

CASHLESS PAYMENT APPLICATION PONDOK PESANTREN DARUL FALAH CIHAMPELAS- CILILIN BASED ON ANDROID

Liandika Endarwan¹, Angga Setiyadi, S.Kom., M.Kom²

¹ Teknik Informatika - Universitas Komputer Indonesia

Jl. Dipatiukur 112-114 Bandung

E-mail : liandika.endarwan@gmail.com¹, anggasetiyadi@gmail.com²

ABSTRAK

Darul Falah Apps is a monthly payment application for Islamic Boarding Schools and Santri money transfers. Based on cash to non-cash payments using Android-based Payment Gateway and Radio Frequency Identification (RFID) technology. Payment Gateway is a gateway or transaction medium provided by an e-commerce application service that can authorize credit card processing or direct payments for clients in electronic / online business activities. Darul Falah Apps can monthly payment application for Islamic Boarding Schools and Santri money transfers. with android technology Parents will get the convenience of payment to Pondok Pesantren and to Santri. With Radio Frequency Identification (RFID) technology, Santri will get the convenience of making payments to cooperatives in Islamic boarding schools and reduce the loss of money that often occurs in Islamic boarding schools. Based on the test results using the black box testing method and beta testing it can be concluded that the application of Darul Falah has made it easier for Parents / Guardians of Santri in the Monthly Payment Process for Islamic Boarding Schools and Santri money transfers.

Keyword: *Payment Gateway, Radio Frequency Identification (RFID), Students in Islamic Boarding Schools (Santri).*

1. PRELIMINARY

Darul Falah Islamic Boarding School located in Cihampelas Village, West Bandung Regency (KBB) is an Islamic Religious Education Facility, also known as Islamic boarding school (Ponpes), is a religious school system for boarding schools, where students, some teachers, religious teachers and school managers live at boarding schools in schools within a certain time frame. July 14, 1991, marked the beginning of the birth of Darul Falah Islamic Boarding School Foundation. Various kinds of activities exist in the Islamic Boarding School system, including teaching and learning, reciting the Koran and several activities in the Darul Falah Islamic boarding school. To meet the needs of Islamic boarding schools. The boarding school also provides a cooperative for the needs of students or

students and requires students to shop for needs in the boarding school environment provided [1].

Based on the results of interviews on February 2, 2019 with KH Asep Burhanuddin as Boarding School Leadership, found a number of 315 students from 175 male students and 140 female students, and conducted interviews with 15 students from 7 male students and 8 female students, that there were several problems owned by Santri, including many students who do not keep their money safely resulting in loss of money. From the loss of money obtained in 2017 there were 17 people, in 2018 there were 25 people and currently from January 2019 to April 2019 there were 22 people lost money in the darul falah boarding school. So from this incident the change of cash payments to non-cash (cashless) can reduce risk.

interview results on March 2, 2019 with 11 parents or guardians of students, who came from outside the West Bandung regency, they had difficulty paying the monthly tuition fee required to be on time to the Darul Falah Islamic Boarding School, the Foundation because the Darul Falah Islamic Boarding School could not implement non-payment-cash.

It is found in the parents or guardians of students that parents find it difficult to supervise the irregular spending of their children which can lead to suspicion in children, such as the payment of infaq, zakat or shodakoh which is normal every week and on the daily needs of students who are difficult to notice by people old students themselves and many students from various corners of the region, various economic conditions of the family sometimes make students social jealous of other friends

Based on the identification of the problems described above, the purpose of this thesis is to build an Android-based Cashless Payment Application for the Darul Falah Cihampelas-Cililin Islamic Boarding School.

The objectives of this research are:

1. Overcoming the loss of santri money that occurred in the boarding school.
2. Simplify the management system of paying the monthly tuition boarding school.
3. Make it easy for parents to see the expenditure of students' money.

generic system is a system whose needs can be determined from the beginning with general specifications [2].

2. RESEARCH CONTENTS

2.1 Research Sites

Darul Falah Islamic Boarding School is located at Jalan Raya Cihampelas, Cihampelas Village, Cihampelas District, West Bandung Regency. At the beginning of its establishment around 1970 it was only a traditional Islamic boarding school (Salafy) that did not have any facilities, except for a house belonging to K.H. Asep Burhanuddin, which functions as a santri hostel as well as a madrasa, was founded by an energetic Kyai, K.H. Asep Burhanuddin. Along with the development era, in 1985, he increased his educational and preaching activities by establishing the Darul Falah Islamic Boarding School Foundation with the notary act No. 22 of 1985, then establishing Formal education, namely Darul Falah Middle School, was the first school founded in Cihampelas Cililin nuanced NU (Nahdhatul Ulama).

According to Andreas Ledewyk Sagala logo is a sign, symbol, or symbol that contains meaning and is used as the identity of an organization, company or individual to be easily remembered by others [2]. The logo of Darul Islamic Boarding School Foundation can be seen in Figure 1:



Figure 1 Agency Logo

The intentions of the Darul Falah Boarding School Foundation Logo:

- Layered pentagon shape means addressing the number of pillars of Islam that is 5 and showing the number of Pancasila.
- The number of stars there are 9 (nine) means that it is desired by Islamic warriors in Indonesia namely Wali Songo.
- The circle in the middle is covered by the Kujang dua symbol which means Nahdhatul Ulama from Delay.
- The book or book means the holy book of the main guidelines in the Darul Falah Islamic Boarding School.
- Green means symbolizing the color to Islam

2.2 Cashless

Cashless is a word that literally means not to use cash. Currently cashless refers to the use of digital forms of payment, for example cashless such as transfers, checks, crossed checks, credit

cards to tap cards (E-wallet) [3]. Here are the advantages of cashless:

1 Comfortable and efficient

When compared to using cash, the cashless payment method is designed to be more convenient to use. Not just by swiping cards, now some cashless payment methods only require a tap system (taped) such as T-Cash, Flazz, Brizzi, etc. Not only convenient, this method is also considered more efficient in terms of time and energy.

2 Make it easy to review transactions

With cashless transactions, your transactions will later have a trace and can be easily tracked. Starting from the number of transactions, places, and also time, all the information you can get easily. The ease of tracking is also a means for you to control the transactions made so that there is no misuse and start cutting expenses when it is excessive.

2.3 Payment Gateway

Payment Gateway is a gateway or transaction medium provided by an e-commerce application service that can authorize credit card processing or direct payments for clients in electronic / online business activities. This payment gateway can make it easier for business people as well as their clients to make transactions [4]. This Payment Gateway aims to identify the Payment Gateway that will be used on the user's mobile platform which will later be used for online payment transactions to top up the Parent user's balance.

No Payment Gateway

- Midtrans
- Doku
- Ipaymu
- Xendit
- Kaspay

A. Advantages of Midtrans

1. 18 Payment Methods Available

Collaborating with leading banks such as Mandiri, BCA, BNI, BRI, CIMB and so on. Midtrans also accepts payments from Mandriri e-cash, T-cash from Telkomsel, XL Cash from XL, Dompetku from Indosat, as well as Indomaret and Kioson.

2. Data Security Guaranteed

If there is a suspicious transaction and is at risk of fraud then the transaction will be held by Midtrans and the partners will be contacted directly by telephone.

3. Working closely with large companies

Having trusted clients such as Tokopedia Tokopedia in the field of e-commerce buying and selling online, Traveloka in selling tickets online, Garuda Indonesia in the field of airlines, and CINEMAXX.

B. Docu Strengths

1. Facebook Money Transfer Facility

This facility is specifically for Doku Wallet users. With this service, verified users can connect their Doku Wallet account to their Facebook account so that they can send funds ranging from IDR 1 to IDR 1 million.

2. Online and Offline Payment Methods

The payment methods provided by Doku vary, ranging from internet banking, interbank transfers, debit / credit cards, and e-wallets called DOKU Wallet. Doku also accepts offline payments through several minimarkets that are included in the Alfamart group.

3. Cooperate with Thousands of Merchants

Another advantage of Doku is that many merchants use this payment gateway service. Counting more than 3,500 merchants, some of Doku's renowned clients are JOOX, the song player application, Century in the pharmaceutical field, Air Asia on airlines and Alfamart.

C. The Advantages of Ipaymu

1. Easy, Safe and Practical

Every transaction made through iPaymu will be documented in detail and detail so that Ipaymu users do not need to worry about security procedures that will be carried out. More than that, Ipaymu can also be an intermediary for transactions that connect sellers and buyers in online business processes.

2. Withdraw Real Time Cash

Payments that enter your iPaymu account can be immediately withdrawn in real time. Really practical and time saving.

3. Support the use of credit cards

In addition to being supported by an interbank transfer service in Indonesia, iPaymu also supports payments using VISA and Master Card credit cards.

4. Practical shopping with your Ipay partners

Ipaymu collaborates with several popular marketplaces in Indonesia to create healthy, practical and trusted online business conditions. We can get special offers and other conveniences when dealing with an Ipaymu account.

D. Xendit Strengths

1. Transfer from Bank Account to Xendit Account

Through the XENDIT application, you can enter funds into an account that has been registered by making a transfer from a bank account to an XENDIT account. As for the "Send / Request" feature XENDIT facilitates you to transfer funds from your XENDIT account to another XENDIT account, and vice versa, you only need to input the telephone number and e-mail address of the destination XENDIT account.

2. Withdraw feature

With this feature, you can withdraw funds from your XENDIT account to your bank account. Here, the application provides a withdrawal option to move the desired XENDIT balance to your bank account. Within 24 hours, the funds will be transferred to your account. Then, you can immediately withdraw it at the ATM machine if you want.

E. Kaspay

1. Security, the entire KasPay transaction process is done through a transfer (top up) and PIN code so that it is safe from fraud or account misuse mode. Every transaction will be confirmed by e-mail and each transaction is comprehensively recorded.

2. Convenience, Creating a KasPay account is very easy and free of charge. You only need to register your KasPay account, top up your balance, choose the product you want and pay using KasPay.

Based on the payment gateway table above, all of them have their own advantages. However, researchers chose Midtrans as a payment gateway service that would later be integrated in the application to be built.

2.4 RFID (Radio Frequency Identification)

RFID is a Radio Frequency Identification already used in many applications one of which is a payment card [6], RFID offers advantages over manual systems or the use of barcode. Labels can be read if they pass near the label reader, even if the reader is covered by objects or not visible. Labels can be read in a container, carton, box or other. RFID labels can read hundreds at a time, while bar codes can only be read one at a time [6].

2.5 Android

Android is a Linux-based operating system designed for touch screen mobile devices such as smartphones and tablet computers. Android was originally developed by Android, Inc., with financial support from Google, which then bought it in 2005. The operating system was officially released in 2007, in conjunction with the establishment of the Open Handset Alliance, a consortium of companies.

a hardware, software and telecommunications company that aims to advance the open standards of cellular devices. The first Android phone went on sale in October 2008 [7].

The system is a collection of equipment components model requirements, functions and interfaces. Information systems are any regular combination of human resources, hardware, software, data, and networks. The life cycle of a system includes [8].

1. Investigate

2. Analysis
3. Design
4. Implementation
5. Maintenance

2.6 JSON (JavaScript Object Notation)

JSON (JavaScript Object Notation) is a lightweight data exchange format, easy to read and write by humans, and easy to translate and generate (generate) by computers. This format is based on part of the JavaScript Programming Language, ECMA-262 Standard 3rd Edition - December 1999. JSON is a text format that does not depend on any programming language because it uses the language styles commonly used by C family programmers including C, C ++, C # , Java, JavaScript, Perl, Python etc. Because of these characteristics, making JSON ideal as a data-exchange language. JSON is made of two structures:

1. A collection of name / value pairs. In some languages, this is stated as an object, record, structure, dictionary, hash table, keyed list, or associative array [9].
2. A list of sorted values (an ordered list of values). In most languages, this is expressed as an array, vector, list, or sequence [9].

These data structures are called universal data structures. Basically, all modern programming languages support this data structure in the same or different form.

2.7 Data Flow Diagram (DFD)

Data Flow Diagrams (DFD) are graphical representations of a system. DFD describes the components of a system, the data streams in which these components are, and the origin, destination and storage of the data. DFD consists of four main components including:

1. Entity.
2. Process.
3. Data Store.
4. Data Flow.

DFD can be said to be a breakdown of context diagrams. A more detailed analysis of the system can be done by breaking down DFD levels 1, 2 and so on [10].

2.8 Current Procedure

1. Prosedur Santri Menyimpan Uang

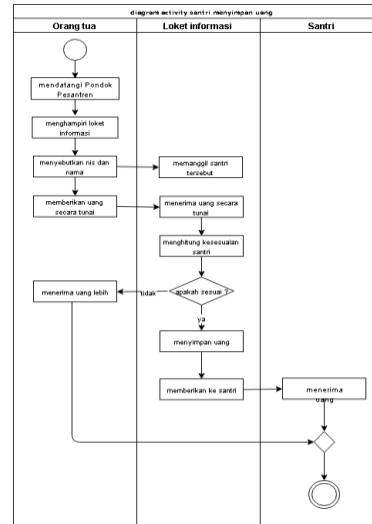


Figure 2 Santri Procedure for Saving Money

- a. Parents of santri come to darul falah boarding school.
- b. Parents to the information counter.
- c. Parents mention NIS and Santri's name.
- d. The information window called the students concerned.
- e. Santri approached the information window.
- f. Parents give money to students who have been nominally determined by the boarding school.
- g. Santri saved his money.

2. Parent Procedure Paying monthly tuition fees

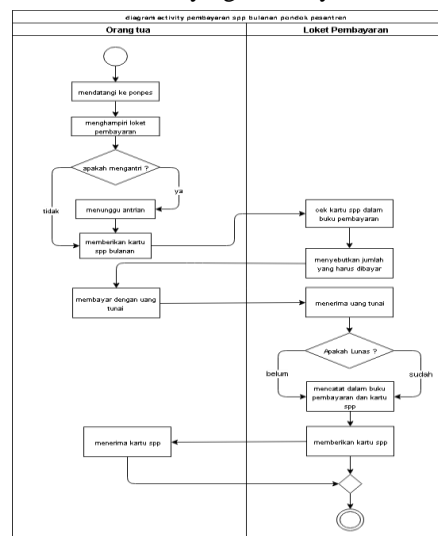


Figure 3 Parent Procedure Paying monthly tuition fees

- a. Parents come to boarding school.
- b. Parents to the payment window.
- c. If parents queue, parents wait in line.
- d. If you do not queue, parents immediately give a monthly SPP card.

- e. Payment counters check NIS, name and address of students from the card and look in the payment book.
 - f. Payment counters specify the amount parents must pay in cash.
 - g. Parents pay with cash.
 - h. Payment counters record in the payment book and spp card.
 - i. The payment window returns the spp card back to the parents.
 - j. Parents accept spp cards..
3. Procedure Parents monitor the expenditure of students

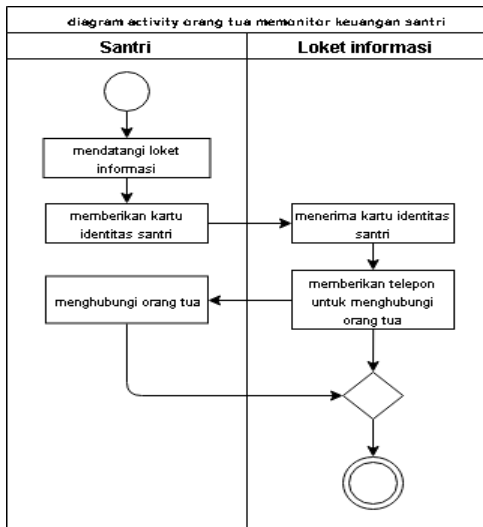


Figure 4 Procedure Parents monitor santri expenditure

- a. Santri to the information counter.
- b. Santri gives a santri identity card.
- c. The information window provided the telephone.
- d. Santri contact parents.

2.9 Analysis of Business Rules

1. Santri Registration along with Santri Identity

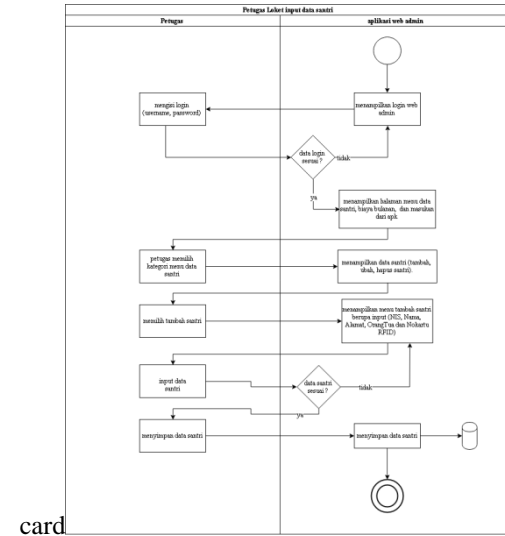


Figure 5 Registration of Santri along with Santri Identity cards

1. Parents Register on the Android Application

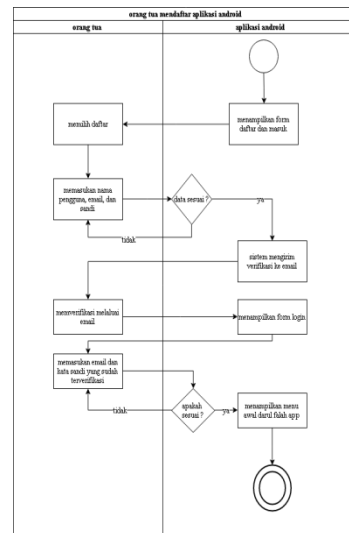


Figure 6 Parents Registering on an Android Application

2. Parents do the

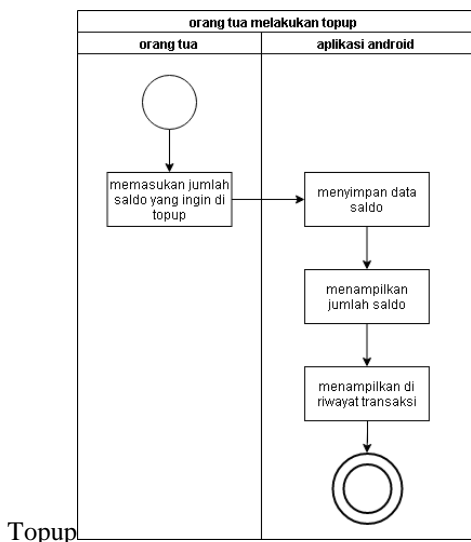


Figure of 7 parents doing top up

3. Parents make transfers to students

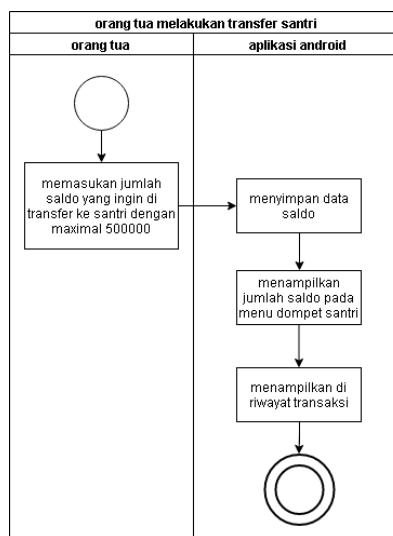


Figure 9 parents making transfers to students

2. Parents make monthly tuition payments

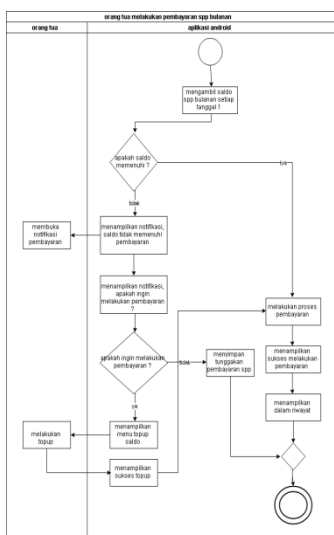


Figure 8 Parents make monthly SPP payments

4. Santri shop at cooperatives

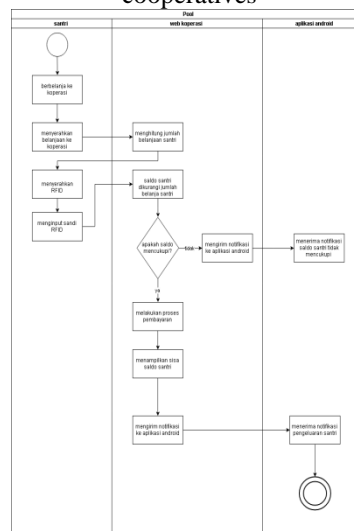


Figure 10 santri shopping at cooperatives

3 Midtrans Analysis

Midtrans analysis is one of the payment gateways that facilitates the needs of online businesses by providing various payment services. The service allows industry players to operate more easily and increase sales. The payment methods provided are card payment, bank transfer, direct debit, e-wallet, over the counter, and others. Midtrans as Payment Gateway aims to identify Payment Gateways that will be used on the user's mobile platform which will later be used for online payment transactions topup Parent user balances.

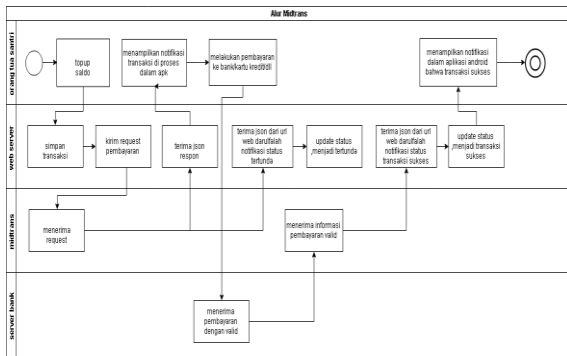


Figure 11 Midtrans Analysis

3.1 System Architecture

1. System architecture on the web



Figure 12 System architecture on the web

Platform Web :

- Web admin requests data to the web server.
- The web server receives data requests and determines the type of request requested.
- If the web server receives a data request it will immediately retrieve the data in the database server.
- After the web server receives the requested data, the data will be returned via the internet to the admin computer.

2. System architecture on mobile



Figure 13 System architecture on mobile

- Parents do input in the form of NIS, Name, Address data of students in Parent's mobile devices.
- Devices connected to the internet send data to the server.
- The server sends data info santri, received by the parents' devices via the internet.
- Device Request parents look for Santri payment data to the server via the internet.
- Device Parents receive info / notification of monthly SPP payment and send money to students.

6. Parents top up the balance, when the balance is less to pay santri monthly spp and santri transfer.

7. Midtrans API that has received data requests from users / users, then make requests in the form of query commands to get data from the database.

8. Parents receive notification Top up balance info.

9. API gets data from database according to the query made, then the API creates the data structure in the form of JSON.

The system contained in the user's mobile device gets response data from the API in JSON format then the parsing process is carried out.

3.2 Usecase Diagram



Figure 14 usecase diagram

3.3 Context diagram

This context diagram illustrates a system in outline and in its entirety

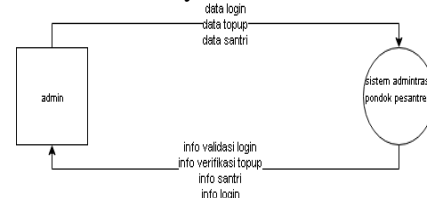


Figure 15 Context diagram

3.4 Data flow Diagram

The Data Flow Diagrams on the system development on the website platform are as follows :

1. DFD Level 1

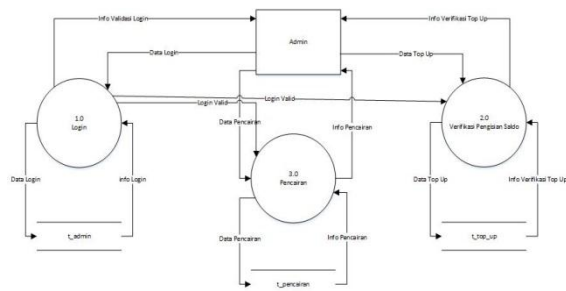


Figure 16 DFD Level 1

2. DFD Level 2 Balance Filling

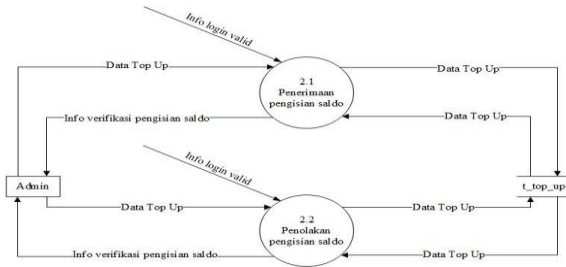


Figure 16 DFD Level 2 Balance Filling

3. DFD Level 2 Santri

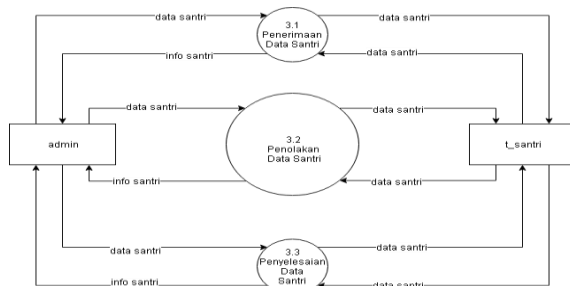


Figure 17 DFD Level 2 Santri

3.5 Pengujian Sistem

System testing is a stage to find errors and deficiencies in the software that is built so that it can be known whether the software has met the criteria in accordance with the objectives or not.

3.6 Testing Scenarios

The test scenario will describe the sequence in testing that will be performed on the software that was built. Software testing scenarios will be built divided into two namely functionality testing scenarios and beta testing scenarios.

- Functionality Testing Scenarios
- Mobile Sub-System Testing Scenarios

Table 1 Scenarios for Testing Mobile Sub-Systems

Test Class	Testing Points	Type of Testing
Login	Enter login data	Black Box
	Login data validation	Black Box
Registration	Enter registration data	Black Box
	Validation of registration data	Black Box
	Save registration data to database	Black Box
Forgot the password	Data input forget	Black Box
	Data validation was forgotten	Black Box
	Save forgotten data to the database	Black Box
Balance Topup	Balance data input	Black Box
	Balance data validation	Black Box
	Displays balance data	Black

SPP Payment	Pay data input	Black Box
	Data validation pay	Black Box
	Store paid data to a database	Black Box
Transfer	Data transfer input	Black Box
	Data transfer validation	Black Box
	Save data transfer to database	Black Box
Add Card	Card data input	Black Box
	Card data validation	Black Box
	Save card data to a database	Black Box
Change Card	Change card input data	Black Box
	Change card data validation	Black Box
	Save data to change the card to the database	Black Box
Removing Cards	Card data input	Black Box
	Card data validation	Black Box
	Delete card data in the database	Black Box
Change Profile Test Class Login	Profile data input	Black Box
	Profile data validation	Black Box
	Change profile data to database	Black Box

c. Web System Sub Testing Scenarios

Table 2 Sub-System Testing Scenarios Web

Test Class	Testing Points	Type of Testing
Login	Enter login data	Black Box
	Login validation	Black Box
Confirm Parent Data	Parent Data Confirmation received	Black Box
	Confirm Parental Data delete	Black Box
	Change Parental Data in the database	Black Box
Santri Data Confirmation	Add Santri Data received	Black Box
	Santri Data Confirmation delete	Black Box
	Changing Santri Data is	Black Box

	complete	
	Change the Santri Data status in the database	<i>Black Box</i>
Transaction Data Confirmation	Add paid transaction data	<i>Black Box</i>
Test Class Login	Confirm Save Transaction Data	<i>Black Box</i>
	Transaction Data Confirmation canceled	<i>Black Box</i>

1. Beta Testing Scenarios

Beta testing is an objective test carried out directly by users who will later use parent and admin software. This research was conducted in West Bandung Kabuoaten using questionnaire techniques. This is done in order to know the extent to which the software built can help and can solve the problems that have been described in the formulation of the problem.

a. Beta Testing Scenarios For Parents

The following are questionnaire questions that will be asked to parents who will later use this application. The question is as follows:

- 1) Do you agree that the Darul Falah Islamic Boarding School payment application can help with monthly tuition payments to your child's boarding school?
- 2) Do you agree that the Darul Falah Islamic Boarding School payment application can help you to make it easier to provide monthly snacks to students based on the rules of the Islamic boarding school?
- 3) Do you agree with monitoring the expenditure of students in the application in accordance with what students spend?
- 4) Do you agree that the Darul Falah Islamic Boarding School payment application can help you in making monthly SPP and Transfer to Santri?

b. Beta Testing Scenarios For admins

The following are questionnaire questions that will be submitted to the admin who will later use this application. The question is as follows:

- 1) Do you agree that the Darul Falah Islamic Boarding School payment admin web application can assist you in receiving parental payments?
- 2) Do you agree that the Darul Falah Islamic Boarding School payment admin web application can assist you in monitoring and accepting transfers of parents to students?
- 3) Do you agree with the Darul Falah Islamic Boarding School payment admin web application that you expect?

3.6 Test Results

The test results display the results of the tests carried out in accordance with the test plan and scenario. The test results are divided into two, namely the results of testing functionality and beta testing results.

3.7 Beta Testing Results

a. Parental Questionnaire Data Results

Scale of Answers:

SS	: Sangat Setuju
S	: Setuju
RG	: Ragu-ragu
TS	: Tidak Setuju
STS	: Sangat Tidak Setuju

The following are some questions that are asked of parents. Here is a question table for parents.

Table 3 Questions for parents

No	QUESTION	SS	S	R G	TS	S T S
1	Do you agree that the Darul Falah Islamic Boarding School payment application can help your child's monthly tuition payment?					
2	Do you agree that the Darul Falah Islamic Boarding School payment application can help you make it easier to provide monthly allowances for students based on the regulations of the Islamic boarding school?					
3	Do you agree with the monitoring of santri spending on the application in accordance with the santri spent?					
4	Do you agree with Darul Falah Islamic Boarding School payment application in transferring to Santri?					

Based on the results of the questionnaire given to parents as sampling, a percentage of each answer can be found using a formula:

$$Y = \frac{P}{Q} \times 100\%$$

Note: Y: Percentage Value

P: Total Score

Q: Highest score Untuk mengukur sikap from users of applications that have been built can use a Likert scale. According to Prof. Dr. Sugiyono, Likert Scale is a scale used to measure perceptions, attitudes or opinions of a person or group of people about an event or social phenomenon, based on operational definitions that have been set by researchers. The following is the score given for the answers to the questionnaire that was given to the authors' research :

Table 4 percentage scale

Scale Answer Description Score	Scale Answer Description Score	Scale Answer Description Score
SS	Sangat Setuju	5
S	Setuju	4
RG	Ragu-ragu	3
TS	Tidak Setuju	2
STS	Sangat Tidak Setuju	1

The following are the results of the percentage of each answer that has been calculated in value using the formula that has been described. This questionnaire was tested on 50 parents

The following is the percentage of the results of the parents questionnaire questions:

Table 5 results of the questionnaire

no	QUESTION	SS	S	R G	T S	S T S
1	Do you agree that the Darul Falah Islamic Boarding School payment application can help your child's monthly tuition payment?	18	24	8		
2	Do you agree that the Darul Falah Islamic Boarding School payment application can help you make it easier to provide monthly allowances for students based on the regulations of the Islamic boarding school?	17	27	6		
3	Do you agree with the monitoring of santri spending on the application in accordance with the santri spent?	15	33	2		
4	Do you agree with Darul Falah Islamic Boarding School payment application in transferring to Santri?	16	31	3		

3.6 Conclusion of Test Results

1. Conclusion Blackbox Testing Results

Based on the testing that has been done, the conclusions obtained are that the processes in the

development of the Android-based application Cashless Payment Islamic Boarding School Darul Falah Cihampelas - Cililin have gone through an improvement phase and have been maximized, as well as functionally have produced the expected output so that the application is feasible to use .

1. Conclusion Results of Beta Testing

Based on the results of beta testing, it can be concluded that:

a. Parents strongly agree that the Darul Falah Islamic Boarding School Cashless Payment Application can help pay monthly non-cash tuition payments.

b. Parents strongly agree that the Darul Falah Islamic Boarding School Cashless Payment Application can help to make it easier to give monthly money to students based on the rules of the Islamic boarding school.

c. Parents strongly agree the results of monitoring the expenditure of students on applications in accordance with what students spend.

d. Parents strongly agree that the Darul Falah Islamic Boarding School Cashless Payment Application can help transfer payments to Santri.

3. CLOSING

Based on the results of tests and discussions that have been made, the following conclusions can be drawn:

1. The Darul Falah app makes it easy for parents to make monthly SPP payments.

2. The Darul Falah app makes it easy for parents to make transfers to students.

3. The application Darul Falah apps makes it easy for parents to find out information on the price of daily santri expenses online.

4. The Darul Falah app provides convenience for administrators to manage administration.

Suggestions that can be given for the development of the system that has been made for further system development are:

1. The Top Up method uses a third party method to make it safer.

BIBLIOGRAPHY

- [1] "Darul Falah" [Online] Available: <https://www.darulfalah.sch.id/profil> [Accessed 02 Maret 2019].
- [2] D. A. Rani Susanto, "Perbandingan Model Waterfall Dan Prototyping Untuk Pengembangan Sistem Informasi," Maj. Ilm. Unikom, vol. Vol.14 No., pp. 41–45, 2016
- [3] Wikipedia, "Logo." [Online]. Available: <https://id.wikipedia.org/wiki/Logo>. [Accessed 02 Maret 2019].
- [4] "Cashless" [Online] Available: <https://www.ajarekonomi.com/2017/01/mengenal-konsep-cashless-society.html> : [Accessed 01 Juli 2019]
- [5] Payment Gateway " [Online] Available: https://en.wikipedia.org/wiki/Payment_gateway

- [Accessed 01 Juli 2019]
- [6] "RFID" [Online] Available:
<https://id.wikipedia.org/wiki/RFID>
[Accessed 1 Maret 2019].
- [7] "Introduction to Android" [Online] Available:
<http://developer.android.com/guide/index.html>
[Accessed 02 Maret 2019].
- [8] Indrajani, "Analisis dan Perancangan Sistem Informasi Card Management," in Berbagai Makalah Sistem Informasi dalam KNSI 2009. Yogyakarta, Indonesia: Informatika, 2009, p. 15.
- [9] "Pengenalan JSON" [Online] Available:
<http://www.json.org/json-id.html> [Accessed 02 Maret 2019].
- [10] Adam Mukharil Bachtiar. (2012) Rekayasa Perangkat Lunak II. Handbook.