vice versa.

Unified Modeling Language (UML)

Is a "language" that has become the industry standard for visualizing, designing and documenting software systems. UML offers a standard for designing models of a system. By using UML, we can create models for all types of software applications, where these applications can run on any hardware, operating system and network, and are written in any programming language.

In UML there are diagrams as follows:

1. Use case diagrams
2. Class diagrams
3. Statechart diagram
4. Activity diagrams
5. Sequencediagram
6. Collaboration diagrams
7. Component diagram
8. Deployment diagram

DISCUSSIONS

Needs Analysis

The attendance system prototype that will be made is a development of an ongoing system and has the same flow. The research method used to design a prototype using the waterfall model uses several stages, namely communication by determining the initial project and the requirements needed in this study by collecting methods. data. The second stage is planning, namely planning in this research planning is done by analyzing system requirements. The third stage is modeling by analyzing the design using UML diagrams. The fourth stage of construction is typing the program code and testing the program. The last stage is Development, namely feedback from the program based on the testing carried out

Communication

conducting the initial determination of the project and the requirements needed in this study, the data collection method was carried out through interviews with the relevant sections. From the results of the interviews, the following information was obtained:

- Employees take attendance via WhatsApp group messages by attaching a photo on duty and typing the time of arrival
- The team leader sends attendance data that has been done by employees to the Back Office every day.
- Back Office makes a recapitulation of attendance for one month which has been sent by the team leader on a daily basis, then submitted to the manager of the results of the attendance recapitulation in the form of a Microsoft Word file for checking.
- Manager checks based on the results of the recapitulation report obtained by the Back Office. If an employee is found to have made a mistake such as being late, not writing down the time of late absenteeism, and committing other frauds, he or she will receive sanctions according to the applicable rules.

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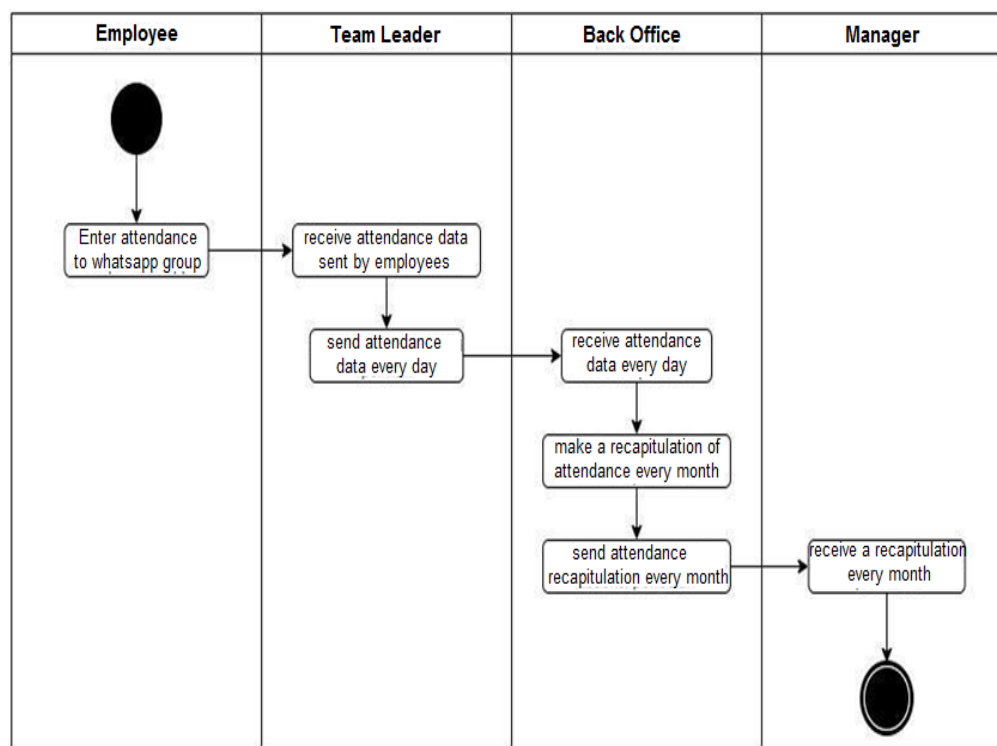


Figure 3 Activity Diagram of the Running Attendance System

Planning

At the planning stage, planning is carried out regarding the desired information system. Planning about what is needed and what can be done by the information system to be developed. In this research, planning is carried out by making a system requirements analysis.

1. User Needs

In this system, there are 3 (three) interconnected users who interact with each other, namely Admin, Employee, and Manager. These three users have different functions and needs. The following scenarios of user requirements are made in the proposed system, namely:

- a. **Admin**
 - Manage employee data
 - Manage attendance reports
 - Can change password
- b. **Employee**
 - Perform attendance in and out
 - Can change password
- c. **Manager**
 - Can view attendance report
 - Can change password

2. System Requirements

- a. Users login first to access this system by entering their username and password
- b. The system manages employee data.
- c. The system performs incoming and outgoing attendance
- d. The system records attendance reports.

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Modeling

At the modeling stage, the information system that will be built is described using UML diagrams. Use case diagrams, Activity Diagrams, Entity Relationship Diagrams, Interface Design Starting from making Usecase Diagrams, the following diagrams are used:

a. **Use case diagrams**

Activities carried out in one use case, namely the login use case in Figure 4, Admin can access employee data, attendance reports, Employees can access incoming and outgoing attendance, Managers can access attendance reports.

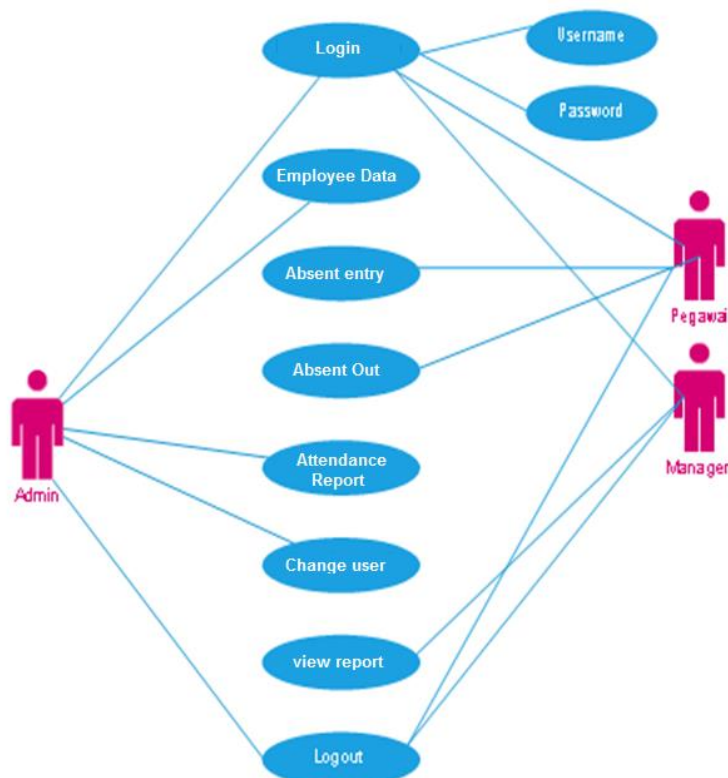


Figure 4 User Page Usecase Diagram (User)

b. **Activity Diagram of the proposed development system**

In the proposed prototype activity in the system which is explained the same as the existing system

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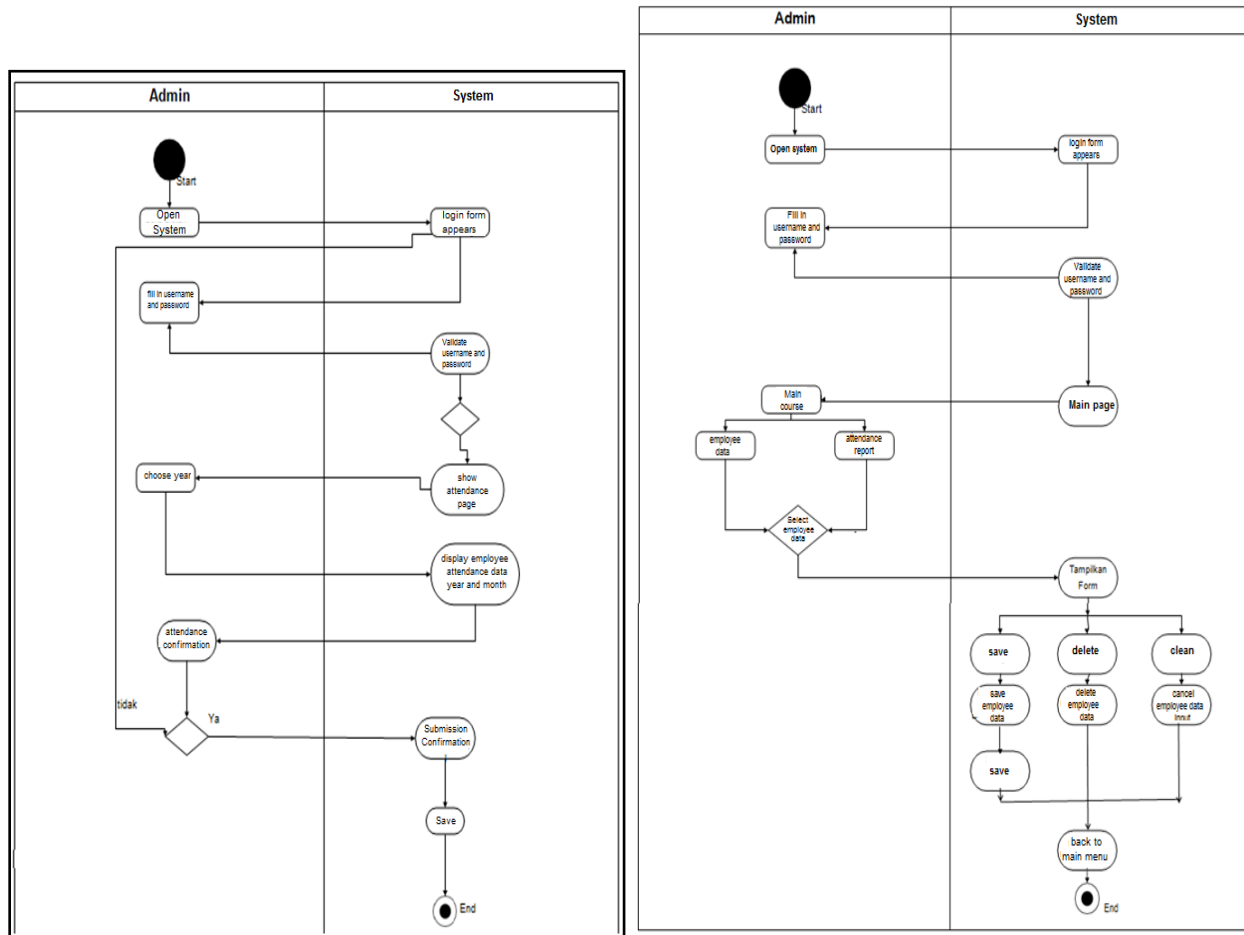


Figure 5 Activity Diagram Showing Attendance data and employee data

c. Entity Relationship Diagram

System requirements can be seen in the database requirements for storage processes in the application on this system there is (one)1 database and (five)5 tables needed in the proposed prototype development, in Figure 6 the database name: absent and the required table: tb_jabatan, user, employee, absent, permission.

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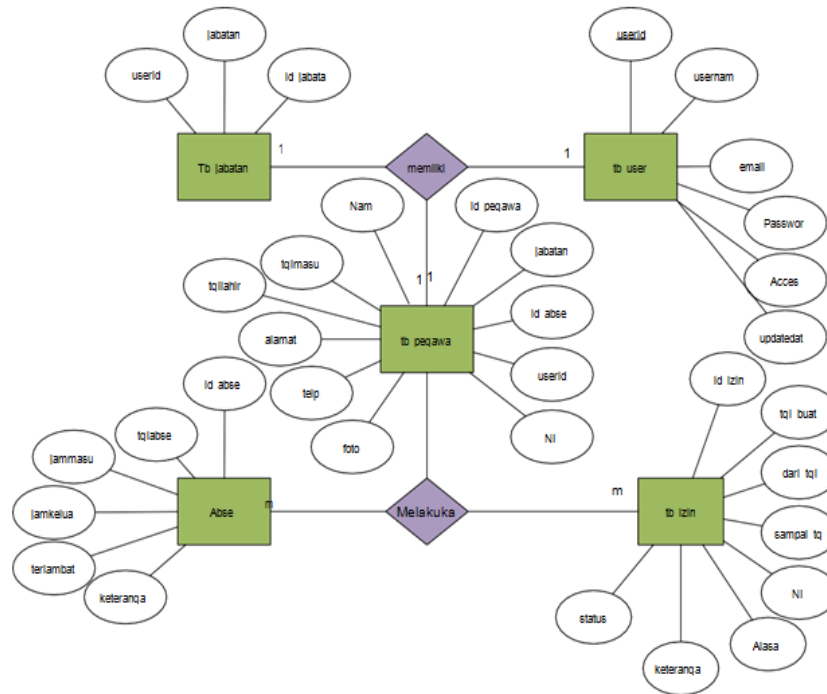


Figure 6 Entity Relationship Diagram (absent)

Construction

At this stage the researcher made a prototype design for the employee attendance system application using the desired visual basic.net software and tested the program created.

1. Login Interface Design

The login page is used for user verification so only registered users that can run the application. The login page consists of input username and password input then click the login button. Every new user who will use the system must be registered first into the user form

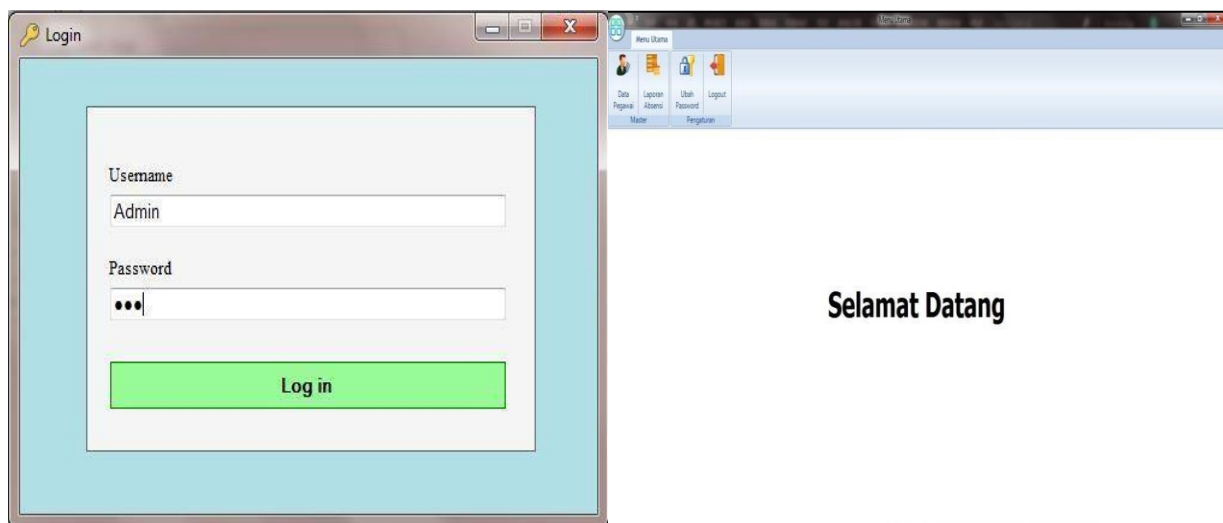


Figure 7 Prototype Design of Login Page and main menu

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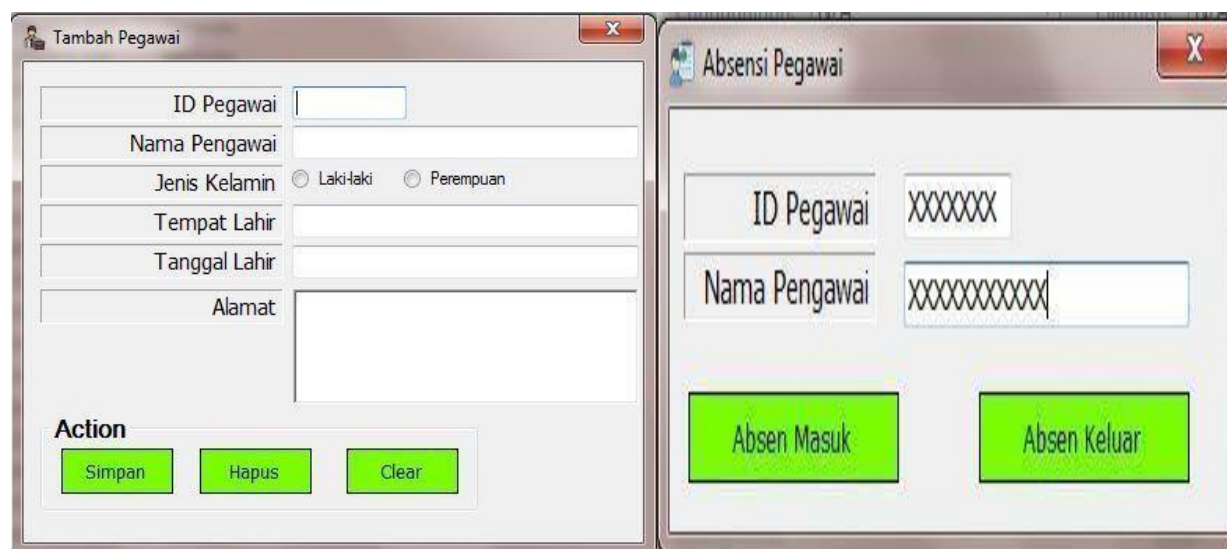


Figure 8 Prototype Design of Employee and Absence Data Pages



Figure 9 Prototype Design of the absent report page

CONCLUSION

The system currently applied is still using By Chat, so that there is still fraud committed by employees and the lack of supervision from the leadership makes the attendance system at the Garuda Indonesia premium service assistant still less effective, and researchers try to propose a computerized system that is expected to minimize fraud when attendance process, so that the company will not suffer losses. Because the design of this attendance system is still a prototype, it is hoped that this application can be a solution and can be realized by developing into an application that suits the needs of the agency, and the development of this prototype makes the attendance application more effective and efficient.

REFERENCES

- Arisandy, Y. (2017). *Sistem Informasi Manajemen (Teori dan Implementasi dalam bisnis)*. Pustaka Belajar.
- Efrinaldi, Saputra;Ropianto, M. (2020). *Entity Relationship Diagram & Praktik DBMS*. https://www.academia.edu/44279739/EFRINALDI_Entity_Relationship_Diagram_and_Praktik_DBMS
- Fathansyah. (2018). *Basis Data*. Informatika.
- Gobai Enggelbertus, Zulkarnain, I. L. (2020). Sistem Informasi Penerimaan Mahasiswa Baru Sekolah Tinggi Ilmu Hukum (STIH) Monokwari. *Jurnal Ilmiah Sistem Informasi Dan Teknik Informatika*, 3, 17–26.

* Corresponding author



<https://ojs.stmik.ypls.ac.id/index.php/jisti/article/view/62/54>

Kadir, A. (2014). *Pengenalan Sistem Informasi*.

Malayu S.P Hasibuan. (2009). *Manajemen Sumber Daya Manusia* (Revisi). PT. Bumi Aksara.

Muthia, Nurul;Amalia, Hilda;Puspita,Ari;Fitria Lestari, A. (2019). Rancang Bangun Sistem Informasi Akuntansi Penjualan Dengan Model Waterfall Berbasis Java Desktop. *Jurnal Ilmu Pengetahuan Dan Teknologi Komputer*, 5 No 1. <https://ejournal.nusamandiri.ac.id/index.php/jitk/article/view/582/520>

Pressman, R. . (2010). *Software Engineering A Practitioner's Approach*.

Raharjo, B. (2018). *Mudah Belajar Visual Basic.NET*. Informatika.

Simonna, E. (2013). *Definisi Absensi dalam*. <https://simonnaerna.blogspot.com>

Supriyono, J. (2014). *Perancangan Sistem Infomasi Absensi Karyawan Menggunakan Konsep Data Mining Pada PT. Kalila Indonesia*.

Sutabri, T. (2016). *Sistem Informasi Manajemen*. Andi Published.

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