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Data Processing System for Household Gas Usage by Rapid Application Development Method in PGAS Solution Medan Based Online

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Abstract

PT. PGAS Solution (PGAS Solution) is one of the government agencies dedicated to focus on the technical and operational aspects in the gas field. PT. PGAS Solution is found in several cities in Indonesia, one of which is in Medan City. One of the works carried out by PGAS Solution is to record household gas usage. From these activities encountered obstacles in terms of recording the calibration of household meters needed every month with the latest data, this is due to the manual recording done by PGAS Solution company employees in the field. Based on the existing problems, the design of an online-based household gas recording management application system is a solution that can help employees in completing these tasks. The purpose of this study is to develop online-based applications for recording more flexible gas usage. For this reason, it is necessary to build an information system. The information system design applies the Use Case diagram concept as a description of the system to be created and will be developed using MySQL as a database and Flowcahrt system as the program flow. The research methodology used is Rapid Application Development (RAD) as a benchmark in making systems to speed up the process of emphasizing development time. The results of this study are the design of an online-based application system with a web service so that it can accelerate the process of recording household gas usage at PGAS SOLUTION Medan. The benefit of this research is that it facilitates the work of employees in processing a more flexible recording of household gas usage. This application must be maintained and back up data to avoid damage. The output of this research is, the publication of the National Journal of Non-Accredited / Accredited which up to the national seminar will be conducted in the first year.

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Key-Words: *System, Rapid Application Development (RAD), Natural Gas, PT.PGASOL*

1. Introduction

The rapid development of information technology that is rapid at this time that led to major changes in various human lives meant practices in individual companies and the development of technology currently has a major impact on increasing the entrenchment of data recording. Records have an important role in every organization, as in PGAS Solution Medan, which is useful for evidence, information sources, memory centers and accountability. In this day, the management of data recording is increasingly making organizations that create data recording manually switch to electronic, but for the management of electronic data recording there are still many organizations that are inadequate. The author is interested in this research due to the management of data recording in PGAS Solution Medan still using manual recording so that researchers create a system in the processing of online-based data recording using information systems in the form of web services designed to facilitate the work and recording in presenting gas usage information in PGAS Solution is by making steps in the form of a table that aims to fill in the data, table form that is filling data in the form data fields managed from the database in displaying data searches, as well as reports as final reports. Based on the description above, the authors are interested in conducting a study entitled **Data Processing System for Household Gas Usage with Rapid Application Development Method in Online Based Medan PGAS Solution**. This study aims to develop a manual recording system into a computerized system based online using a web service system for recording household gas usage in PGAS Solution to make it more flexible. The specific objectives of this study can be seen from the analysis as follows, to measure the level of difficulty in recording and reporting gas usage in household, describe an overview of how the online-based reporting system works using a web service, Analyzing the accuracy of reporting and recording of household gas usage in PGAS Solution.

Based on the background of the problem and this specific purpose, the urgency of this research is known, namely:

1. To assist employees at PGAS Solution in recording and reporting household gas usage.
2. As a tool in recording and reporting household gas usage.
3. As a contribution for the writer in the process of recording and reporting system.

2. LITERATURE REVIEW

2.1 Software

Computer programs that are associated with documentation of needs, design models, and ways of use are called software (Arif & Purwoko, 2017) In general, the definition of software is a problem-solving tool that applies basic theories in certain fields that produce software that is free from errors in the decision making process, sending data to the budget and on time (Fathansyah, 2013) Based on the above definition, software is a collection of electronic data that is regulated and stored by a computer, where electronic data stored can be in the form of programs or instructions that will be run in accordance with the instructions. The characteristics of the software are as follows:

- a. Software is built with engineering, not produced by manufacturers or manufacturers
- b. The software is never using because records in the software can be fixed
- c. Manufactured goods are usually the new components will continue to be produced, while the software is usually continuously improved as needs grow.

2.2 System

The system is a component or variable that is organized, interact with each other, and is interdependent with one another and integrated. By definition, the system is divided into two groups of approaches (Fauzi Rahman, 2015). Procedural approach, which is the right sequence in carrying out an instruction based on the stages that explain what must be done, when it is done, who does it and how to do it. While the second approach is the element approach, is the system as an interrelated part, operating together to achieve goals (Hasibuan, 2014). Understanding the system in general, namely as follows:

1. Each system consists of various elements
2. The elements in the system work together to achieve the goals of the system
3. A system is part of another larger system
4. These elements are an inseparable part of other systems.

2.3 Data Processing

Data Processing is computer software used to create text documents (Heryanto & Raharjo, 2009) Data processing characteristics, namely:

- a. Editing and formatting text
- b. Check spelling and grammar text
- c. Store documents on disk so they can then be opened
- d. Print a document.

Data processing is handled by a piece of software, where the software is called a DBMS (Database Management System) which will determine how the data is processed. The intended software is a DBMS such as Foxbase, Rbase, Microsoft Access, Borland Paradox, MS-SQL Server, etc.

2.4 Database

Information generated quickly and correctly through the processing system in a group of related data is the Database. Where to produce true and fast information depends on the process of recording in compiling a database in its own interest (**Husanah, 2014**). The easiest way to understand a database is like a database as a list of certain information. For example, a database in a place must report such as a security post, then fill in the name of the visitor, address, agency, need, hours of entry, hours out and signatures.

2.5 MySQL

MySQL is a database server program that is able to receive and send data very quickly, multi-user and using the standard SQL (Structured Query Language) ". By using a MySQL server, the data can be accessed by many users at the same time and can limit the access of users based on privilege (user rights) granted. MySQL uses the language of SQL (Structure Query Language), which is a standard database programming language. The advantages of MySQL are as follows:

1. Are open source, meaning this program is free or free to be used by anyone without having to buy and pay a license to the maker.
2. MySQL is a database server, so using this database can connect it to internet media so that it can be accessed remotely.
3. MySQL is a database that is capable of storing very large capacity data up to Gigabytes in size.
4. The software system does not burden the work of the server or computer, because it can work in the background.
5. MySQL is supported by the ODBC driver, meaning that the MySQL database can be accessed using any application, including visuals such as Delphi or Visual Basic.
6. It's quite safe because it has a password to access it Supports fields that are used as primary keys and unique keys (Jubilee, 2015)

2.6 Rapid Application Development

Rapid Application Development (RAD) is an approach to the development of object-oriented systems that include a development method and software that aims to shorten the time normally required in the life cycle of traditional system development between the design and implementation of an information system (Ismail, 2013) Another definition of RAD is a linear sequential software development process that emphasizes the development cycle in a short time. By using iterative methods in developing systems and working models the system is constructed at the beginning of the development stage as an objective of determining user needs and subsequently removed (Januarita, 2014)

The RAD model has 3 stages as follows:

1. Requirement Planning (Requirement Plan), the initial stages that bring users and analysts together who aim to identify the goals of the system and the information needs to achieve the goals. With the involvement of both parties, making this initial stage is the most important thing.
2. Design System (System Design Process), at this stage the activeness of users who are directly involved in determining the achievement of objectives. In this process improvements often occur if there is still a mismatch of design between the user and analyst.
3. Implementation (Implementation / Implementation), this stage is the stage of making a program by developing the design of a program that has been approved by the user and analyst. This tea also conducts trials (trial errors) of the program before it is applied to an organization.

3 METHODOLOGY

3.1 Design Development Planning Learning Model

The research design in learning planning refers to the blended learning model with a constructive approach. The research flow of planning the learning model is illustrated in the following figure 3.1.

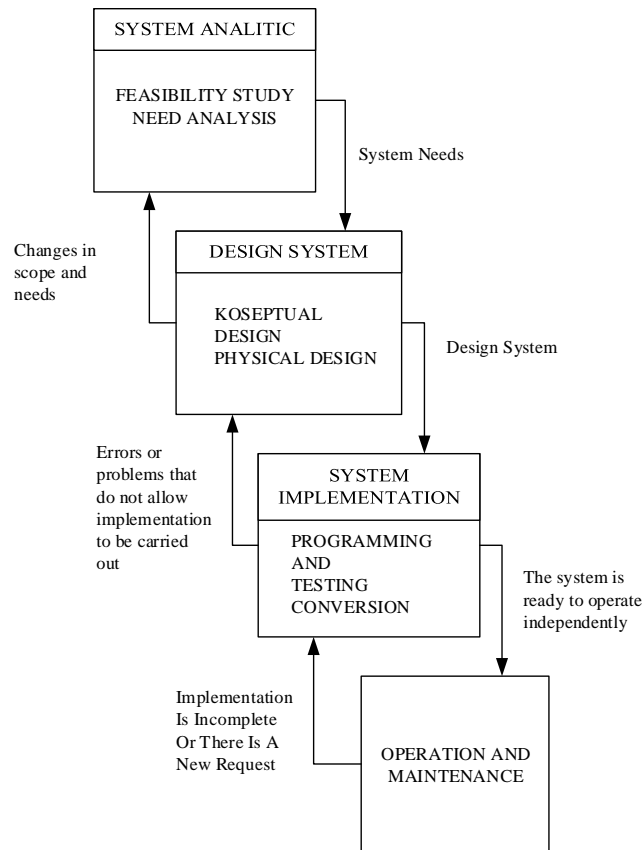


Figure 3.1 Research Steps

3.2 Need Analysis

To meet the needs analysis of researchers using several methods including:

a. Observation

Is a method of gathering information by direct observation and observation of research objects? This observation was carried out on:

Place : PT.GAS Solution Medan

Address :

b. Interview

Interviews were conducted directly with the MA.Daruttagwa about how the learning system that is being used at the MA.Daruttagwa so that researchers can find out the advantages and disadvantages of the application as a reference for applications that will be made later.

3.2 Analysis of the Current System

The recording that took place at PT. PGAS Solution Medan is still running manually because it has not used an application that can help in accelerating the process of gas usage. Ongoing systems include

1. Data processing process, Employees carry out data processing processes manually which slow down the work process of employees in recording gas usage.
2. Data Reporting Process, Data reporting is carried out by field employees who are tasked with checking gas usage, then field employees provide information and data to office employees and manual data recording occurs.
3. System problems that are ongoing, Recording ongoing in PT. PGAS Solution is still manually because there are no applications that help employees in accelerating the processing of existing data.

3.3 Design Method

a. Use Case Diagram

Use case diagram that has been designed in full about the interactions that occur between actors with information systems that are designed and created. Actors are objects that interact directly with the system. The use case diagram determines the roles performed by actors

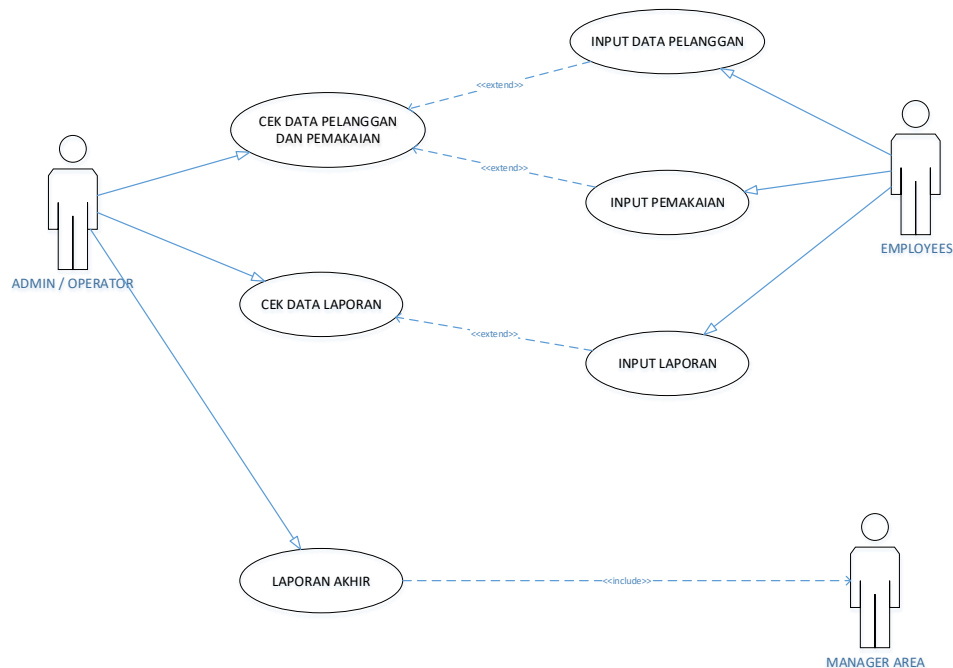


Table 3. List of Descriptions for Use Cases

Actor	Description
Employees	The existence of customer data review conducted by employees to control customer usage and then reporting customer data that has been inputted to the operator.
Operator	Users who have information access rights and see reports that have been made by employees.
Manager Area	Users who have the right to view information, change data or delete data.

b. Activity Diagram

1. Activity Diagram Form Login

The Activity diagram on the login form that has been designed is

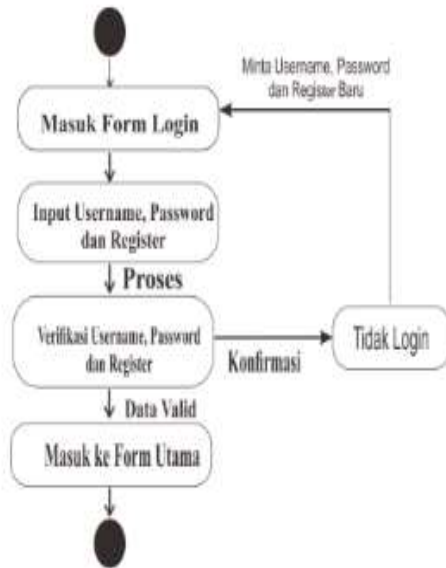


Figure 3.2 Form Login

In the login activity diagram above the Admin has access rights to enter the data menu by entering usernames, passwords and registers validly to be able to enter the main menu.

2. Activity Diagram Menu Utama

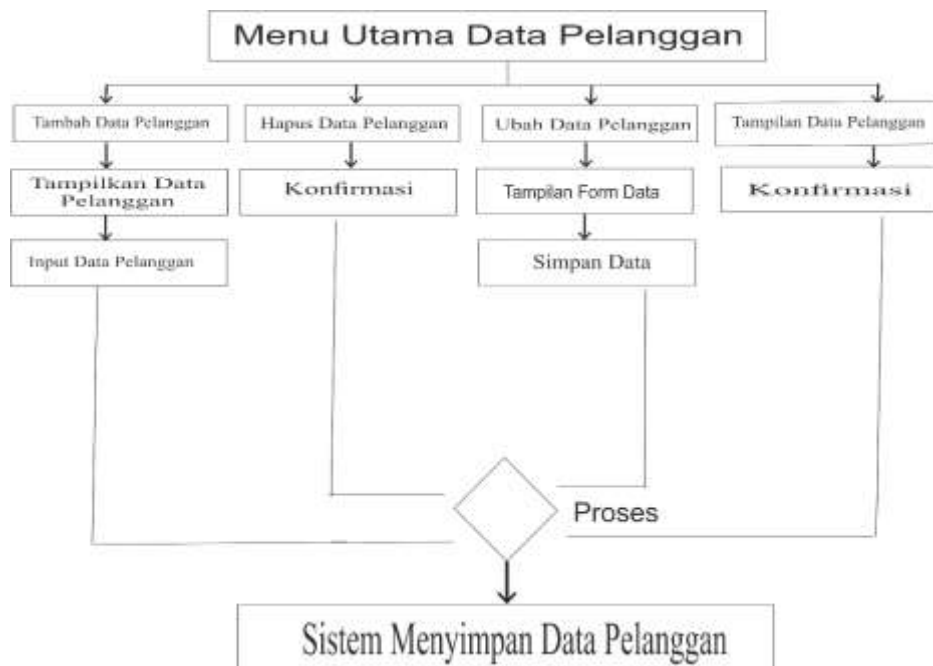


Figure 3.3 Main Menu

In the activity diagram this main menu Admin can do the process of adding, delete, change, display

c. Sequence Diagram

Sequence diagrams will illustrate in more detail the process of a use case.

1. Sequence Add Data

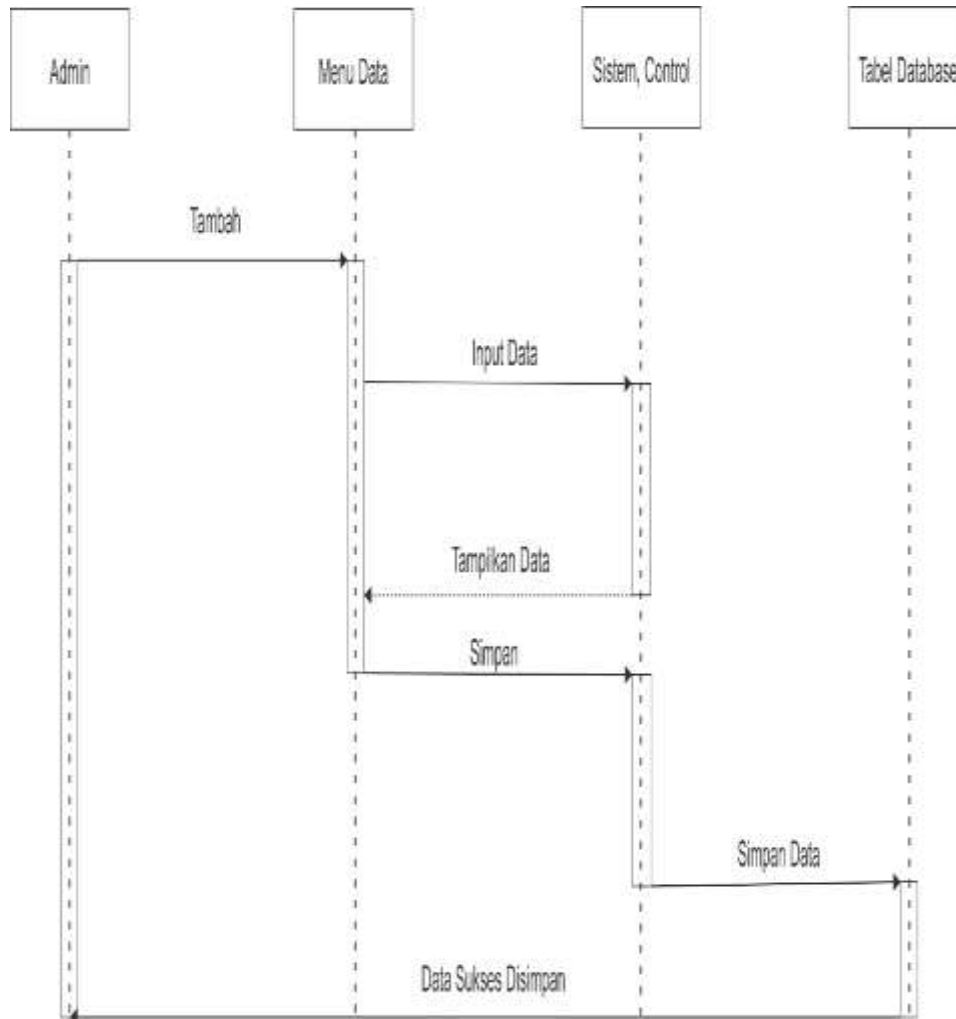


Figure3.4 Add Data

Information :

- Admin enters the data menu and performs the data insert process.
- The data to be saved will be displayed first.
- The system processes data to the database.
- A message appears that the data has been saved successfully

2. Delete Data Sequence

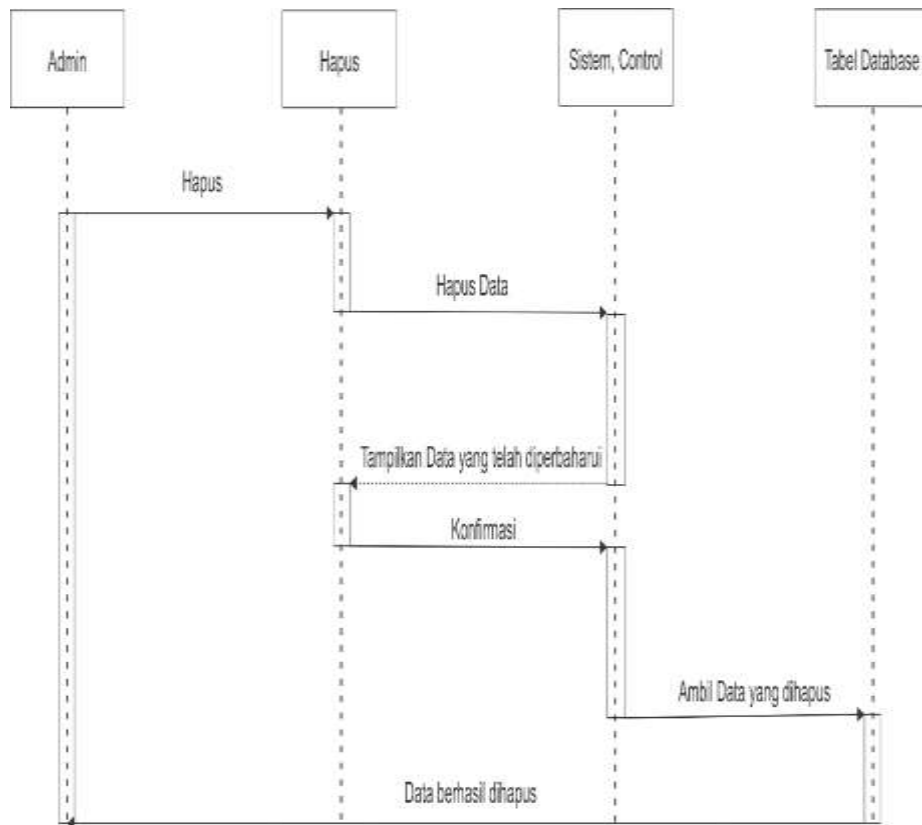


Figure 3.5 Delete Data

Information:

- Admin chooses the delete data icon.
- A data confirmation message appears that will be deleted.
- The system processes to save data to the database.
- The message data has been successfully deleted

3. Change Data Sequence

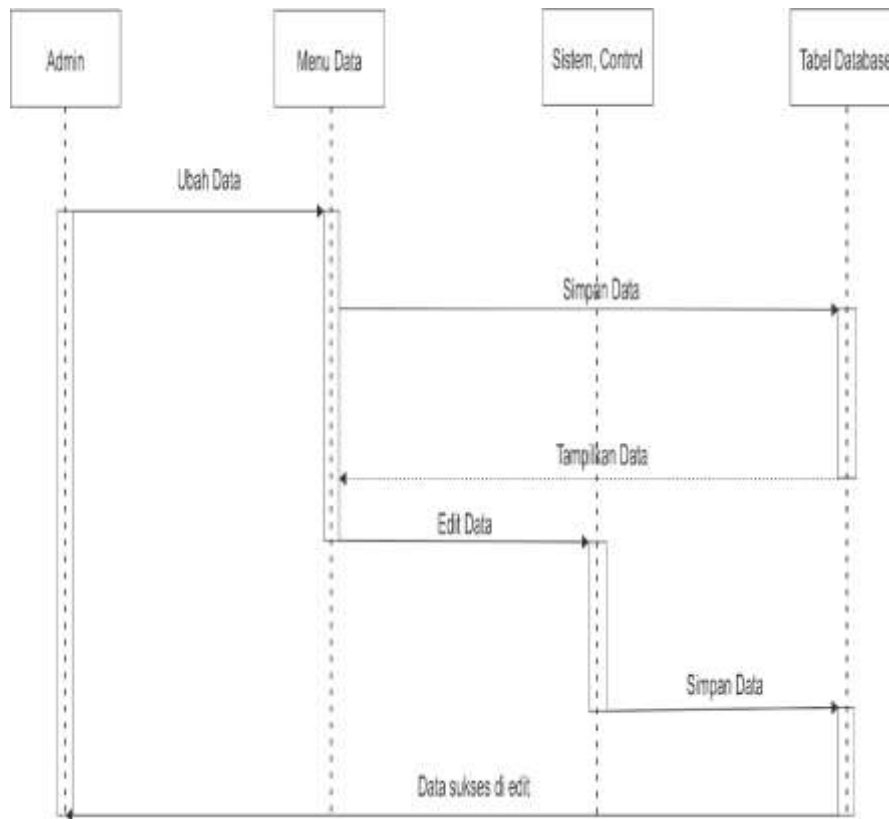


Figure 3.6 Data change

Information :

- Admin enters the data menu and selects edit data.
- Data is displayed by the system and the admin edits the data.
- The system processes data storage to the database.
- A successful data message appears.

4. Results and Discussions

4.1 Application Design

From the application that has been implemented by the author, the company no longer uses the Microsoft Access application, but instead uses Web Application. Where the results of the design of this application the author produces a book form 1-70 that contains a search table with No Ref, Month and Customer Name which serves to facilitate employees and companies in recording and seeing the use of household calibration gas in PGAS Solution Medan.

Discussion

1. Initial Display

a. Form Login

This process should user have to do the initial login, when the login is successful then the user is ready to enter the main menu, the user will be registered beforehand by entering the user name, password and register. After that, the login will succeed and enter the main menu.



Figure 4.2 Form Login

b. Main Menu Display

The Main Menu is designed by the author to make it easier for employees to double check the names of customers who enter and exit in accordance with the book number, reference, address and so on. The main menu consists of 13 forms or book numbers and signs out.

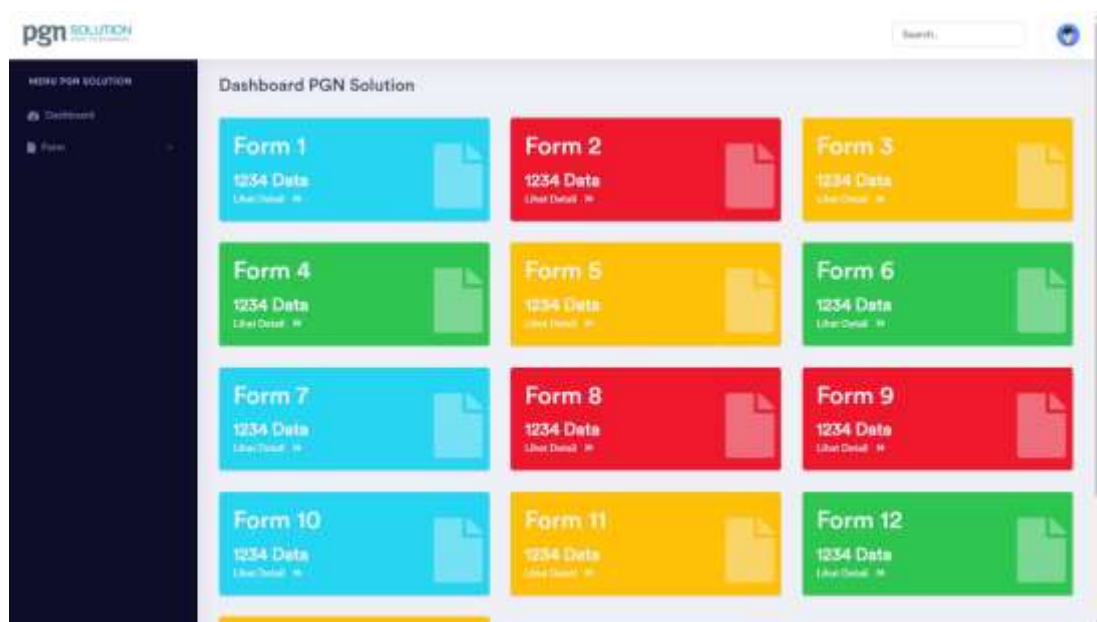


Figure 4.3 Main Menu Display

c. Form Customer Data Table

In this process, showing the customer data table that has been designed by the author. Where this customer data table has been compiled to the maximum extent possible to facilitate employees in inputting customer data both in and out. This part of the table consists of Month, No Ref, Customer Name, Address, Consumer Type, GSize, Serial Number, Recording Stand, Year, Meter Calibration, Documentation and information. No Reference is used as the Primary Key.

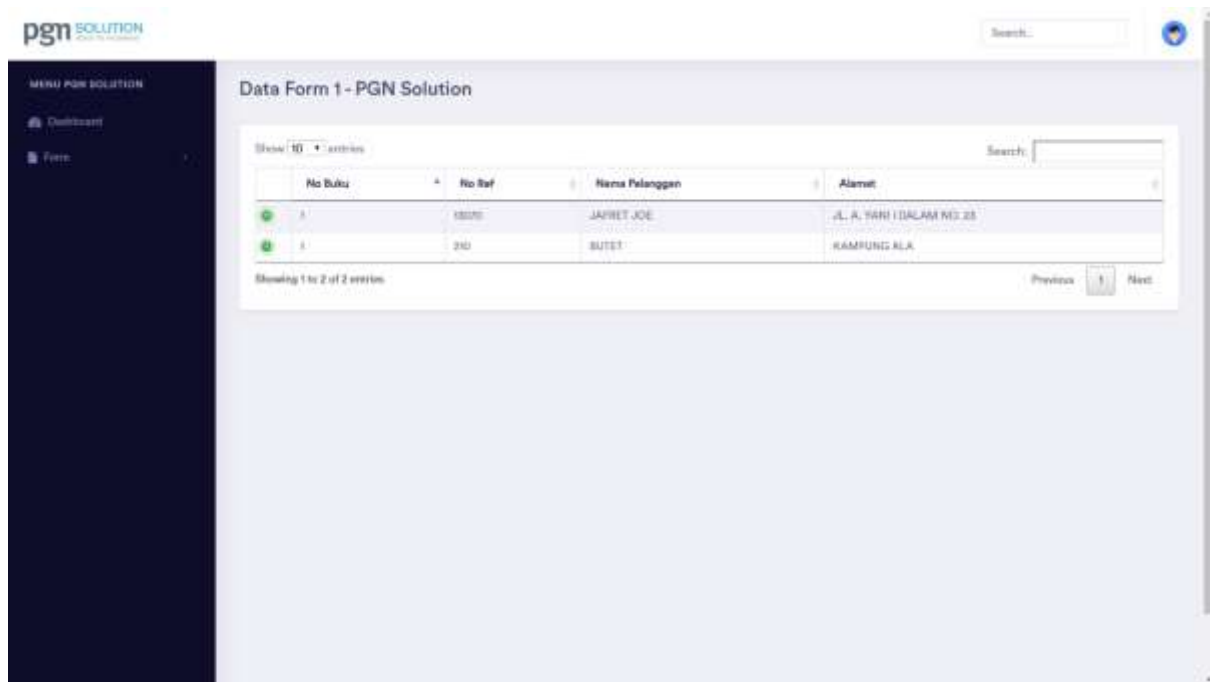


Figure 4.4 Form Customer Data Table

d. Display Form of Customer Gas Usage Data

In this process, the data displayed is output that has been designed by the author. This form consists of the PGASOL Solution Logo, Month as one of the evidences in the recording of gas usage, the book number which is usually used by employees with the abbreviation of "No Book" to facilitate employees in seeing customer data. with this abbreviation, reference No. is used as a search for customer data both in and out, the name of the customer as an object or person who uses natural gas from PT. PGASOL Medan.



Figure 4.5 Display Main Form

5. Conclusion

Based on the results of this study that have been conducted by the author from interviews with existing data and described previously, the authors conclude that with the development of applications that have been designed by researchers, the processing of recording the use of household gas that is made can facilitate the work of the company as well as employees in inputting customer data both in and out and can see the previous month's household gas usage easily so it does not spend much time. There is a draft Login Form that is used by the user to get access rights and enter the main menu. In the main menu there are forms and tables, in which with the forms and tables the user can input data on the customer's gas usage both the addition of incoming and outgoing data. Each form has been completed with a lookup table in accordance with the number of refs and months the user wants, the addition of new data and an entire data table contained in the form so that it can be used as desired by the user easily.

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