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PROTOTYPE DESIGN OF TIMBULREJO VILLAGE DEVICE PERCENTAGE SYSTEM BASED ON QR CODE

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Abstract
QR code is a two-dimensional matrix code as a development of the evolution of barcode codes, the present system is an important thing in every office and other institution to see the results of attendance. Modern era like today by creating a QR Code persistence system with the concept of BYOD (Bring Your Own Devices), so that the percentage system becomes more modern. The village apparatus percentage system aims to form the discipline of the Timbulrejo Village Apparatus, and is useful for accelerating and facilitating absentee reporting to be more effective and efficient. By using the Prototype method to describe the system, so that the user or system owner has a picture of the system development that will be carried out, using Fishbone and context diagrams, to describe the analysis and design of the system. The process of collecting data is by observing, interviewing, and studying literature. In making this or code-based persistence system using the PHP & MySQL programming language so that the system can be made according to the design, such as the home page, the admin menu which consists of the dashboard menu, the data menu which contains data for village apparatus and its offices, the menu for the Village hall and the menu. weekdays, then there is a menu to take a QR Code and scan a QR Code, a menu of attendance data which consists of a menu of history and presentation recap, finally, there is a set menu consisting of user management and menu management the resulting system is expected to greatly facilitate all users.

Keywords:
Presentation;
System;
QR Code;
Prototype

I. INTRODUCTION

Quick Response Code (QR Code) is a two-dimensional matrix code as an evolutionary development of barcode code, barcode code has a small capacity performance power, while QR code has a fairly large capacity performance power, in the modern era like today, where everyone has a smartphone. android, a software for mobile devices that includes an operating system, middleware, and key applications, android also provides an open platform for its developers, it is possible that the android smartphone can be used for a QR code-based percentage system in the Timbulrejo Village government to accelerate Timbulrejo Village apparatus is absent and facilitates effective and efficient reporting of percentages. Based on the results of the examination at the Timbulrejo Village Government, the importance of a percentage report to find out the results of the discipline of the Timbulrejo Village apparatus, the problem that occurs in the manual percentage system causes the Timbulrejo Village apparatus to be undisciplined, seen from the annual recapitulation the percentage of the Timbulrejo Village apparatus attendance in 2019 was only 26 %, and the attendance percentage in 2020 is only 9%. Seeing smartphone technology that is very fast at this time, there is one interesting feature of smartphones is the camera, giving rise to the idea of using QR Codes and android smartphones used for the percentage system in the Timbulrejo Village government. This QR code-based Percentage System can also save on printing, paper, and ink costs for making manual percentage sheets.

Based on research from Ermatital Rahmat, Izwan Heroza, and Miftahul Jannah (2016) The purpose of this research is to update the attendance method that continues to develop and is already running at Sriwijaya University. based on the development of modern technology as it is today by creating a QR Code attendance system with the concept of BYOD (Bring Your Own Devices) so that the attendance system becomes more modern and helps to streamline time in conducting attendance activities. In addition to analyzing the concept of BYOD (Bring Your Own Devices), an automated attendance property will be generated. What is meant is the efficient collection of attendance data without incurring printing costs[2]. According to research by Elin Herlina and Taufik Hidyatulloh (2017), the creation of a QR code is to simplify the data management process and assist in reporting attendance data at SMP Negeri 11 Sukabumi City. This web-based QR code can be applied to the attendance system and helps solve problems in an

office, because the attendance system is an important role in everyday life, especially in schools, offices, companies, and other places that require attendance. The use of the web-based QR code method in this attendance system is expected to assist in the data management process, to provide daily, monthly, and yearly attendance reports [3]. According to research conducted by Akhirudin Pulungan and Alfa Saleh (2020), the purpose of this research is to create an attendance system designed to record attendance and the desired time discipline can run well on android smartphones because they see the importance of time discipline at school as a top priority. , then the data management is designed using Firebase Realtime using the Java programming language on Android Studio, and requires an internet connection to run it [4]. According to Herfia Rhomadhona (2018), the purpose of researching the Tanah Laut Regency BKPSDM Office is to implement employee attendance using web-based Qr Code technology, to make it easier for admins to manage employee information data and complete attendance recapitulation, and will also make it easier for employees to do permission online using the scanner, during the implementation of the sharpness of the scan screen the quality must be good because if the quality is not good the employee's Qr Code is difficult to read [5]. According to research conducted by Dennis and Nia Ekawati (2021), an employee attendance application design was made using an android-based Qr code at the Asacom Store, to assist the store owner admin in real-time employee attendance, then to be able to develop applications by multiplying indicators and variables, so that the application can run without depending on an internet connection and can be used on Android Oreo systems and above and also other operating systems [6].

Based on the studies described in previous research. There are still some shortcomings, such as the appearance of the page. So the author will develop a QR code-based Timbulrejo Village Device Percentage system using and utilizing Android smartphone features by creating a QR code system id card by combining a Web Program, so that attendance activities in an office save more time and costs and create efficient reporting by using modern technology in today's technological era. The advantages of this QR code-based system greatly facilitate a collection of data related to the discipline of the Village Apparatus and speed up attendance reporting with an attractive appearance.

After I made observations in Timbulrejo Village, Bangunrejo District, Central Lampung Regency, Lampung Province, there was a problem in the discipline of the village apparatus causing the percentage reporting to be ineffective because the percentage system was still manual. Of course, with a problem like this, it must be followed up by creating a QR code-based village apparatus percentage system. Because by creating a QR code-based village apparatus percentage system, it will make it easier for village officials to be absent and reporting will be more efficient.

The benefits and objectives of the research are to speed up and simplify reporting of percentages, so that village officials are more disciplined in being responsible for all their duties. Because discipline is very important in an office or company, there is a QR code-based percentage system where the system is able to process data recording. data on-time attendance, daily, monthly and yearly, it will form a disciplined character for all village officials in Timbulrejo Village

II. THEORETICAL

2.1. Information System

According to Elisabet Yunaeti Anggraeni and Rita Irviani (2017:2) Information system is a combination of a group of people, hardware (hardware), software (software), communication networks, and data resources that collect, change, and disseminate information within an organization. [7]. According to Abdul Kadir (2014:8) Information systems consist of components (humans, computers, information technology, and work procedures)[8]. Based on the definition of Information System above, it can be concluded that, Information System is a combination of people's activities with information technology, to support the collection, conversion and dissemination of information data within a particular organization.

2.2. Percentage

According to RI Law number 41 of 2014 article 1 concerning guidelines for employee attendance at the ministry of communication and information technology, attendance is a determining component of assessment based on the presence of an employee in the office at a certain time according to the provisions of working days and hours [9]. According to Lengkong, Fiden, and Masrikat in the Journal of Danindya Puput Muliana Putri, Heru Supriyono (2019) Percentage or attendance is an activity carried out by people to prove that they are disciplined to be present or not in an agency [10]. Based on the definition of the studies above, the PPresenceSystem (attendance) is a combination of a person's activities with technology to determine the presence or discipline of employees in an office or other organization.

2.3. Timbulrejo Village

Based on the Law of the Republic of Indonesia Number 6 of 2014 Article 1 concerning Villages. The village is a legal community unit that has territorial boundaries that are authorized to regulate and manage government affairs, the interests of the local community based on community initiatives, origin rights, and traditional rights that are recognized and respected in the government system of the Unitary

State of the Republic of Indonesia. A brief history of Timbulrejo Village used to be a division of Margorejo Village, Timbulrejo Village residents are transmigration from the island of Java, namely Central Java, West Java, and East Java Provinces. The people of Timbulrejo Village are mostly Javanese who embrace Islam so that the teachings of Islam from the beginning have become the foundation for building a better society. After the data is that most of the population is from Java, an era of change has come, namely, what was once only a forest in Timbulrejo Village has become a bustling and developed area[12]. (Profile Timbulrejo Village 2020: 1)

2.4. QR Code

According to Roni Habibi, Dinda Anik Masruro, Nuha Hanifatul Khonsa, (2020: 1-2, 11) QR stands for Quick Response, which is a two-dimensional barcode created in 1994 by Denso, one of the major companies in the Toyota group, and approved as an international standard. Data storage that can be accommodated in QR Codes is more than barcodes that are limited to one dimension so that QR code users are more efficient. QR codes in education can be used to store certain information. The QR code can also be used on the Percentage of guidance which can be generated every week according to the guidance needs of each student. QR codes in everyday life can also be found on the line application, where we can share line accounts with our friends. The QR code will read what information is contained in the coding of the QR Code, such as a link from the line profile that can be accessed and added to add friends on the line. Based on the explanation of the QR Code above, it can be concluded that the QR Code can store a fairly large performance capacity in various fields of information.

III. RESEARCH METHODS

3.1. Prototyping Model

According to Sri Mulyani et al (2018: 30) Prototyping is a system development technique that uses a prototype to describe a system, so that the system owner has an overview of the system development that will be carried out [19]. In this study, researchers used the prototype development method as follows:

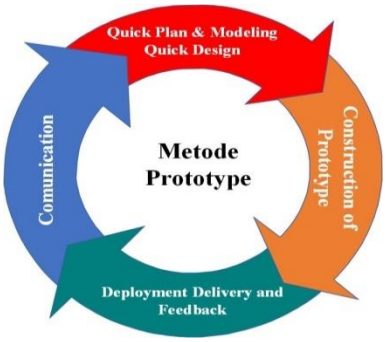

Figure 2. Prototype Model (Pressman: 2010)

Based on the prototype model that has been designed, it can be explained that the discussion of each stage in the model is as follows:

1. Communication

Hold a meeting to communicate with the Village Head of Timbulrejo Mr. Asdy Noor and a group of people who need and have an interest, to determine the currently known software requirements and to describe areas where further definition is needed for future requirements.

2. Quick Plan

In this planning, the need for prototyping is done quickly in order to determine the overall planning.

3. Modeling Quick Design

At this stage the planning modeling in the previous stage is carried out using the Fishbone framework, to describe the analysis and design of the system.

4. Construction of Prototype

Quick design creation is the basis for starting the prototype model and is based on representative aspects of the software that will be seen by computer users.

5. Deployment Deliery and Feedback

The prototype was then submitted to the Head of Timbulrejo Village, Mr. Asdy Noor, and a group of people who have a need to provide an assessment of the prototype that has been made and provide feedback that will be used to improve the comparison of needs. Furthermore, the relationship or interaction will occur when the system developer makes improvements to the prototype.

3.2. Fishbone

According to Imamoto in the journal Intan Kamala Aisyiah and Suneva Basri, Fishbone is a fishbone diagram that is used to categorize various problems or causes of abilities from one subject in an easy-to-understand way [20]. By using a fishbone diagram, it can be seen the reason for making a Qr code-based percentage system.

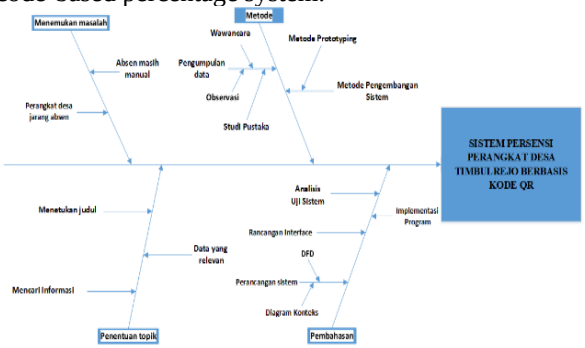

Figure 3 Fishbone Diagram

Based on the picture above is the process of how the system is made. Here is the explanation:

a. Found a problem

The problem that is being faced in Timbul Rejo Village is that manual absences cause village officials to be rarely absent, from this an idea

came out to create an automatic and easy attendance system aimed at making village officials disciplined in filling out absences.

b. Topic Determination
In determining the topic, what is done is to find useful information so that the topics and titles discussed really have problems, then look for relevant data so that the topics discussed are based on the latest data and also determine the titles of the topics to be discussed.

c. Method
In the first method, the first thing to do is to collect data by observing or visiting directly to the place to be researched, then conducting interviews with the Village Head and Village Apparatus, and finally, to study the literature by visiting the library and looking for sources from the internet.

d. Discussion
The discussion section contains the objects to be discussed based on the data and observations that have been made and provides solutions to existing problems. The first thing to do is to design a system using context diagrams and DFD (data flow diagrams) to make the process and data flow descriptions clear and easy to see. Next, designing the interface aims to make the appearance of the application that will be made has an overview of what kind of design to connect users with the system. Program implementation is the process of implementing an application or installing an application directly on a computer and finally analyzing the results of the system test after the application is installed, it will analyze whether some menus or programs have errors or do not work well.

IV. DISCUSSION

In this design process, the researcher will create a Qr code-based Timbulrejo Village device percentage system and is depicted in the following diagram:

4.1. Design System

a. Context Diagram
This diagram serves to explain the flow of data that will be processed on the system created from the admin to the system user. Here is a picture of the diagram:

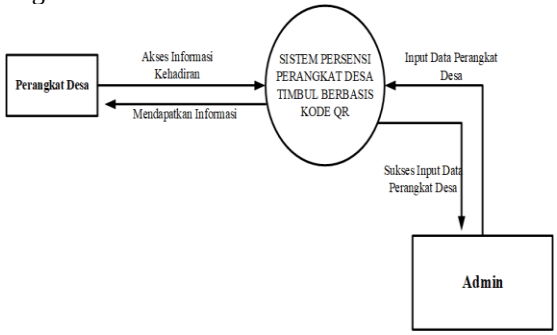

Figure 4 Context Diagram

b. Data Flow Diagram (DFD) Level 0
This diagram illustrates and explains the data flow from the login process into the system and how the QR Code printing process. Below is an image of the diagram:

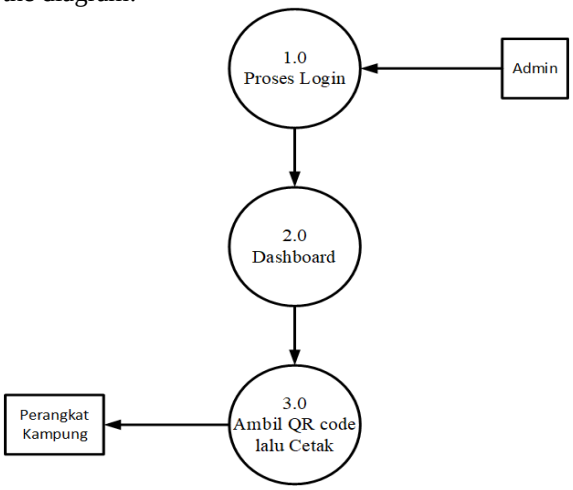

Figure 5 DFD level 0

c. Data Flow Diagram (DFD) Level 1
In this diagram illustrates the flow of data how the scan process from the user to the system. The diagram is described as follows:

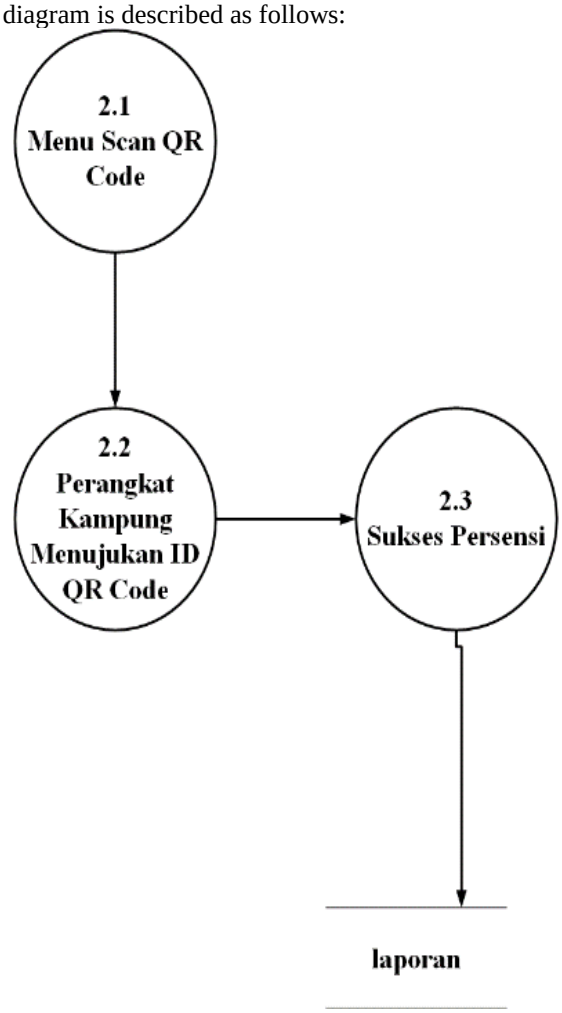

Figure 6 DFD Level 1

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4.2. Interface Design

The following is an image of the prototype image on the application system that will be made:

a. Homepage

The home page is the page that first appears after logging in. On this home page, there are four display menus of number boxes that contain the total number of village officials, positions, places, and days of work. And in the graphic menu section, contains the total number of Village officials based on their place and position.

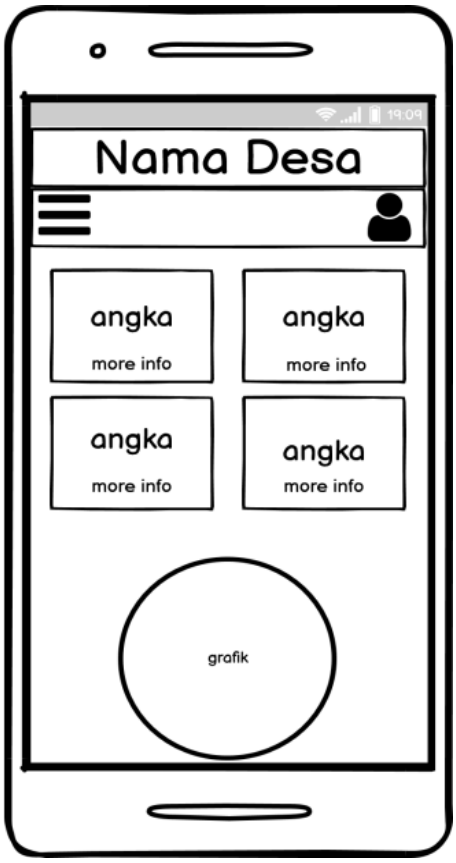

Figure 7. Home page

b. Admin Menu

In this section there are several menus, namely:

1. Dashboard, this dashboard menu is the menu to return to the first home page login
2. Data, in the data, contains the Village device data menu to display all Village device data, in the data menu there is also delete, edit, detail, and add data menu, maybe there is a new village apparatus or a replaced village apparatus. Position data menu to display job data there is also an add data menu to edit the changed position data or add a new position. Place menu, to display where the Village apparatus works. Day menu, to display working days, and there is an additional data menu to add weekday data.
3. Take the QR Code menu to take a QR code that serves to be absent and scanned in the QR Code scan menu section.
4. Presence Data Menu, in this menu section there are two menus, namely: Percentage History, to view the history of anyone who has been absent and data will appear on who has been absent and from what time. Percentage Recap contains recap data based on the workplace. And there is a print menu to print the results of the attendance recapitulation.
5. Menu Settings, in the settings menu there are two menus, namely: User management, useful for adding new users, there are two users who can log in, one admin, and two operators. The admin can edit, delete and add data, while the operator can only activate the QR Code scan menu when the Village apparatus is going to be absent. So when you add a user, there you can choose which user will be used as an admin or operator. Menu management, useful for editing the home page menu, such as the Village device data menu, can be renamed and position data.

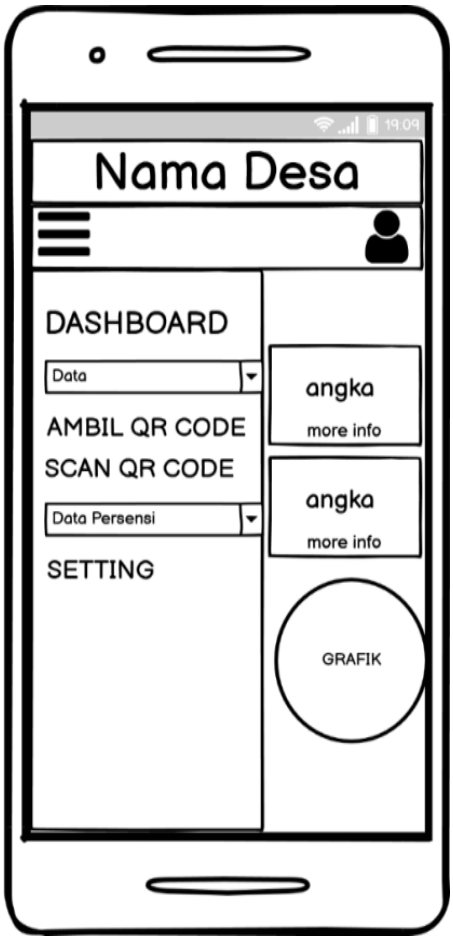

Figure 8 Admin Menu

4.3. Program Implementation

It is the result of a pre-designed program design. The following is a picture of the implementation of the program that has been made

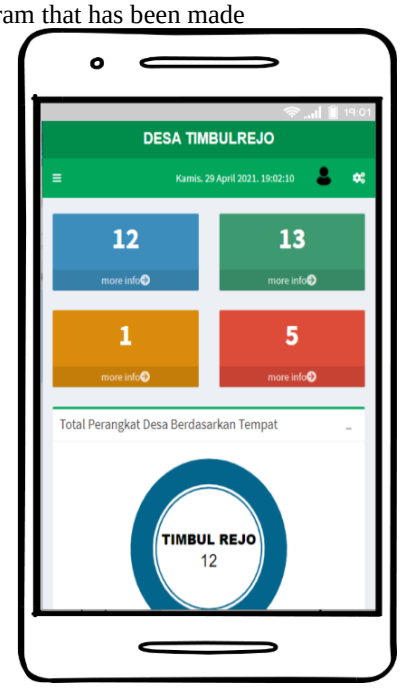

Figure 9. Home Page

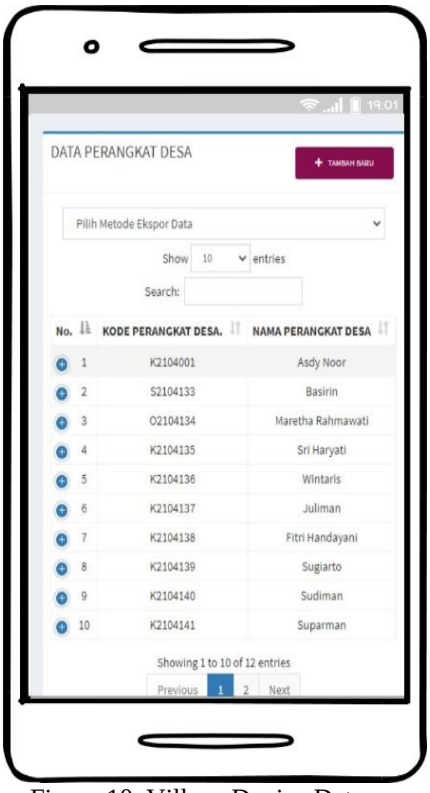

Figure 10. Village Device Data

To take a QR code that serves to be absent and scanned in the QR Code scan menu. Next, the camera scans the QR Code that has been obtained from the QR Code capture menu by directing the QR Code to the scanning camera so that the data enters the village absence recapitulation.

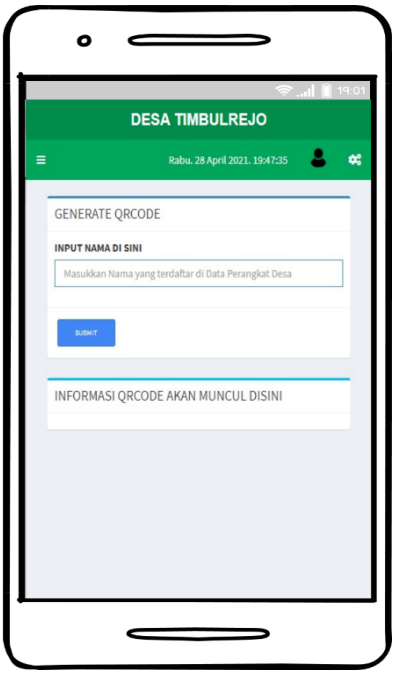

Figure 11. Take QR Code

To display when the user was registered, when was the last login, and to edit admin data such as user name and password.

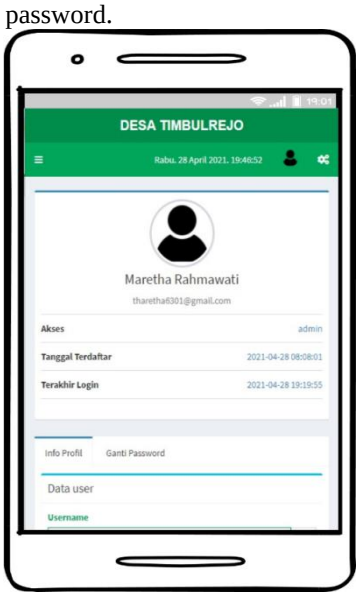

Figure 12. Village Staff Profile

4.4. System Test Results Analysis

Below is a table of system test results using the black-box model, namely testing based on application details such as the appearance of the application, the functions that exist in the application, and the suitability of the function flow with the business processes desired by the customer. This test does not see and test the source code

of the program that has been created. The results of testing the village apparatus percentage application can be seen in Table 1 below:

Table 1. Analysis of Application System Test Results

NO	TESTED MENU	SYSTEM TEST RESULT		DESCRIPTION
		RUNNING	EROR	
1	Localhost	Running		Success
2	Dashboard	Running		Success
3	Scan *QR code*	Running		Success
4	Village Data Profile	Running		Success
5	Add Data	Running		Success
6	Scan QR Code	Running		Success
7	Data	Running		Success
8	Presence Data	Running		Success
9	Edit Data	Running		Success
10	Clear Data	Running		Success
11	Login Admin	Running		Success
12	*Presence history*	Running		Success
13	*Setting*	Running		Success
14	Camera	Running		Success
15	*Sign out*	Running		Success

V. CONCLUSION

Based on the results of research that have been carried out by researchers, in making a QR Code-based Timbulrejo Village Apparatus Percentage System to improve Village Apparatus discipline, it can be concluded that the percentage system is important in every office and other agency to see the results of attendance. Seeing how important the percentage system is, the Timbulrejo Village Apparatus Percentage System is based on a QR code to improve the discipline of the Village Apparatus. The results of this study in order to make it easier for the Village Apparatus to be absent, help speed up the attendance process and in the data recap process so that the data becomes effective and efficient. The implementation of the QR code-based Timbulrejo Village Apparatus Percentage System test results by running the menus tested. Such as the Localhost menu, dashboard, scan QR code, profile, add data, retrieve QR code, data, attendance data, edit data, delete data, admin login, history of presentation, settings, camera and sign out. The QR code-based Village Apparatus Percentage System can also overcome the effective and efficient processing of Village Apparatus percentage information so that the Timbulrejo Village Apparatus is more disciplined because the data is stored in an integrated database.

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