Object Oriented Modelling and Design

INDUSTRIAL ENGINEERING

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Project	**:**	**Modern Charity Box**
Topic	**:**	**Social-Religion**
Concept	**:**	**Online Application - Modern Charity Box**
Lecturer	**:**	**Indra, S.Kom, M.T.I**

SAMPOERNA UNIVERSITY

SUMMER PROGRAM

2019

A. Related Work

Nowadays, there are many proposals that related with an online tool. As the time goes by, people prefer to do something in easier way. It makes us propose an innovation about something that familiar, charity box. This innovation aims to ease our life between spiritual and social. Technology cannot be ignored that has influence and change how people respond a problem. Therefore, we make a proposal of our innovation, online charity box. Previously, there is a proposal research that explain about online charity in terms of zakat, alms, or even wakaf. This proposal is planned by a student of industrial faculty of a university in Indonesia. It shows how to design a web for this online charity. This proposal needs another links that related in designing/ running a machine with server. We have searched many resources that connect with this project. First, the journal from another industrial faculty student from Universitas Muhammadiyah Surakarta. This journal tells about how to make a system for infaq, wakaf, and alms in online way. It is our basic information regarding with this project. Second, the journal from an It faculty student from ITS. This journal tells about how to design/make a finance system with using PHP and MySQL. Third, the journal from Atik Rusmayanti, Universitas Jakarta. This journal tells about finance managing system of a village. Fourth, the journal from Universitas Muhammadiyah Sukabumi. The journal tells about how to design a finance system for a corporation. Those fourth resources have connection with this project since the new project will include finance and online system. These resources will help us to improve our knowledge for building this new system.

B. Outline

1. Background

Charity box is already common in our daily life, especially for Muslim. Every time when Muslim goes to the Mosque, usually they will find out a charity box in front of or inside the mosque. We know that since the first time the charity box was created; it is always related to the cash money. It is because the purpose of creating this box is to collect the money for those who want to give alms.

Begins from the situation in our surrounding which can be categorized as a problem, we decide to use the charity box as an object in this project. The first reason is nowadays, especially in the big city, many people prefer to use a credit card instead of cash money. It can be understood because using a credit card is simpler than using cash money when doing a transaction. Indirectly, it also gives an impact to the charity box. Why? The busy people such as an employee often forgot to prepare cash for charity box.

The second reason is we found that, sometimes, the treasurer a bit difficult to manage the money. It is because cash money requires more time to calculate its amount. Also, an error is possible to happen when the treasurer is not careful enough when counting the money. It leads to inaccuracy of data that will be recorded which can also be categorized as a serious problem in the terms of accountancy.

The last reason is the increasing criminal cases, especially stealing charity box in mosque. Giving physical money attracts more eyes on charity box that will trigger bad people to steal and use it for their own business. Charity that primarily will be used as donation for needed people is gone. Indirectly, it will impact to people that want to give the alms. People will not put their money there again than

the money is wasted in wrong way. They give the money is for goodness and praying. Never be thinking that it would make bad action, breaking their intention to pray. Again, security in conventional charity box is one of the considerations behind the launching of modern charity box.

This project is clearly stated if the final product will be a charity box that able to be used with a credit card and an online platform to display the data from the charity box machine, which has higher security system.

2. Problem Formulation

- Conventional method requires more time to manage the data.
- Conventional charity box trigger more criminal action.
- Many busy people such officers do not have much time to drawn their money out before praying.

3. Limitation

- Time

  This project is expected to be done within nine months with the details below:

  - Concept stage finishes in 3 months.
  - Design stage finish in 2 months.
  - Development stage finishes in 2 months.
  - Production stage finishes in 2 months.
  - Disposal stage will be considered when the product of this project needs an upgrade.

- Data

  The data that will be used in this project is one of treasurers in our surrounding. We plan to use the data from “Salat Jumat” in Sampoerna Academy last year.

- Application

  The product of this project will use a web display. So, we will use Java to do a programming stage. Besides that, Java is easy to be used and more flexible than others.

- Budget

  The budget in developing this project will come from the client. All the agreement about the budget will be written in the letter of agreement. It will be acknowledged by all of stakeholder in this project.

4. Goal

   Make an effective and efficient device that deals with:

   - Process data/input faster than the usual tools.
   - Guarantee for higher security system.
   - Help people to be always give alms whenever, wherever, and in any conditions.

5. Research Benefit

   - Change the perception of people if only cash money that can be used for charity box.
   - Decrease the amount of criminal action.
   - Bring the charity box to the more modern style.

C. Discussion

1. Functional requirement

- Machine

    1. The user will be able to write the nominal of money.
    2. The machine will be able to detect the user's card.
    3. The machine will be able to display a greeting after user transfer the money.
    4. The user will be able to log out immediately when they want, with the note the transfer process is not done yet.

- Server

    The server will be able to display:

    1. Data number.
    2. Date, month, year, and transaction time.
    3. Account number.
    4. Incomes.
    5. Expenses.
    6. Notes.
    7. Balance.

2. Non-functional requirement

- Product requirement

    The server is private and can be only accessed by admin/treasurer.

    Server can only be accessed via WEB.

    User must have a card (credit, debit, ATM, etc.).

    Offline data will be exported to Microsoft Word.

    Online data can be downloaded.

This application is non-paid application that can be upgraded.

- Organization Requirement

  The file will be transferred from machine to the server corresponding with security encryption code.

- External Requirement

  The information that can be read is account number of user.

3. Business Process Current System

   The money will be collected by using manual charity box.

   The money will be counted once a week by the admin/treasurer.

   The amount of money will be recorded in a file through manually or application.

4. Business Process Proposed System

   User will be able to do a transaction using card.

   User will be able to write the nominal that they want to transfer.

   User will tap their card to the scanner.

   The money will be transferred to the bank.

   The data of the transaction will be uploaded and will be saved by the server.

5. Use case

a. Use Case Diagram Money Collecting Stage

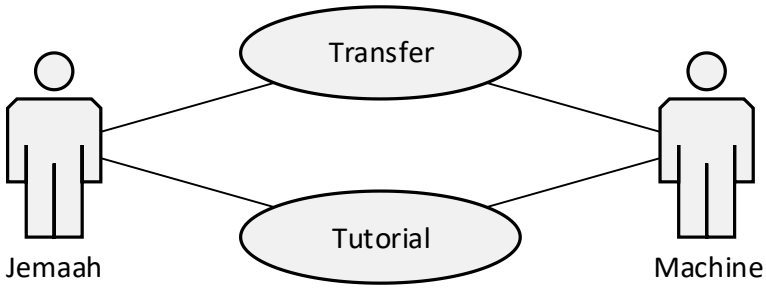

Figure 1 Use Case Diagram Money Collecting Stage

b. Use Case Diagram Data Recording Stage

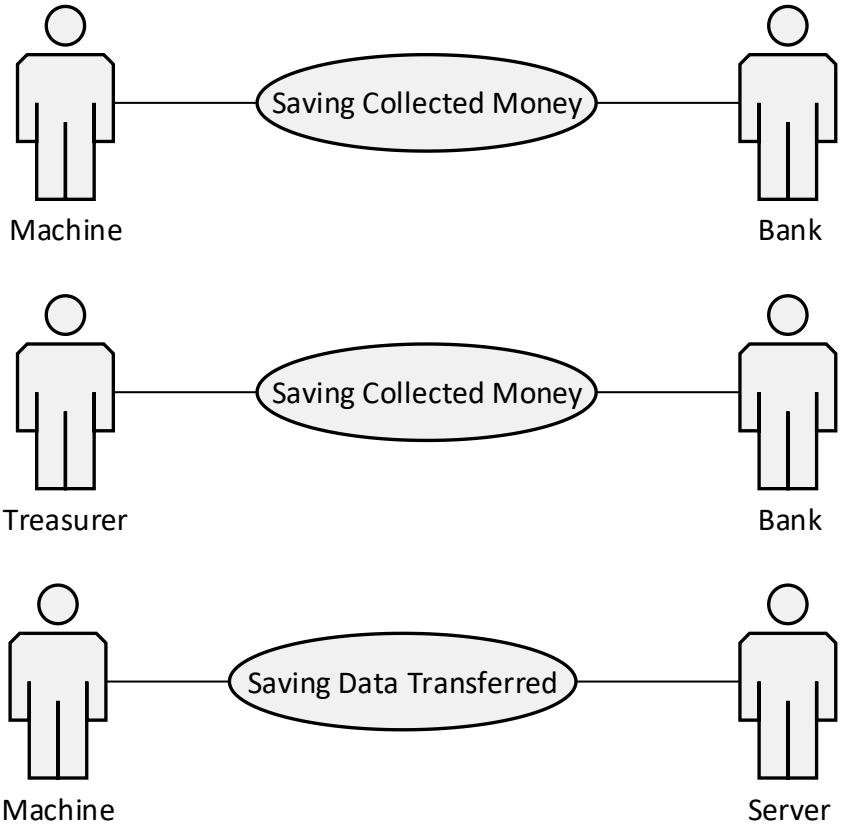

Figure 2 Use Case Diagram Data Recording Stage

c. Use Case Diagram Data Managing Stage

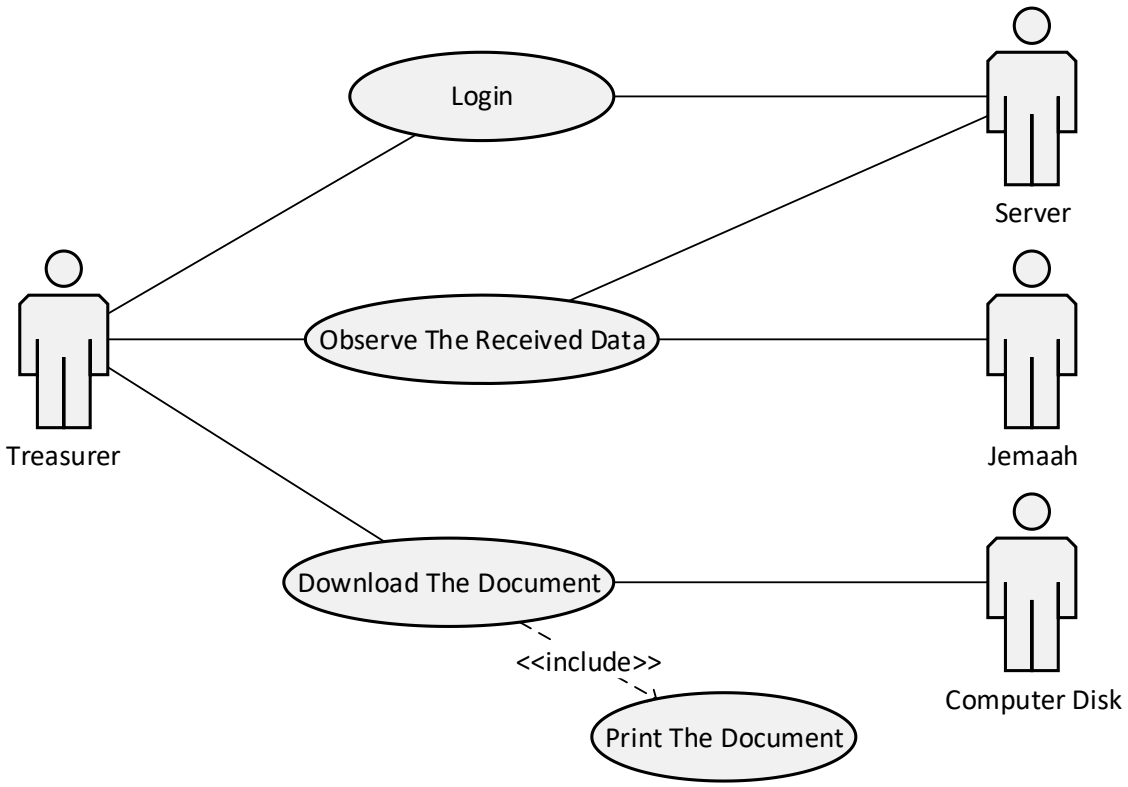

Figure 3 Use Case Diagram Data managing Stage

6. Use Case Description

   a. Use Case Money Collecting Stage

   - Use Case : Transfer

     Actor : Jemaah, Machine

     Purpose : Transfer the money

     Description :

     - Jemaah will write the nominal on the screen.
     - Jemaah will tap their card onto the scanner.
     - Machine will record the data.

   - Use Case : Tutorial

     Actor : Jemaah, Machine

     Purpose : Display a tutorial of how to use the machine

Description :

- Jemaah will click the tutorial icon on the screen.
- Machine will display the tutorial about transfer the money through the screen.

b. Use Case Data Recording Stage

- Use Case : Saving Collected Money

  Actor : Machine, Bank

  Purpose : Saving the money via Bank in the term of data

  Description :

  - Machine will send the data to the bank.
  - Bank will record and save the money.

- Use Case : Saving Collected Money

  Actor : Treasurer, Bank

  Purpose : Saving the money via Bank in the term of account

  Description :

  - The treasurer will make an account.
  - Bank will record and save the money.

- Use Case : Saving DataTransferred

  Actor : Machine, Server

  Purpose : Archiving the data

  Description :

  - Machine will upload the data to the server.
  - Server will keep the data.

c. Use Case Data Managing Stage

- Use Case : Login

Actor : Treasurer, Server

Purpose : Login to the server

Description :

- Treasurer will login into the server.
- Treasurer will insert email address and password.
- Server will process the information.
- Server will display the data.

- Use Case : Observe the Received Data

  Actor : Treasurer, Server, Jemaah

  Purpose : Treasurer will be able to manage the data flow

  Description :

  - Jemaah will transfer the data through the machine.
  - Treasurer will look at the data flow in the server system.
  - Treasurer will acknowledge if there is a problem.
  - Server will display the data.
  - Server will save the changes.

- Use Case : Download the Document

  Actor : Treasurer, Computer Disk

  Purpose : Saving the offline document

  Description :

  - Treasurer will click the icon “download in the server”.
  - Server will import the data into Microsoft Word.
  - The Computer disk will save the offline document.
  - The document will be printed as a hard copy.

7. Activity Diagram

a. Activity Diagram Business Process Current System

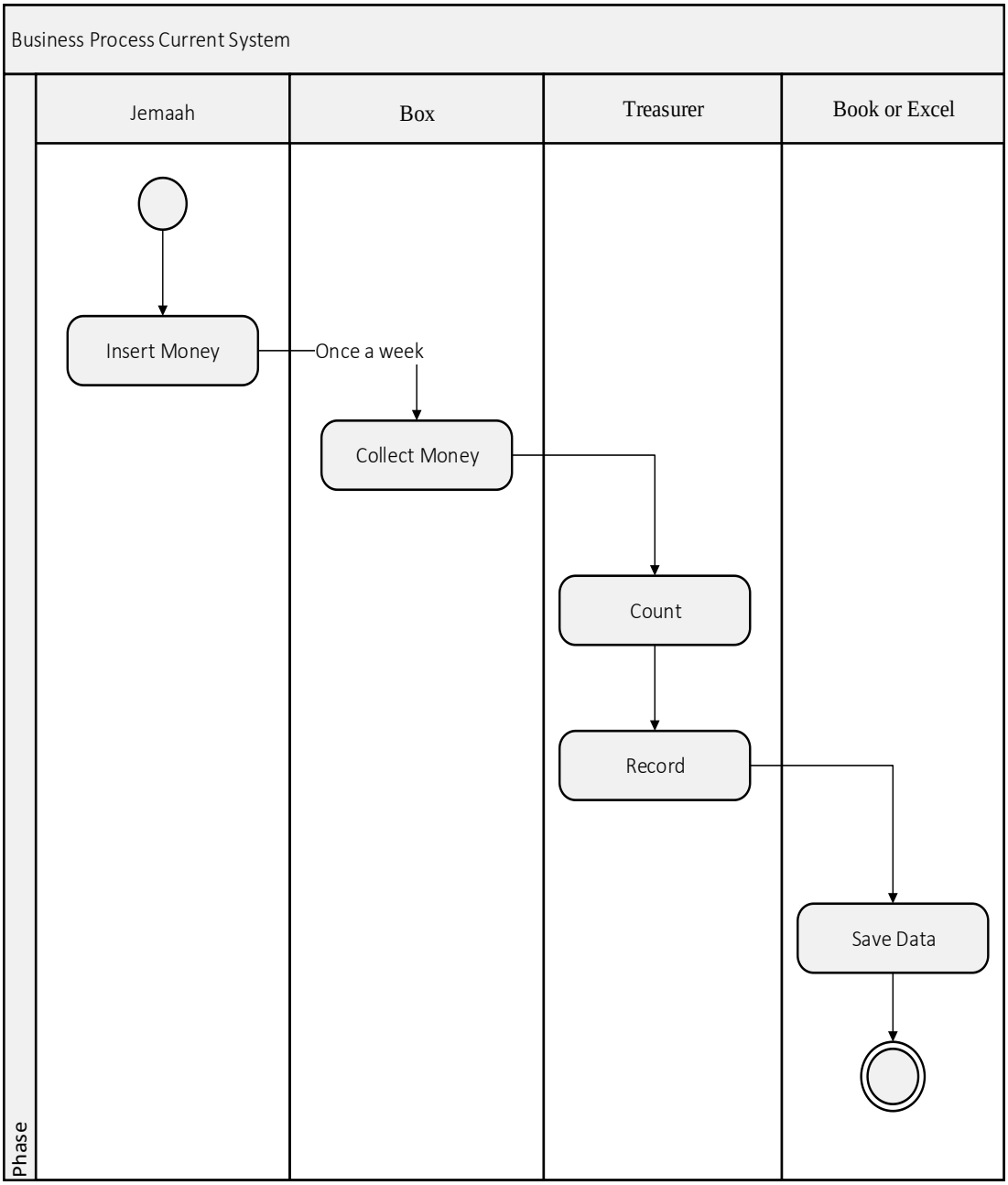

Figure 4 Activity Diagram Business Process Current System

b. Activity Diagram Business Process Proposed System

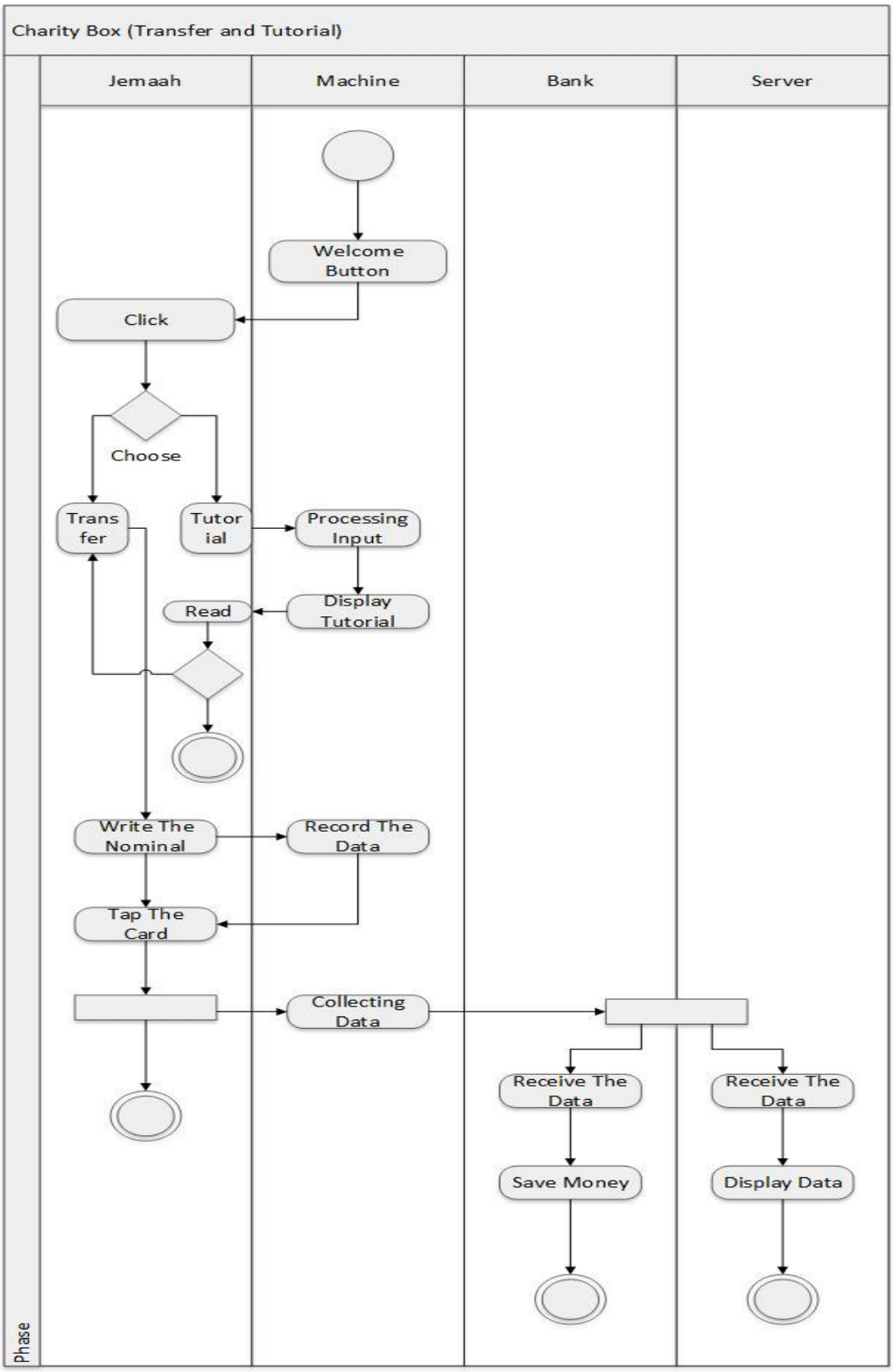

Figure 5 Activity Diagram Business Process Proposed System – Transfer and Tutorial

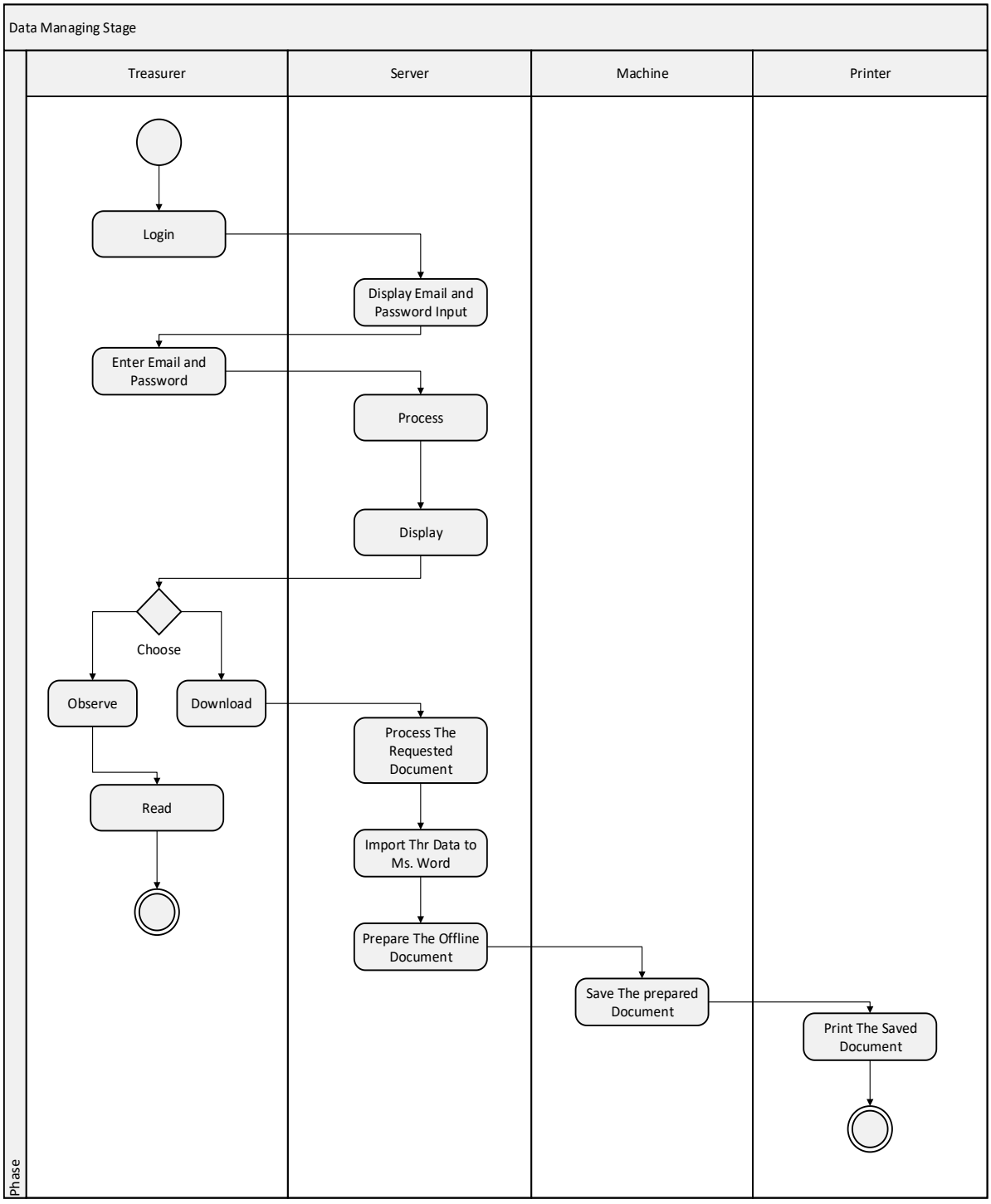

Figure 6 Activity Diagram Business Process Proposed System – Data Managing Stage

7. Class Diagram

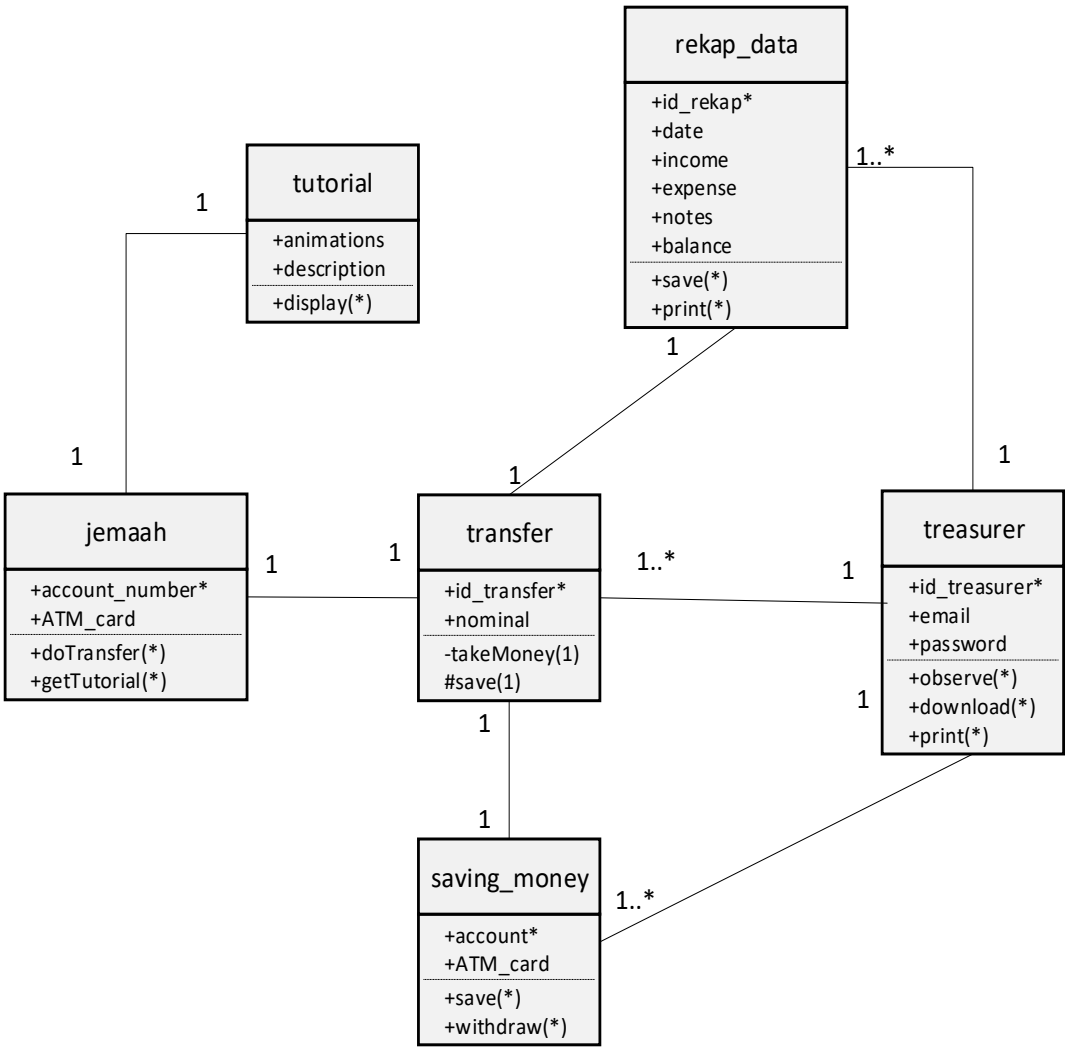

Figure 7 Class Diagram

8. Conceptual Data Modelling

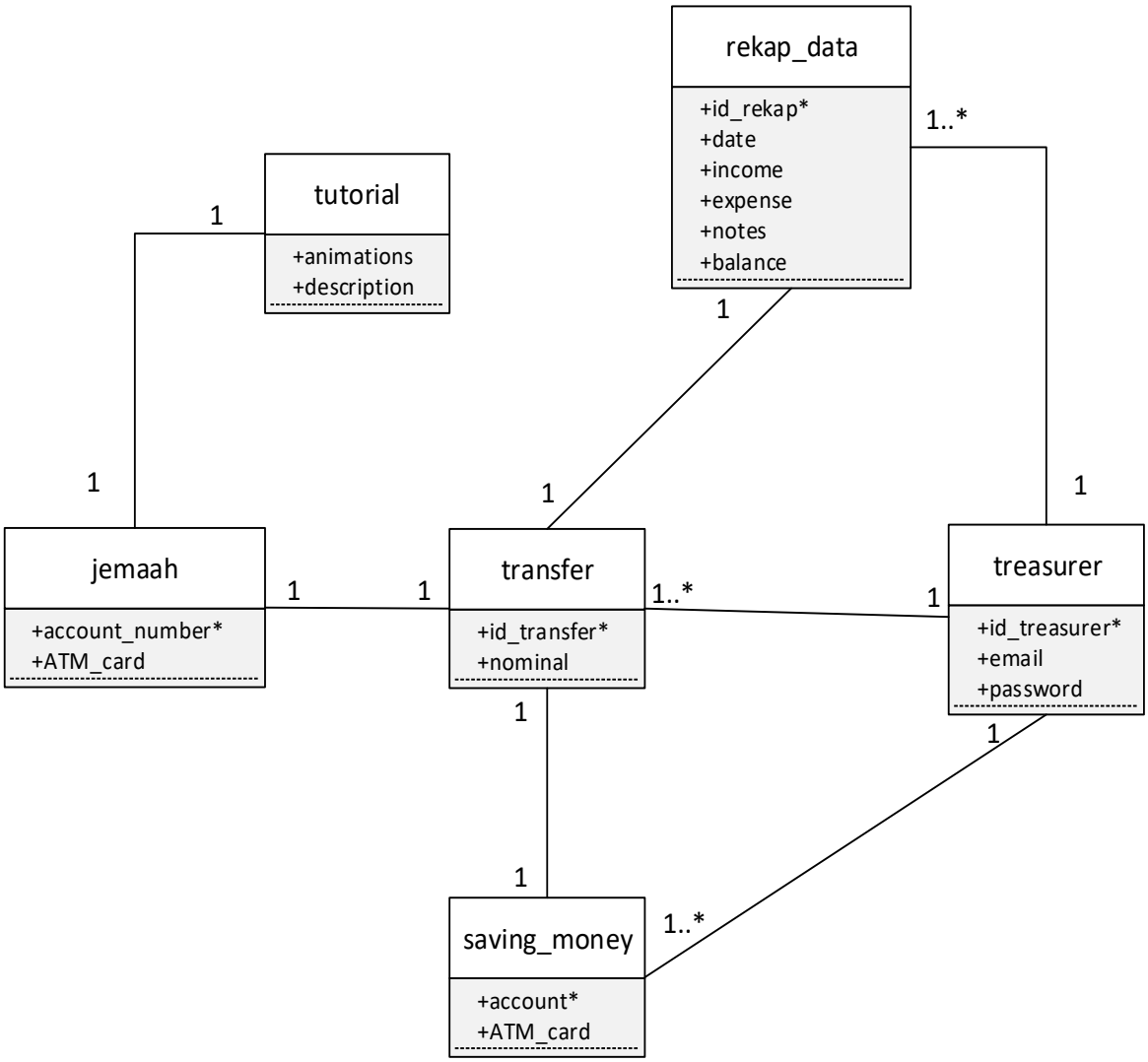

Figure 4 Conceptual Data Modelling

9. Logical Record Structured (LRS)

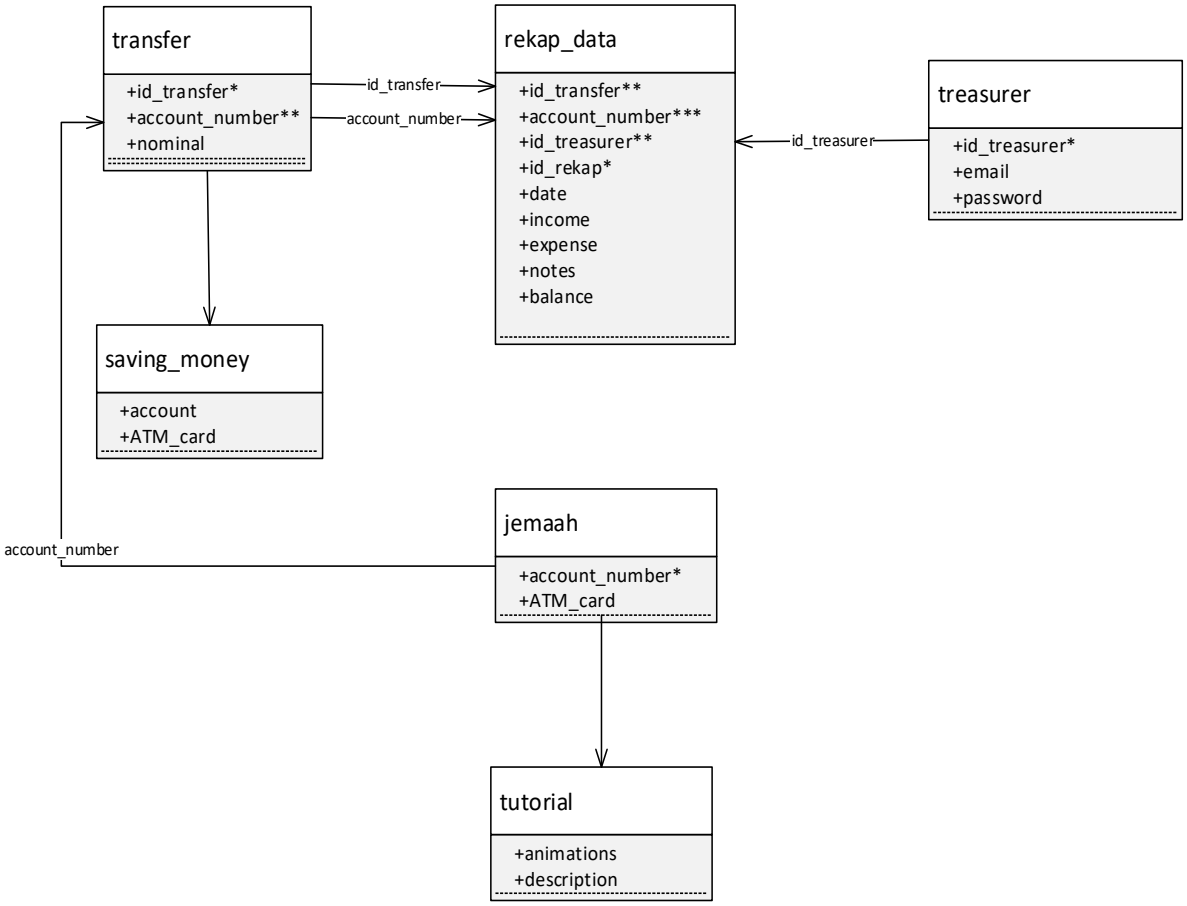

Figure 5 Logistic Record Structure

10. Data Relation Model

a. Table relation jemaah

account_number	ATM_card
PK	

Table 1 Table relation jemaah

b. Table relation tutorial

Animations	description

Table 2 Table relation tutorial

c. Table relation transfer

id_transfer	account_number	nominal
PK	FK	

Table 3Table relation transfer

d. Table relation saving_money

Account	ATM_card

Table 4 Table relation saving_money

e. Table relation rekap_data

id_rekap	id_transfer	id_treasurer	account_number	date	income	expense	notes	balance
PK	FK	FK	FK					

Table 5 Table relation rekap_data

f. Table relation treasurer

id_treasurer	email	password
PK		

Table 6 Table relation treasurer

11. Data Basic Specification

a. Table jemaah

Table name : jemaah
Media : Server
Content : Jemaah's account data
Organization : Index Sequential
Primary key : account_number
Record's Length : 30 byte
Total Record : 100 / day

No.	Field Name	Type	Length	Information
1.	account_number	Number	20	Jemaah's account number
2.	ATM_card	Varchar	10	Name of The Card

Table 7 Table jemaah

b. Table tutorial

Table name : tutorial
Media : Machine
Content : Tutorial's content
Organization : Index Sequential
Primary key : -
Record's Length : 2000 byte
Total Record : 100 / day

No.	Field Name	Type	Length	Information
1.	animations	Varchar	1000	Animations
2.	description	Varchar	1000	Description of the steps

Table 8 Table tutorial

c. Table transfer

Table name : transfer
Media : Server, Machine, Bank
Content : Data Transfer Information
Organization : Index Sequential
Primary key : id_transfer
Record's Length : 45 byte
Total Record : 100 / day

No.	Field Name	Type	Length	Information
1.	id_transfer	Number	10	ID Code of Transfer
2.	account_number	Number	20	Jemaah's account number

3.	nominal	Number	15	Nominal of Money Transferred

Table 9 Table transfer

d. Table saving_money

Table name : saving_money
Media : Bank, Machine
Content : Money Transferred Saving
Organization : Index Sequential
Primary key : -
Record's Length : 30 byte
Total Record : 100 / day

No.	Field Name	Type	Length	Information
1.	Account	Number	20	Account of saving money
2.	ATM_card	Varchar	10	Name of The Card

Table 10 Table saving_money

e. Table rekap_data

Table name : rekap_data
Media : Server
Content : Data Compiling
Organization : Index Sequential
Primary key : id_rekap
Record's Length : 1103 byte
Total Record :max. 3 times / week

No.	Field Name	Type	Length	Information
1.	id_rekap	Number	10	ID Code of Rekap
2.	id_transfer	Number	10	ID Code of Transfer
3.	id_treasurer	Number	10	ID Code of Treasurer
4.	account_number	Number	20	Jemaah's account number
5.	date	Number	8	Rekap's Date
6.	income	Number	15	Total Income
7.	expense	Number	15	Total Expense
8.	notes	Varchar	1000	Usage of Expense
9.	balance	Number	15	Money Balance

Table 11 Table rekap_data

f. Table treasurer

Table name : treasurer
Media : Server
Content : Manage Money and Data Transferred
Organization : Index Sequential
Primary key : id_treasurer
Record's Length : 40 byte
Total Record : max. 20 / day

No.	Field Name	Type	length	Information
1.	id_treasurer	Number	10	ID Code of Treasurer
2.	email	Varchar	20	Login Email
3.	password	Number	10	Login Password

Table 12 Table treasurer

12. Sequence Diagram

a. Transfer

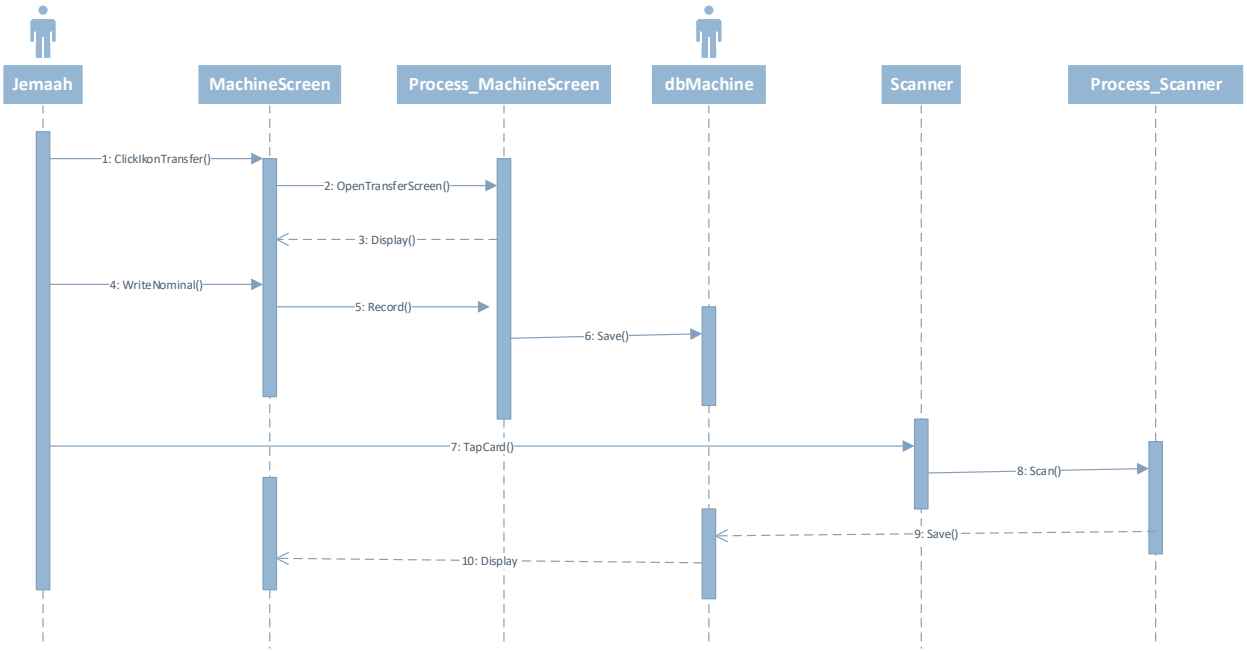

Figure 10 Sequence Diagram Transfer

b. Tutorial

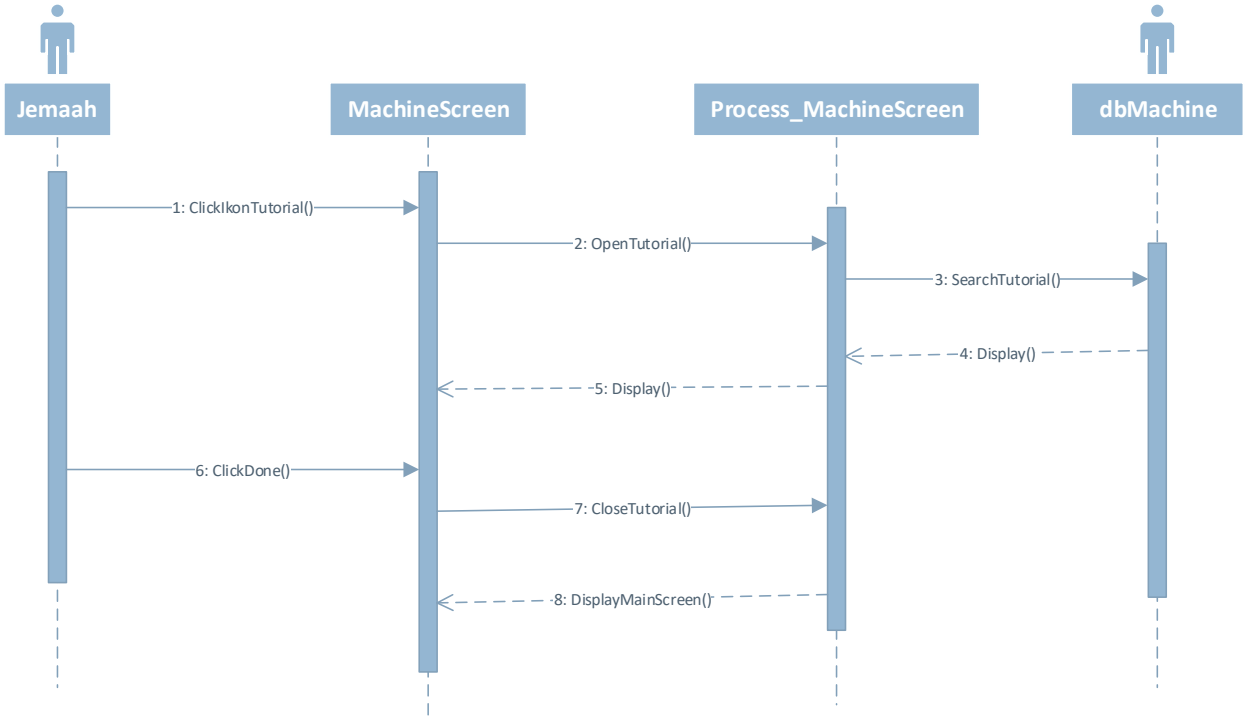

Figure 11 Sequence Diagram Tutorial

c. Saving Collected Money (Machine & Bank)

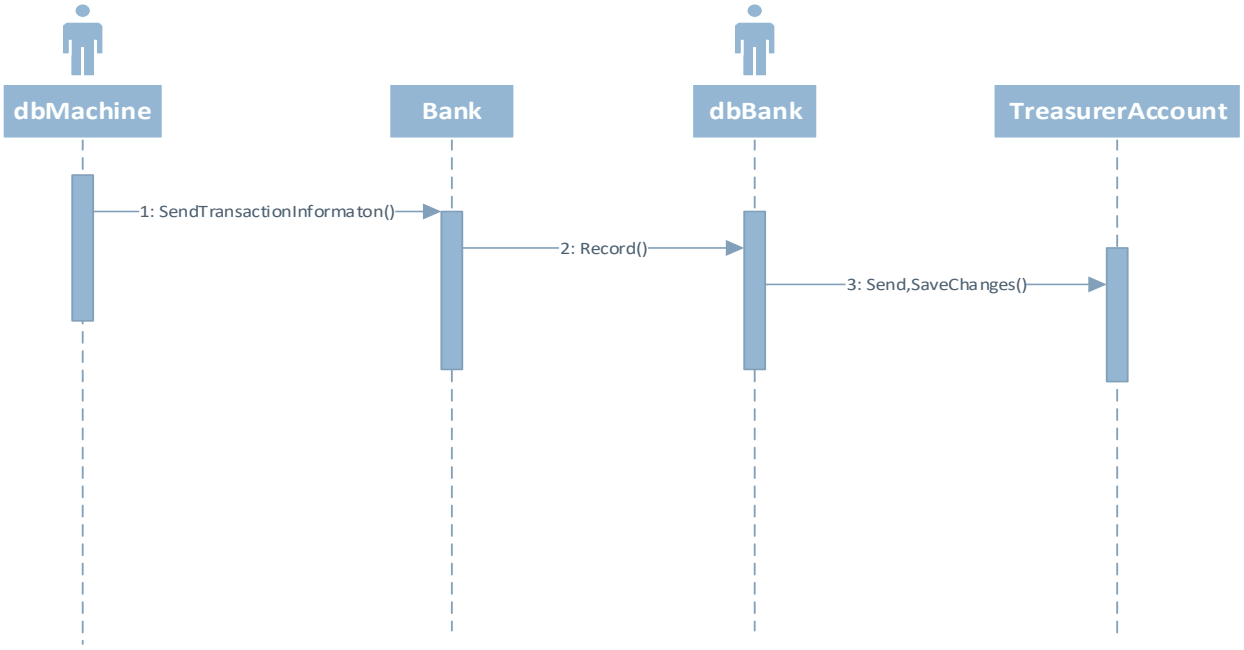

Figure 12 Sequence Diagram Saving Collected Money

d. Saving Collected Money (Treasurer& Bank)

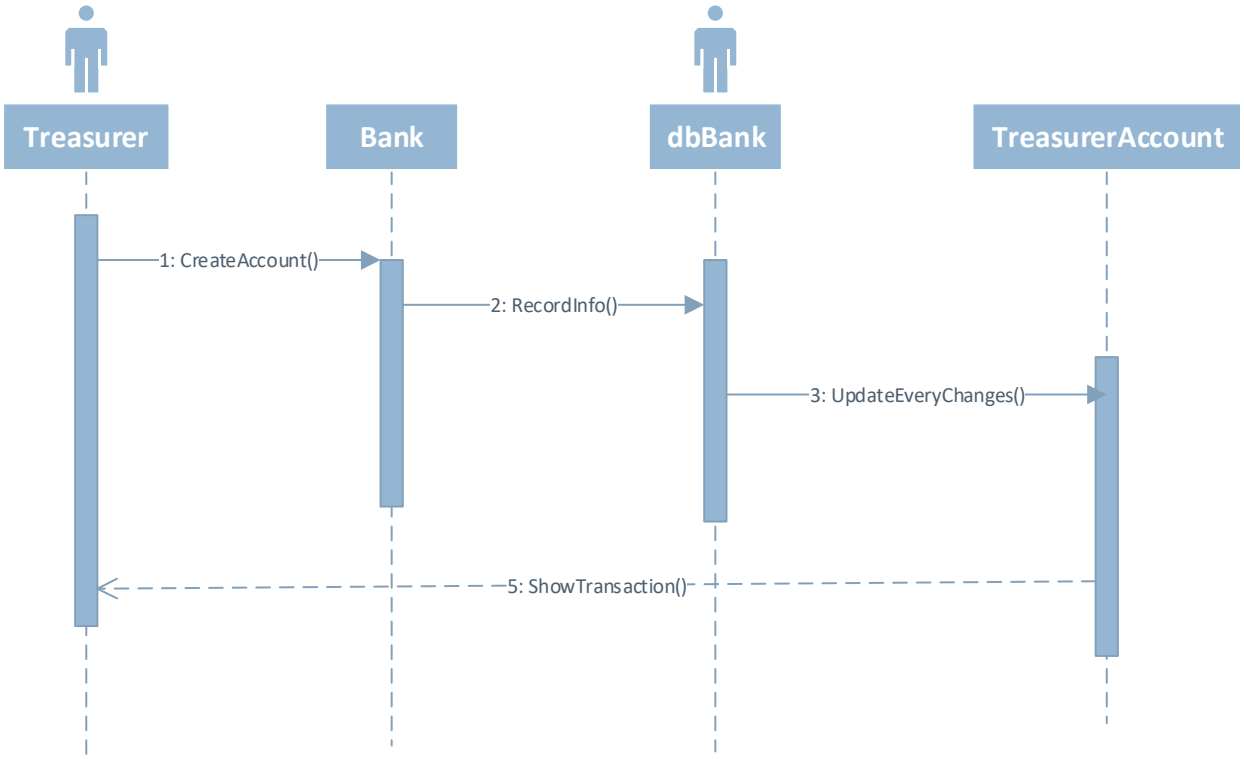

Figure 13 Sequence Diagram Saving Collected Money 2

e. Saving Data Transferred (Machine & Server)

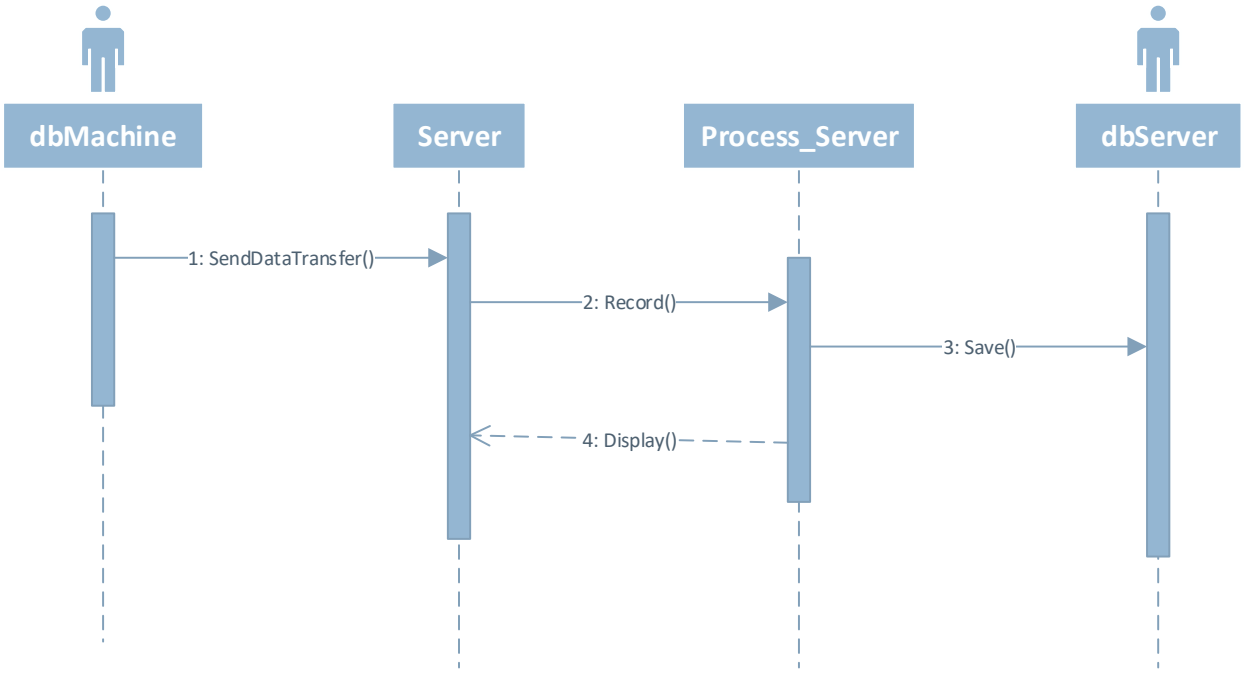

Figure 14 Sequence Diagram Saving Data Transferred

f. Login

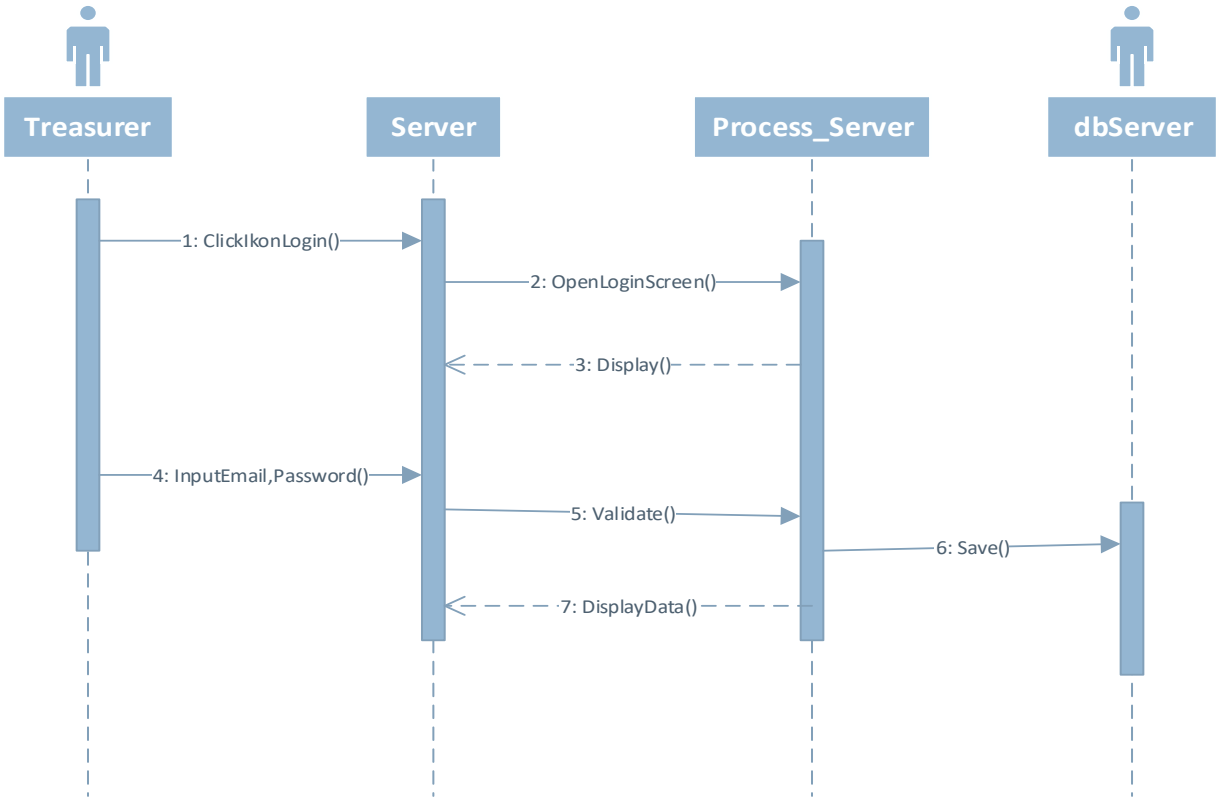

Figure 15 Sequence Diagram Login

g. Observe Received Data

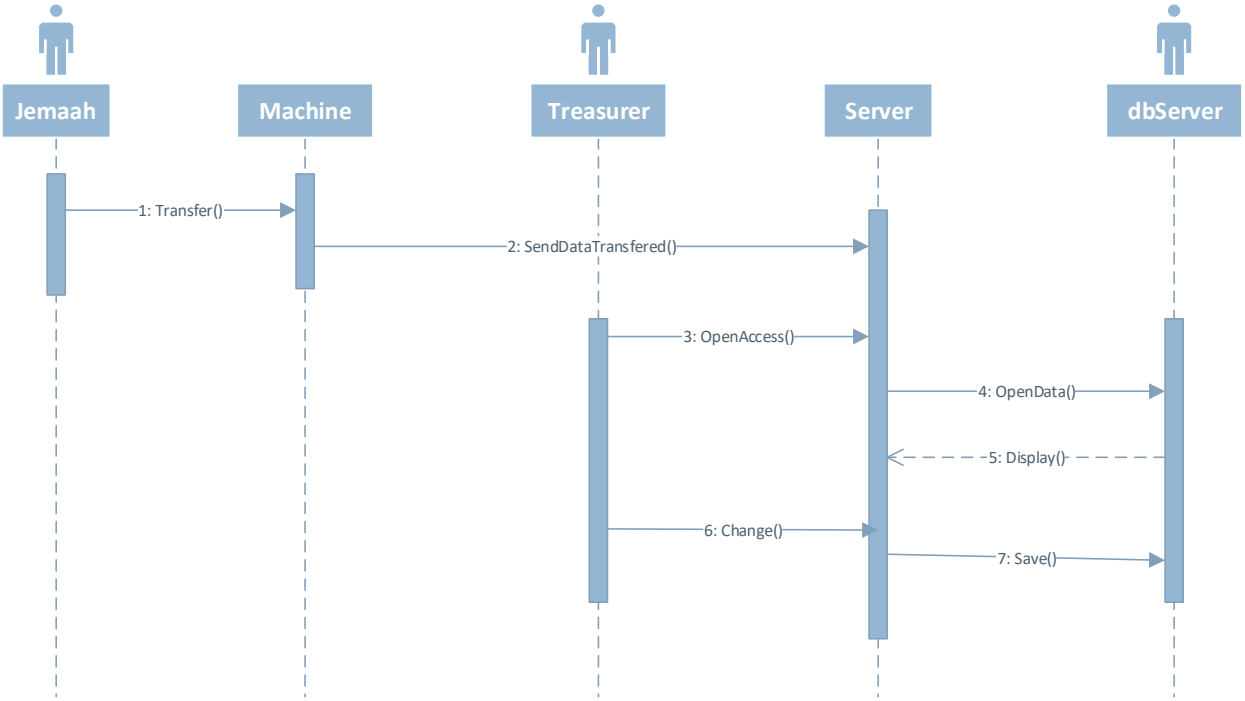

Figure 16 Sequence Diagram Observe Received Data

h. Download Document

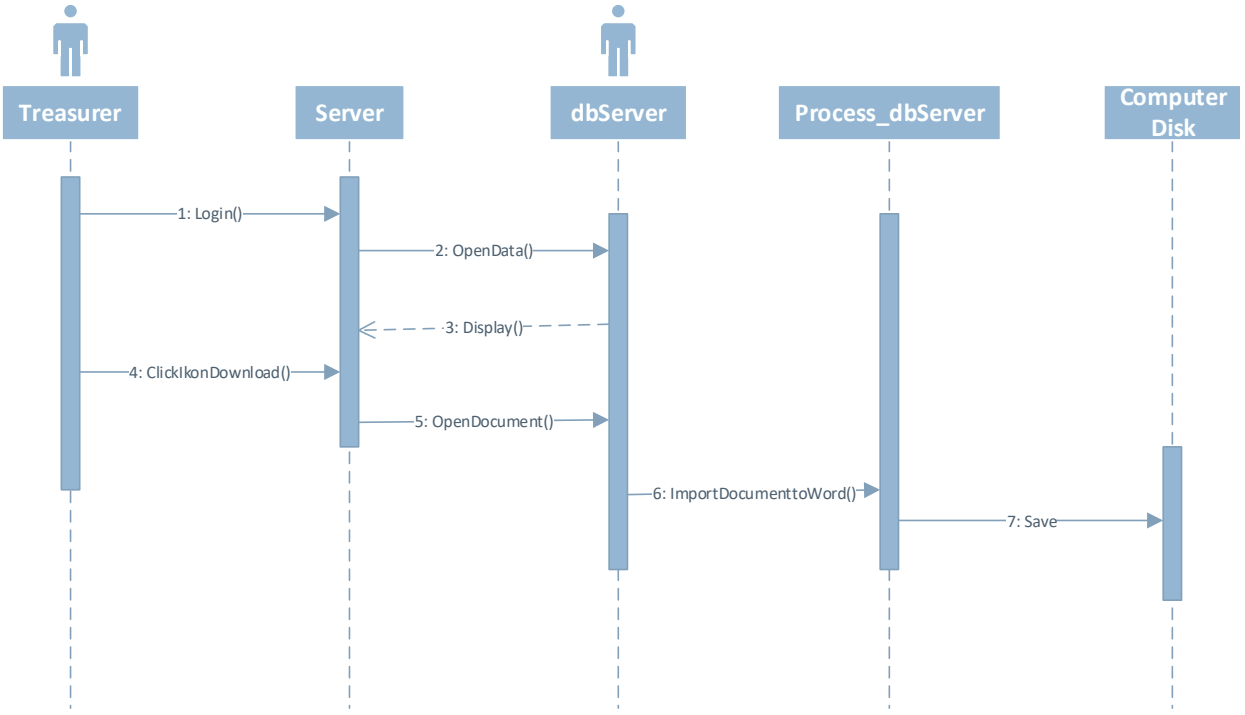

Figure 17 Sequence Diagram Download Document

13. Display Structure
    a. Display Menu in Machine

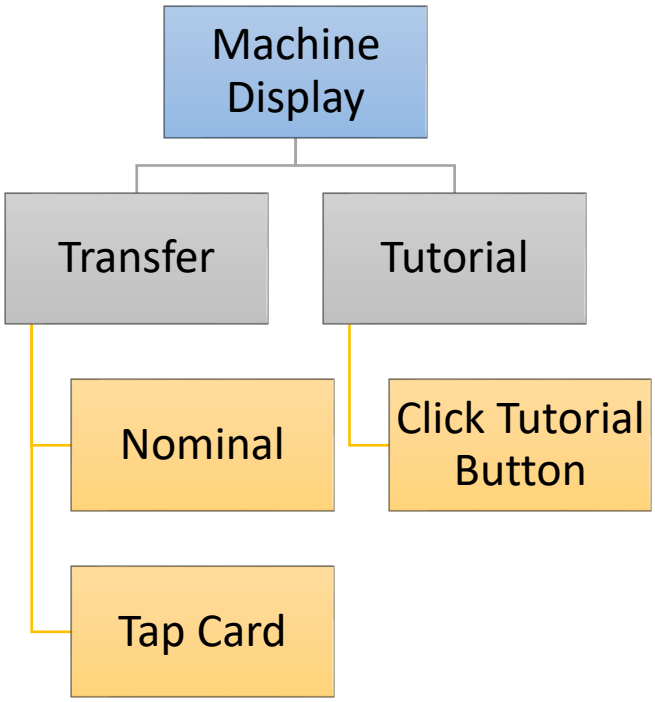

Figure 18 Display Menu Machine

b. Display Menu on The Server

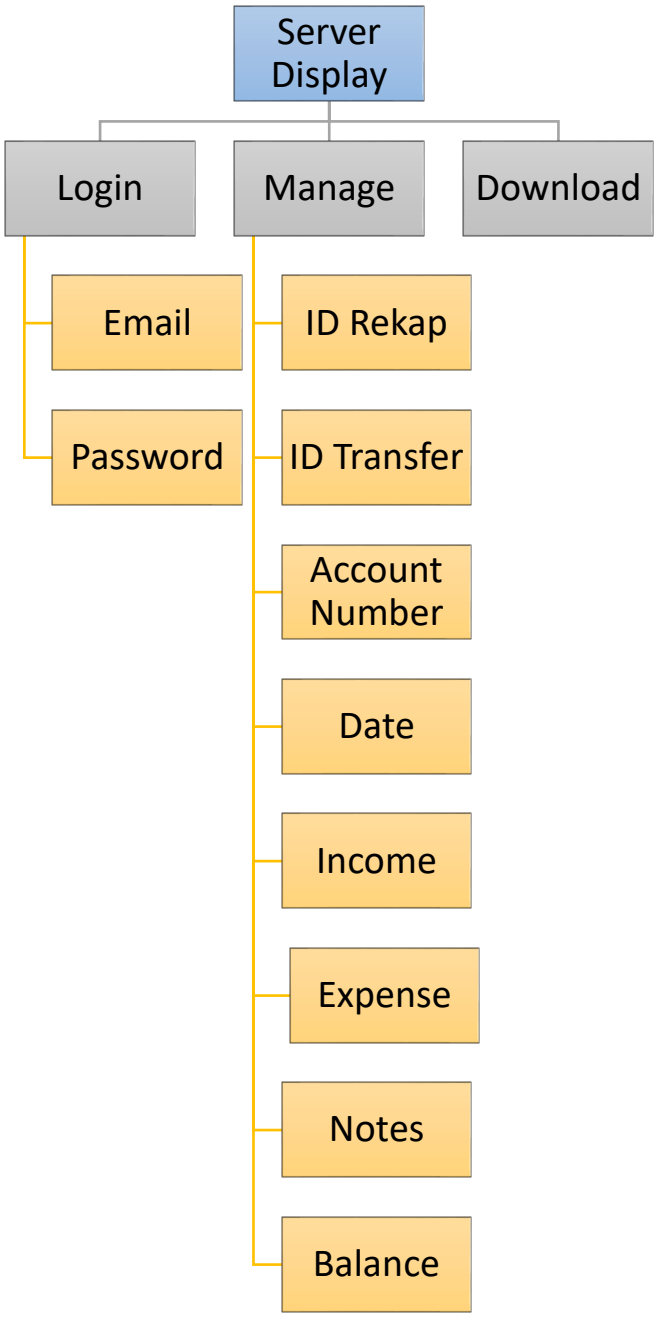

Figure 19 Display Menu Server

14. Design Form
    a. Form Treasurer

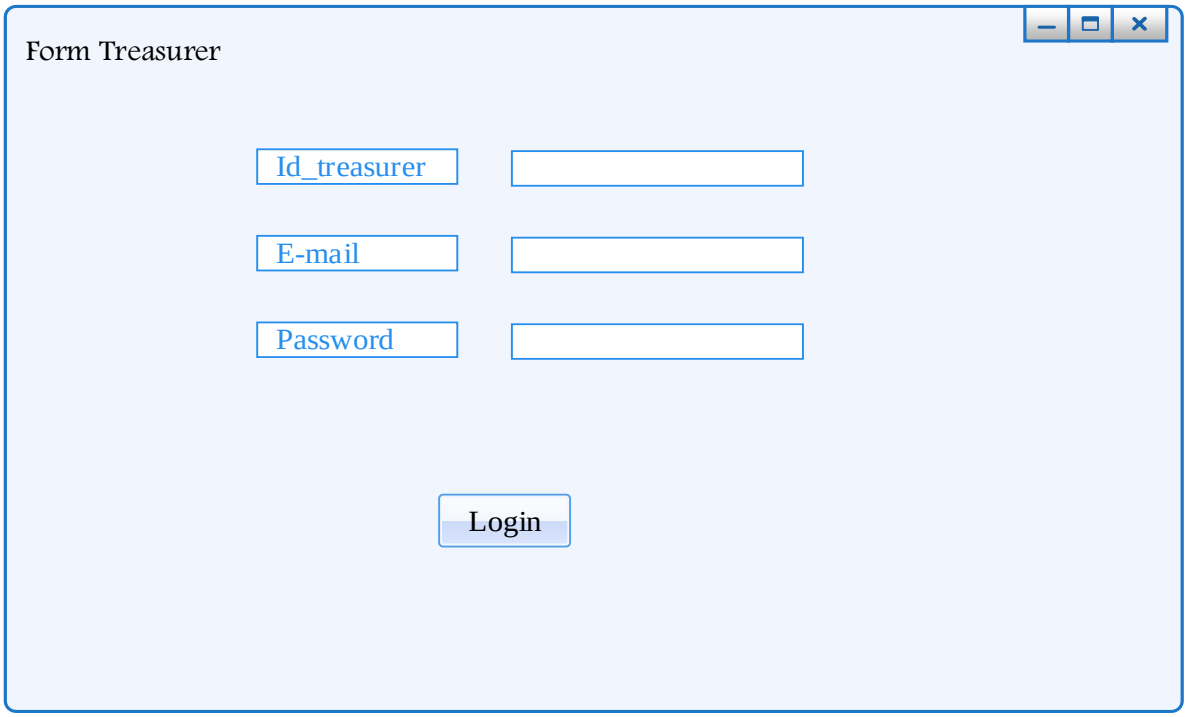

Figure 20 Form Treasurer

The function of this form:

1) Open the access to the server

b. Form Transfer

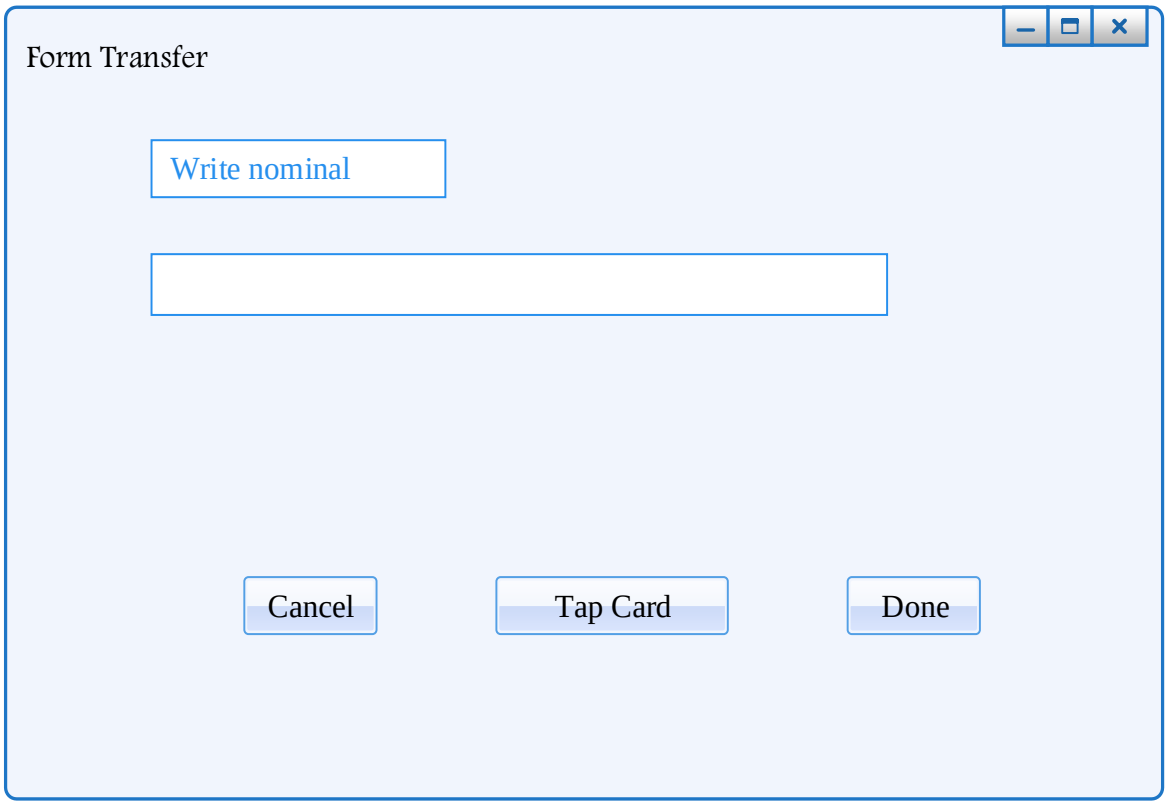

Figure 21Form Transfer

Form function:

1) Record the transaction data
2) Open the access to the transaction by clicking the “Tap Card”
3) Cancel the transaction

c. Form Rekap

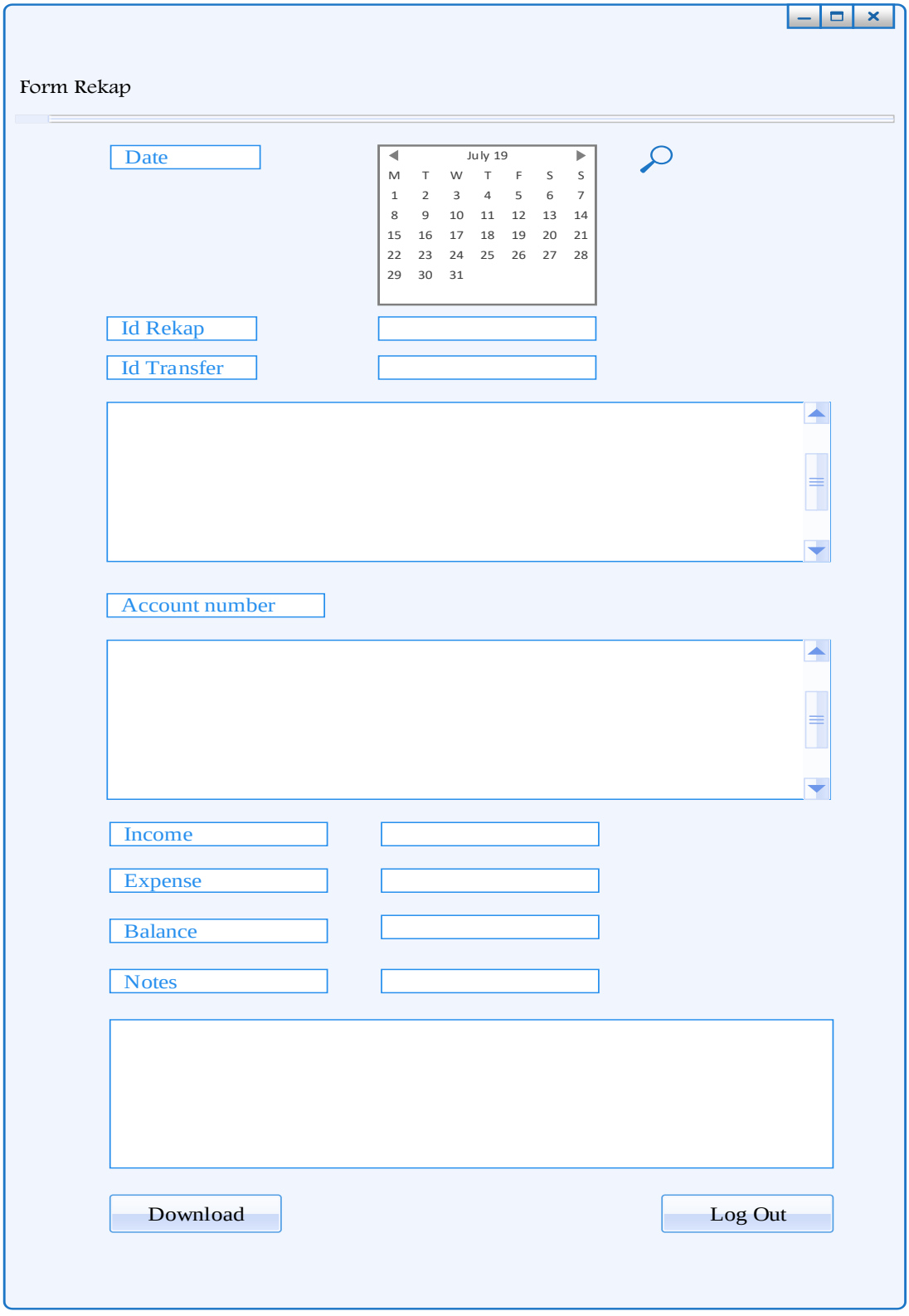

Figure 22 Form Rekap

Form function:

1) Browse the transaction in a particular time

2) Observing the data transaction

3) Download the file transaction

15. Conclusion

Online Charity Box is designed to help the treasurer of the mosque manage and calculate the money income and money expense. By using online tools, the data will be kept within a longer time with high security. This method also simply because we just do clicking activity by the given button. The treasurer no need to calculate and write the data by hand. The machine can do it easily. There is no error calculation; moreover, it will guarantee us with its credibility. While the machine does the task, the money counted will be the same as the Jemaah's has given. It will minimize the bad thoughts if the treasurer maybe takes the money from alms to himself for his own business. Therefore, Jemaah will trust the treasurer. This also considers based on the era. People tend to bring cards than cash. It is more practice and effective. By knowing the reality, it can be concluded if we have to facilitate the need of the people in an easier way, which is by using the card. Just focus on how people can do alms by using a card. Those are the purpose of why we decide to propose this innovation.

By doing a survey, about 7 out of 10 correspondents said if this innovation would succeed when we are good in introducing the product and other attracted advertisements. Then, 2 out of 10 correspondents said if this project can succeed in value of 50:50, depends on the pro and contra. The last correspondent rejects this innovation because of the usage of credit card that he thought it was 'riba'. Looking from the result of the survey, online charity box is possible to be run and it will succeed when this innovation doing their best performance. From advertising, Security System, and another innovation are expected inside this innovation. However, this innovation does not acquire online paying system by cellular phone. It just helps you to tap the card and to help the treasurer in managing data.

From this proposal, we hope that it can ease the transaction of giving alms. In making this paper, we hope that all people can easily use the online charity box. Empower the people to worship wherever and whenever they are. This project still needs development; however,

the developing process will be conducted as time goes by when the product needs an upgrade. Last words, hopefully, this online charity box will satisfy your need and contact us if you have another idea to improve this innovation.

16. Attachment

- INTERVIEW RESULT

✓ Question:

- What is the first thing that comes to your mind if you heard word of "Charity Box"?
- Ever you stuck in situation when you want to give alms but you don't have any coins or you just have a big money? If you had ever experience it, tell the place? What is your next action during experience it?
- Have you ever think about giving alms by tapping your card (can be credit card, ATM card, etc.)?
- What is the success rate of this new innovation by your evaluation?
- If more than 50% of you said it would be successes, what is your hope about this innovation?

✓ Answer:

1. Siti Zulaikha

- It is placed in mosque. The appearance of charity box is not the problem. However, the setting of the charity box is the problem because it can be seen by people when we want to give money into the charity box.
- I experienced it in Al-Munawar (Mosque)
- I have never thinking so far but it can be a new innovation that will be succeed.
- It can be succeeding and the success rate is 80%

- My hope that this innovation will be available and accessible everywhere. Because of the new innovation, the marketing team should be work harder. If can, you can add some features like zakat or wakaf online.

2. Irine Shafana Jasmine

- Mosque. It is because I always meet charity box in mosque.
- Yes, I experienced it. If I still have money to go home, I will let my money fall into charity box. If it is not, the money will be used as my cost to go home.
- I never get an idea about the machine. However, I join an online community that related with charity box.
- The rate of success of this innovation is 80%. Moreover, Regional government DKI Jakarta also support non-cash program even though it still in the form of planning. The reason is because it will be efficient and more effective.
- I suggest to use barcode or link. It will be easier and efficient. Machine needs money and it still complicated to use it; moreover, if we do not understand the steps of the system.

3. Imam Maghfir Ramadhan

- Reward (pahala).
- I experienced it. Because I had no other money, I used it for my business.
- I have never thinking about that innovation.
- The rate of success is relatively small; moreover, there is a minimum regulation to transfer from bank. If I can give the value, it will be only 50%.

- My hope if this innovation is realized is it will be setting in the place that can be seen and accessible for people. Upgrading system also need to the next time.

4. Maya Primeradama Yanti

- Mosque. There are two kinds of charity box. The one that placed in front of the mosque and the one that move slide along the people inside the mosque.
- I often forget about bring coins to the charity box. It is something that simple but Important for me.
- I just know the features that use an online system to give charity. However, for the machine itself, I never be thinking about that.
- I ensure that this innovation will be succeeded and I will predict about 80% for the rate of success of your new innovation. It is because it will be easier for people to give charity. They do not have to look for coins and it will be better if this machine is placed in strategic places, not just in mosque.
- I hope that the machine is accessible, easy to use, and eye-catching. It doesn't have to be big box, just a small thing that can be placed on the table.

5. Natasya Alief Zhafira

- Charity box is placed in mosque, related with orphans, and awareness to each other.
- I ever experience it once, twice, etc.
- It is stranger word to me. I just think what we have now, a conventional charity box.

- I think it will be achieving a great response while the people will respond it. Just do it more in security system because there are many problems about machine hacking in real life.
- The machine can be designed as simple and attractive. You also can insert tutorial to teach the one that have not understood the steps of running this innovation.

6. Bagus Aditya Kurniawan

- Charity box is not only having a square as its shape, but still any others and many benefit. That is why charity box is very important in the daily life.
- Sometimes, when I want to infaq, the amount of my money is too big and I am too shy to take the return.
- I have ever, I will be very happy if it will be realized.
- 50:50 because there will be many pro and contra.
- I can type the amount of money as what I want and the security of this machine is proven.

7. Nurrizal Al-Qindi

- Charity box is like the connector of economy and the helper of people in need.
- Often, especially when Salat Jumat.
- I never thought using credit card to do an infaq. The reason is because in Islam credit card is prohibited.
- If the target of this project is people who know that credit card is prohibited in Islam, this project will never succeed.

- The new innovation that can be developed is creating a charity box that can be moved by itself, not produce a noise, and has a high technology in the security system.

8. Syahreza Agung Al-fatih

- Charity box is a medium to collect a fund for religion or social purpose.
- Often.
- No.
- It depends on the socialization of introducing the product. It will be better if there is a specific instance that can manage this charity box.
- We can write the nominal of the money as we want.

9. Bari Iffat Jusuf Habibie Junior

- Charity box is a distributor of human intension to give alms.
- I have ever.
- Never, because I am afraid that other people will know when I give alms.
- No answer.
- It private, so that other people will not know. Then, it has a high security system. The transaction process can be set as quick as possible.

10. Taufiqurrahman

- Charity box is a medium for collecting a fund, which used for beneficial purpose in social religion field.
- I have ever, usually when Salat Jumat and in the street when I saw people in need.
- Not yet, because I never use a debit or credit card.
- It depends on the advertisement and product socialization.

- There is information of the money using. It has a high technology of security system. Then, it placed in public area.

- Real Treasurer Data

	A	B	C	D	E	F	G	H
1	Data Uang Kotak Amal Hari Jumat							
2								
3	No	Tanggal	Pemasukan		Pengeluaran		Jumlah Total	Jumlah Sisa
4			Keterangan	Jumlah	Keterangan	Jumlah		
5	1	28/10/2017	Pemindahan Data	Rp 726,500			Rp 726,500	Rp 226,500
6	2	28/10/2017	Kotak Amal	Rp 624,500			Rp 1,351,000	Rp 851,000
7	3	30/10/2017			Penitipan Uang ke Si	Rp 700,000	Rp 1,351,000	Rp 151,000
8	4	08/11/2017	Kotak Amal	Rp 632,000			Rp 1,983,000	Rp 783,000
9	5	11/11/2017	Kotak Amal	Rp 872,000			Rp 2,855,000	Rp 1,655,000
10	6	11/11/2017			Penitipan Uang ke Si	Rp 1,500,000	Rp 2,855,000	Rp 155,000
11	7	11/11/2017	Kotak Amal	Rp 7,000			Rp 2,862,000	Rp 162,000
12	8	23/11/2017	Kotak Amal	Rp 696,000			Rp 3,558,000	Rp 858,000
13	9	23/11/2017			Donasi ke Panti Asuh	Rp 1,200,000	Rp 2,358,000	Rp 358,000
14	10	23/11/2017	Sisa Donasi	Rp 8,000			Rp 2,366,000	Rp 366,000
15	11	03/12/2017	Kotak Amal tgl 24-11	Rp 500,000			Rp 2,866,000	Rp 866,000
16	12	03/12/2017			Penitipan Uang ke Si	Rp 500,000	Rp 2,866,000	Rp 366,000
17	13	08/12/2017	Kotak Amal tgl 01-12	Rp 495,000			Rp 3,361,000	Rp 861,000
18	14	08/12/2017	Kotak Amal tgl 05-12	Rp 1,243,000			Rp 4,604,000	Rp 2,104,000
19	15	08/12/2017			Donasi Kak Alif	Rp 1,500,000	Rp 3,104,000	Rp 604,000
20	16	12/12/2017	Kotak Amal	Rp 127,400			Rp 3,231,400	Rp 731,400
21								

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