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Service request management system application development with rapid application development method using web-based bubble sort algorithm

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Abstract: The Helpdesk system is a system to facilitate the reporting of technological information damage. Helpdesk systems are already widely used or developed somewhere with a wide variety of technologies and systems. Monitoring system as a process to collect data from various sources and helpdesk as the implementer of the monitoring system is required to be active to monitor reports from users. The helpdesk is a center point where problems or issues are reported in a coordinated and coordinated manner. The helpdesk is a complementary part of a function, service, and is responsible for problem solving. This is one of the obstacles in the implementation of work is still found errors in the process of handling remote hands or trouble shoot reports daily, weekly and monthly. Because currently the data and problem handling reports are still manual so it is difficult to see the status of handling. Helpdesk design system at PT. TH Indoplantations is a system where to facilitate users or customers and the Helpdesk data center division in processing a technical problem that occurs in the data center or customer or user devices located in the data center PT. TH Indoplantations. Based on the concept and design of a web-based helpdesk system at PT. TH Indoplantations can help in dealing with interference that occurs in customer devices.

Keywords: helpdesk, remote hand, trouble shoot, PT. TH Indoplantations

1. Introduction

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At PT. TH. Indoplantations have no application of supporting information systems, which impact manual procedures taking a long time for each process. One example is the employment report on PT. TH. Indoplantations, the process starts from employees filling out work reports in the form of excel that has been prepared, Furthermore, employees send a work report every month to report on employment in the field, the report is processed to be signed by the chairman and asks for approval to the leadership in the field project, to seek the approval of the Board of Directors by signing. Once approved by both, the report form will be processed back to the central office.

Web-based information systems in Indonesia are increasingly felt in supporting daily activities. Manual data processing certainly cannot compensate for the need for a fast, precise and accurate presentation of information. Currently, manual data processing is considered less effective for providing reports and information for companies that are developing and have diverse transactions. Service Request Management is a part of the company's operational system that becomes a single point of contact for employees to handle system operational problems. The demand for information and the use of computer applications encourages the formation of an application that is able to accommodate activities and problems in employees during operational activities at work. The modern implementation of Service Request Management systems in today's information and technology era can help existing systems because it sometimes helps the flow of information run faster.

Characteristics of the problem as follows:

1. Constraints in manual procedures require the leader to be in the office to give approval to the employee's work report submission.
2. Field employees such as technicians and engineers whose work activities are not in the office still spell out reports manually.
3. Data history reports are used for employee performance materials, currently managing report data in manual procedures in the form of excel.

In the application of helpdesk includes work reports, filing request problems.

1. The system built is the Application System Service Request Management System With Rapid Application Development Method Using web-based Bubble Sort Algorithm.
2. The scope of research is carried out at the Head Office of PT. TH. Indoplantations.
3. Case studies conducted only in the Service Request Management process at PT. TH. Indoplantations.

The purpose of the research is as follows:

1. To design a Service Request Management application at PT. TH. Indoplantations.
2. To implement the Service Request Management application at PT. TH. Indoplantations.
3. Evaluate the implementation of a web-based helpdesk information system.

2. Materials and Method

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2.1 R.A.D(Rapid Application Development)

RAD is a form of method that is incremental one of them in a short manufacturing process. Rapid prototyping or RAD is a process overview of software upgrades grouped in incremental techniques. Rapid Application Development confirms a fast and short development cycle. Rapid Application Development uses repetitive processes (interative) in the development of systems on working models (working models). (Sukamto et al, 2016).

RAD is a method that focuses on speed in system development to meet the needs of users or system owners such as prototyping but has a wider scope (Mulyani, 2016).

RAD implementation

This application creation method uses the Rapid Application Development (RAD) system design method, which starts with the requirements planning, system design, and implementation stages. By using the RAD method stages in webiste development can produce a website that provides objective information.

The research methodology uses the Rapid Application Development (RAD) approach i.e. Requirements Analysis, Design (Modeling) and Implementation (Construction). So that the research stages carried out follow the stages in the RAD methodology.

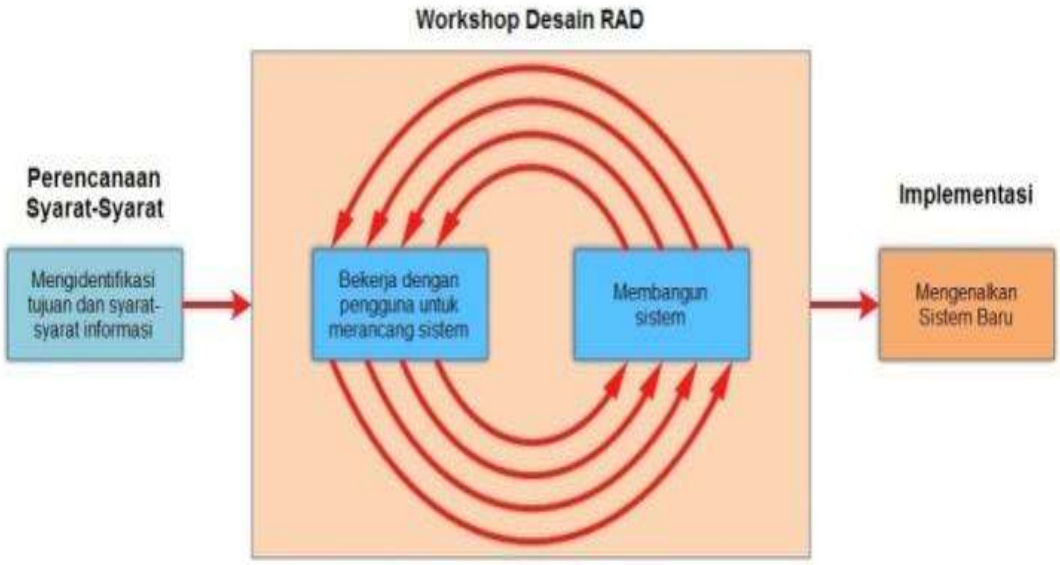

Figure 2.1 RAD DesignWorkshop

Stages of application development from each phase of application development:

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a. Planning Requirements (Planning Conditions). In this phase, users and analysts meet to identify the purposes of the application or system and to identify the terms of information arising from those purposes. The orientation in this phase is to solve the company's problems.
b. RAD Design Workshop (RAD Design Workshop). According to (Mulyani, 2016) This phase is a phase to design and improve that can be described as a workshop. Analyzers and programmers can work on building and demonstrating visual representations of design and work patterns to users. This design workshop can be done for several days depending on the size of the application to be developed. During the RAD design workshop, the user responds to existing prototypes and the analyzer improves modules designed based on user response.
c. Implementation. In this implementation phase, analysts work with users intensely during workshops and design business and nontechnical aspects of the company. As soon as these aspects are approved and systems are built and filtered, new systems or parts of the system are piloted and then introduced to the organization.
d. Verification. This step is the step where the system or application that has been created is tested. Whether the system is feasible or still has to be improved. Testing is usually needed to avoid the system still error or even not running. If the system is considered good then the system can be applied.
e. Maintenance. The system that has been implemented is then maintained so that it is always in good condition and does not occur errors or avoid attacks from outside.

2.2 Definition of Bubble Sort Algorithm

Bubble Sort is a simple sorting process that works by repeatedly comparing two data elements at a time and exchanging data elements that are sequentially incorrect. The idea of Bubble Sort is a water bubble that will "float" for a table that is ascending. Small value elements will be "levied" (to the index in installment), It means being lifted to the "top" (the smallest index) through exchange. Because this algorithm performs sequencing by comparing data elements.

1. Bubble Sort Concept

Bubble sort is a sorting method that compares the current element with the next element. If the current element is larger than the next element, then its position will be exchanged, otherwise the position will remain.

2. Bubble Sort Simulation

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The following is an example of a simulation of a sorting algorithm against an array with a length of 5 elements. For example, to run with elements. It will be sorted by the Bubble Sort algorithm in order from largest to smallest (descending).

2.3 HelpDesk

A helpdesk is basically a center point where problems or issues are reported and organized in a organized manner. From a general perspective, a helpdesk is a complementary part of a service function, and is responsible for solving problems or other issues. Helpdesk is used to answer client questions. Questions and answers can be submitted by phone, email, web, or fax. You can also use applications that make it easier for people to run a helpdesk quickly to find answers to problems faced by clients or users.

The result of a person's work in carrying out the tasks assigned to him is based on skill, experience and earnestness and time.

2.4 Development Methodology

In building this helpdesk system, the author took a methodology approach to RAD (Rapid Application Development) system development. The reason the author uses the methodology is because designing this system will be cheaper in terms of cost and faster in implementation as well as involving the end user in the design process. So that the main goal can be achieved. Meanwhile, in the rad development stage (Rapid Application Development) consists of several activities that are certainly in accordance with the implementation that has been spelled out in the flow of the system development process. These stages are:

1. Requirements Analysis

The Requirements Analysis stage aims to identify the needs, limitations and objectives of the system to be built by collecting data from stakeholders. This stage is done by conducting interviews to parties related to the needs of the system needed. After conducting the interview, a solution was obtained regarding the specifications of the Service Request Management website.

2. Design Workshop

The modeling stage aims to design all activities in the system architecture as a whole and improve the understanding of the problem based on the analyses carried out. At this stage the researcher designs all activities involving the identification and description of the software system as a whole aimed at improving the understanding of the problem based on the analysis performed.

3. Implementation

The implementation stage is to implies system and application of methods in programming to the results of system needs and can be explained in the implementation phase of databases and program coding. The purpose of this stage is to construct the system and apply methods in programming to the results of system needs and will be explained in the stages of implementing the database.

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The activity is to determine the environment of software implementation, database design, programming, and interface. Then the results obtained are playing database and program code. Based on the results of research, the Service Request Management website with the application of RAD (Rapid Application Development) methods is real and can provide maximum results. Significantly the system can meet the needs of users in the needs of Service Request Management. Testing each software system refers to all stages of the RAD method and everything can run well and smoothly. The system can be a medium of promotion to the wider community. The test results show a website that can provide objective information so that it can help and provide convenience for customers in finding Service Request Management information.

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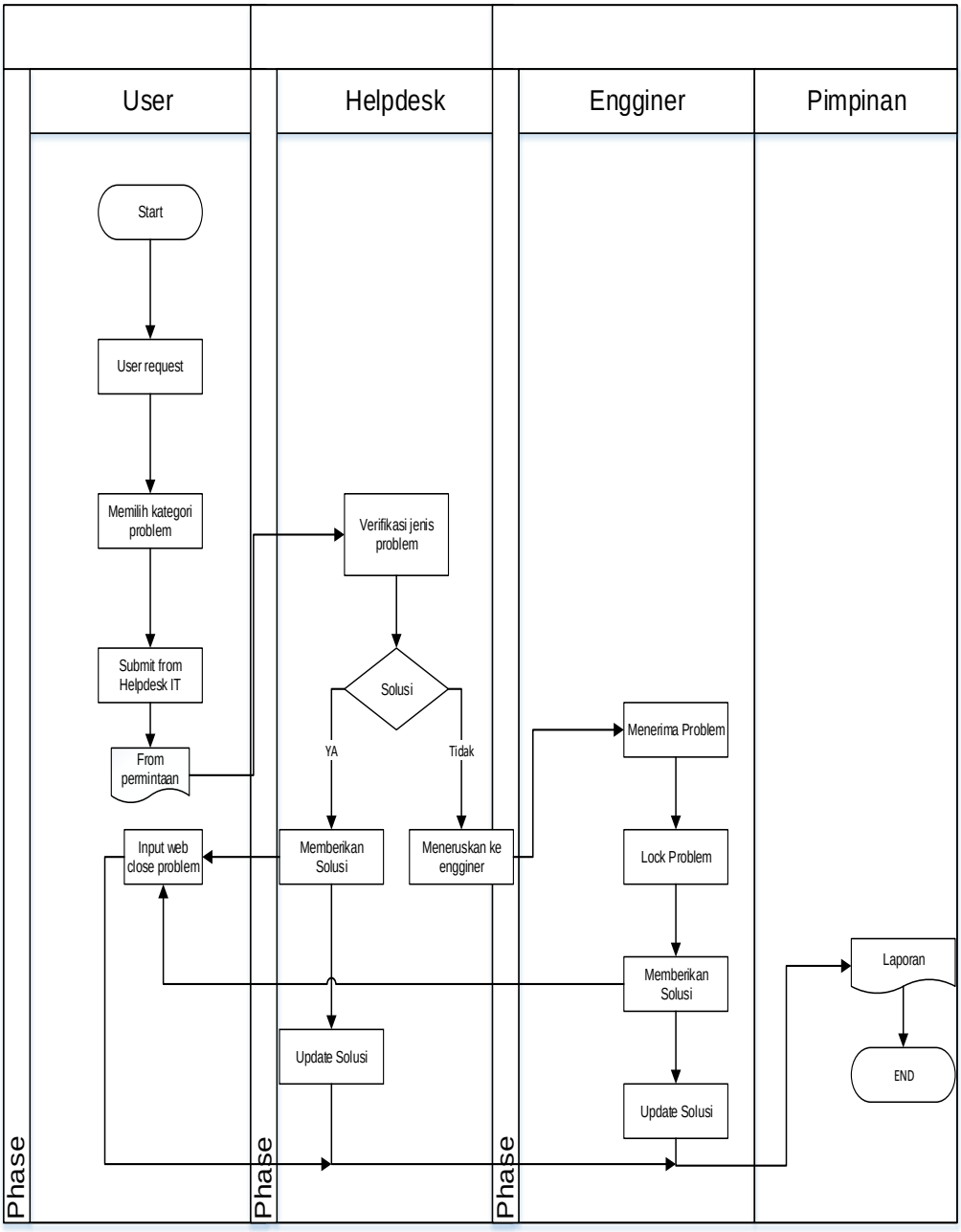

Figure 4.1 Flowchart of Docoment Proposed System

3. Results and Discussion

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3.1 System Implementation

System implementation is a procedure performed to complete an application program that is in the program documentation. This implementation stage is done after the design is completed and will then be implemented using PHP scripts.

Implementation of prototype System work resultpadaPT. TH. Indoplantations are done using PHP programming, with the database used being MySql, the PHP programming language can be run on various operating system platforms and hardware, but full implementation and testing is only done on Laptops with Microsoft Windows 10 operating system.

In implementing this application monitoring and control software, there are several things that need to be the limitations of implementation, namely:

1. The database used in this implementation is MySQL.
2. Majority web based view using English
3. This helpdesk system application, more towards as an electronic helpdesk management.

3.2 Analysis of the Proposed System

After performing the system analysis stage, several weaknesses were found in the running system. So at this design stage a web-based helpdesk system is a proposal that is expected to fix weaknesses in the current system.

Software system design is described by an analysis model using a Use Case diagram and followed by a design model. Analysis is u

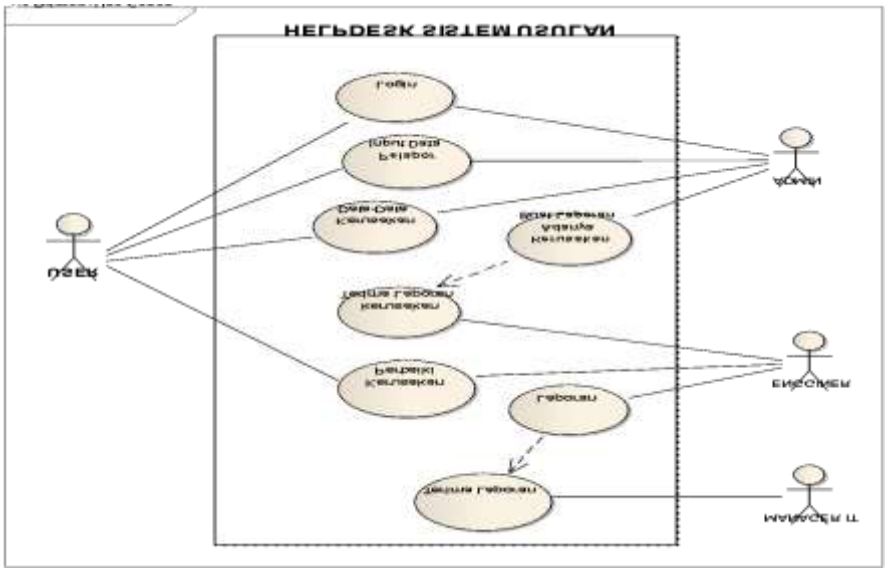

Figure 3.1 Usecase System Diagram

3.3 Class Diagram

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Class diagrams are the best tools in software design. Class diagrams help development get system structure and produce good system design.

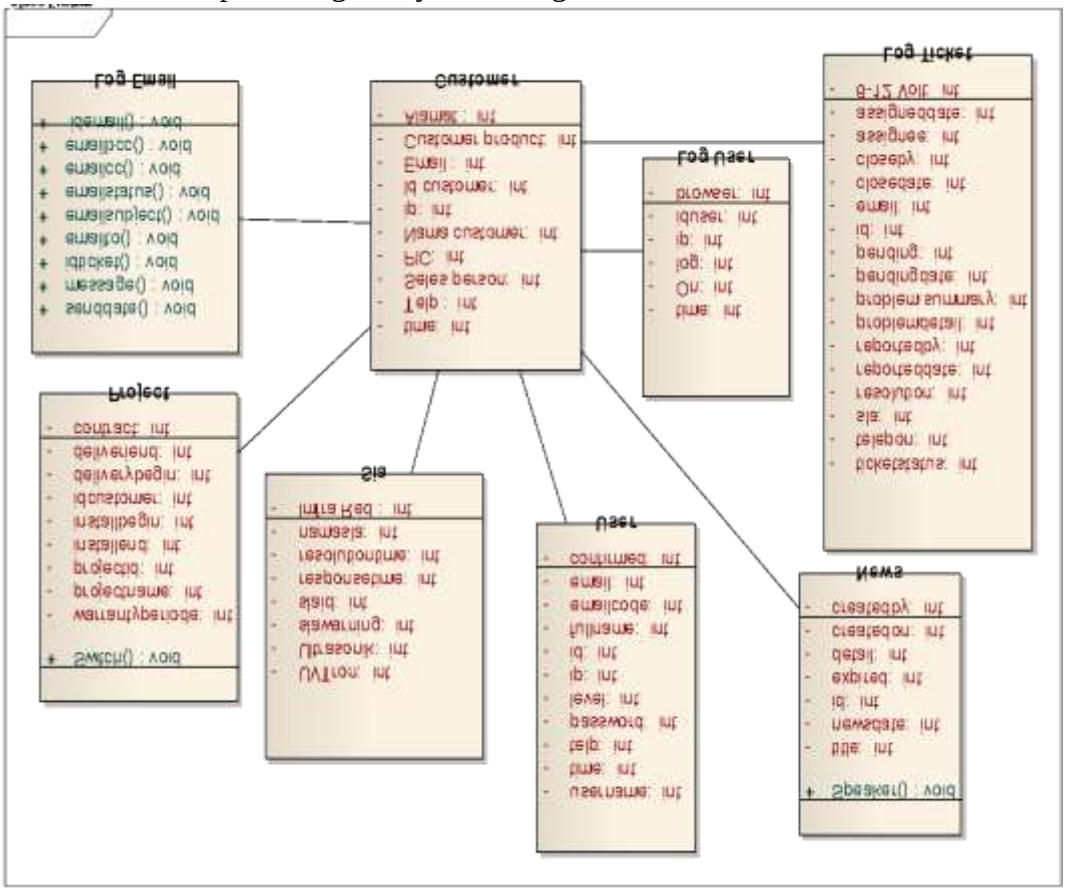

Figure 3.2 Class Diagram System HelpDesk

1. Login Menu view on Users and Administrators

Here is the login menu view on users and administrators:

In this stage explain how the interface design of the helpdesk application. The menu contains the following views:

a. Login view.

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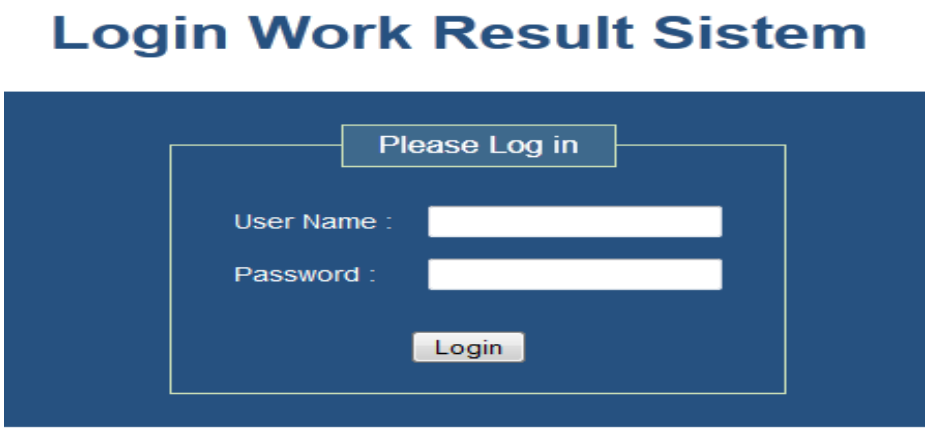

Figure 3.3 Login Page View

b. Home view

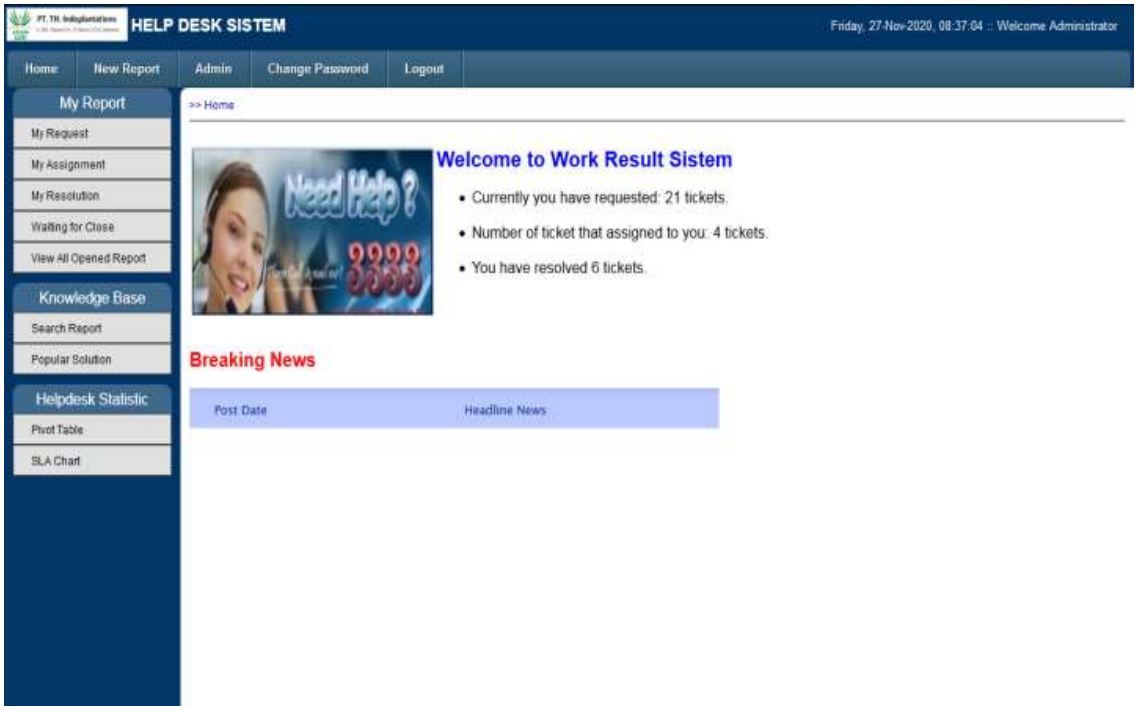

Figure 3.4 Home Page View

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c. Add user helpdesk and engginer view

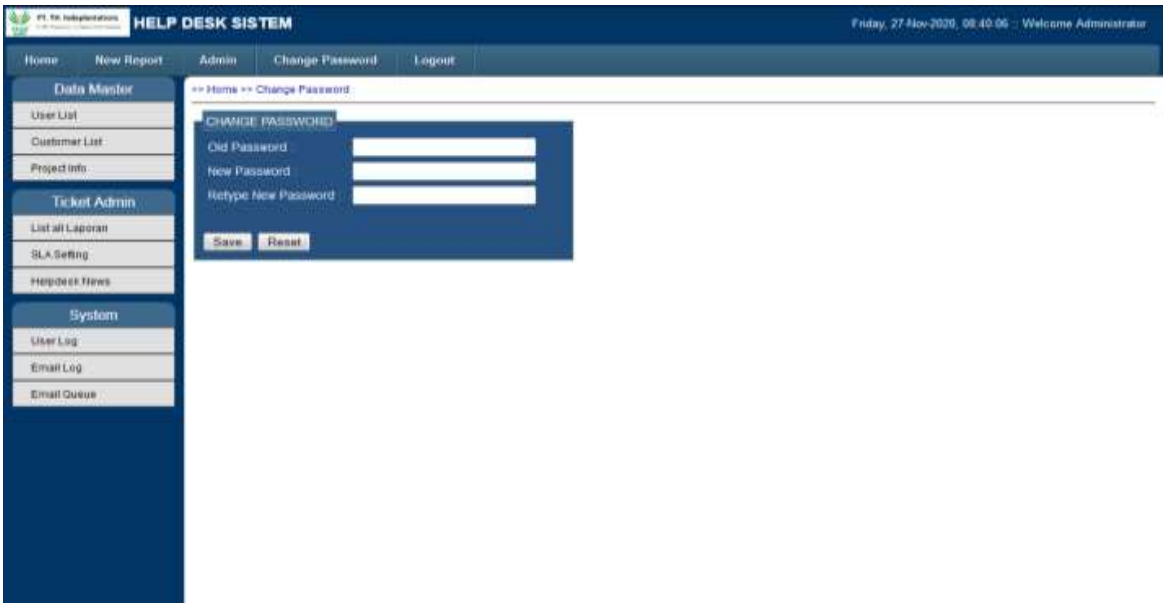

Figure 3.5 Add New User

d. New report view

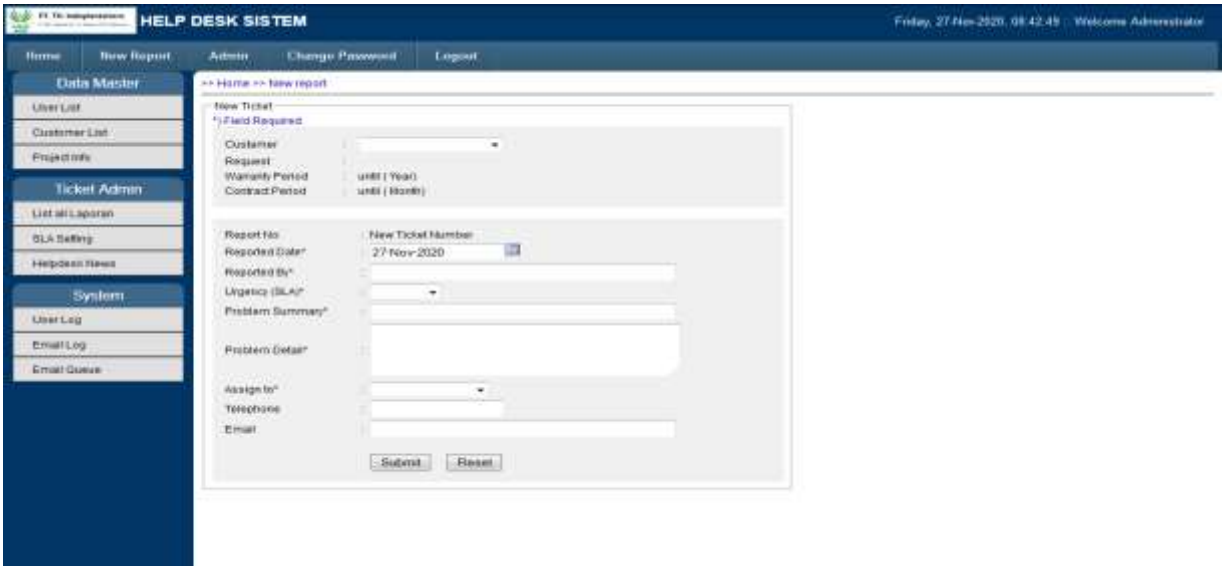

Figure 3.6 New report page

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e. Request problem view

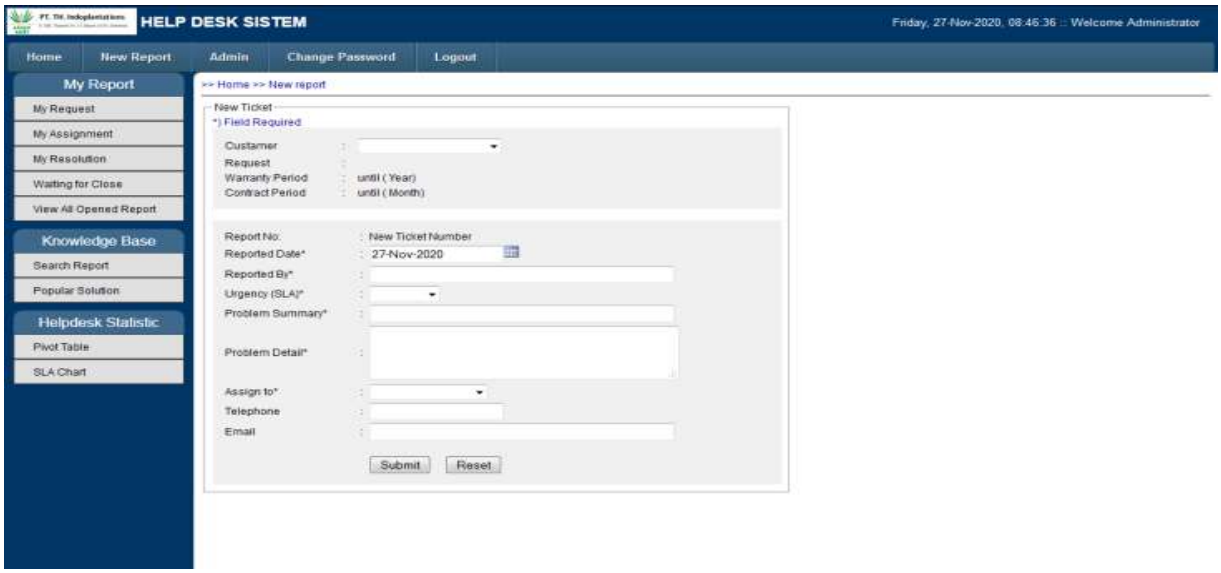

Figure 3.7 New Problems page

f. Assigned view

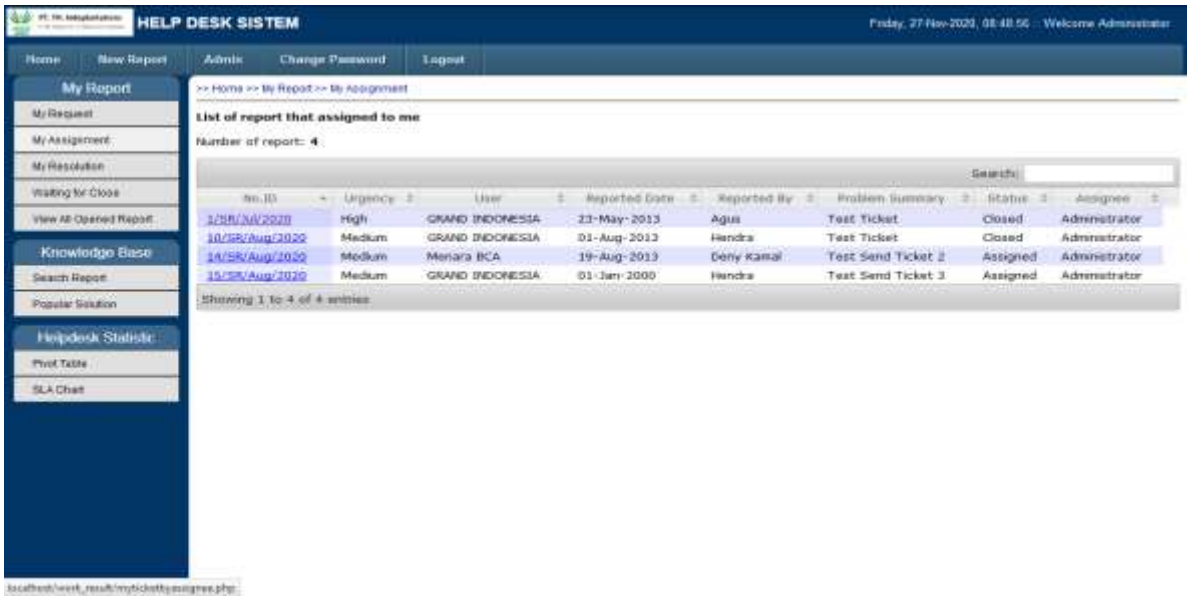

Figure 3.8 View assigned page

g. SLA status view

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Figure 3.9 SLA status view

4. Conclusion

System running Service Request Management which has been done at PT. TH. Indoplantations in carrying out the running process is still manual. Obstacles faced in the current system that are still used for example when customers will file a complaint, must fill out a form provided by the Administration section, then the administration section still has to wait for the presence of the IT Manager to get approval. Administrative Section of PT. TH. Indoplantations has difficulty in controlling helpdesk complaint data such as the number of complaints that have entered the email and have been handled by the engineer and customer complaint data that has not been handled by the enggineer.

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