

Designing Bank Guarantee Website Tracking Model using UML

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Abstract. Bank Guarantee (BG) is a form of credit facility that is given by the bank. The function of BG itself is to prevent default or inability of the guaranteed party to fulfil their responsibility. BG must be well-kept to then be returned back to the guaranteed party after the period of validity ends, or to be claimed when the guaranteed party did default. In PT. XYZ - Eastern Java Distribution Unit, BG are kept based on the order in the list of BGs that is made using MS Excel. After the interview, some disadvantages in the existing system is found. These disadvantages are that the list cannot be accessed using other device, the data must have backup which must be done periodically to prevent the loss of data due to errors and the data can easily be modified by anyone that uses the computer that stores the data. A SWOT Analysis was done to find out a strategy to improve the storage and tracking system involving the BG. It is then known that tracking system using website can be made to be a form of solution for these disadvantages. This simple tracking website then designed using Unified Modelling Language. Based on the SWOT analysis and UML, user interface mock up can be made.

Keywords: SWOT analysis, unified modelling language, system development, user interface

1. Introduction

Based on the law of Republic of Indonesia (UU RI) no. 10 year 1998 article 1 clause 2, bank is a business institution that receives funding from the society in the form of deposits and channels it to the society in the form of credit and other forms. One of the credit facilities given by the bank is the Bank Guarantee [1]. The purpose of Bank Guarantee is to ensure the transaction between the parties outside the bank from the possible risks that may emerge. One of the unwanted risks is default, which means the inability to finish a job or not fulfilling the obligation as of how it must be done. When the guaranteed party did this default, thus the receiver of the Bank Guarantee may be able to claim the amount of money written in the Bank Guarantee by giving Certificate of Default along with the real Bank Guarantee to the bank.

The Bank Guarantee has its due date in which it is valid. After its validity date has ended, the Bank Guarantee must be given back to the guaranteed party to extend its validity (if the contract needs to continue) or to claim back the money (if the contract is done). The authenticity of the Bank Guarantee is first verified to the bank to prevent forged Bank Guarantee that cannot be claimed. After the verification process, Bank Guarantee is then kept. But there is no automatic system to trace the Bank Guarantees. Thus, there is a need to check one by one. The current system used is through the use of Microsoft Excel. The example of Microsoft Excel that used in the office can be seen in Figure 1.

No.	Nomor Nota Dinas	Tanggal Nota Dinas	Tanggal Penyerahan	Bank yang Menghbitkan	Yang Dijamin	Nilai	Adas Berlaku Awal	Berakhir	Keterangan	Konfirmasi
4	Tidak ada nota dinas		27/12/11	Bank Jatim	Sementara Tiga PT	Rp. 242.778.451	13/12/11	27/12/11	Asih	Tidak ada
5			27/12/11	Bank Jatim	Sementara Tiga PT	Rp. 196.710.714	13/12/11	27/12/11	Asih	Tidak ada
6			27/12/11	Bank Jatim	Sementara Tiga PT	Rp. 215.706.134	13/12/11	27/12/11	Asih	Tidak ada
7			27/12/11	Bank Jatim	Sementara Tiga PT	Rp. 149.554.402	13/12/11	27/12/11	Asih	Tidak ada
8			27/12/11	Bank Jatim	Sementara Tiga PT	Rp. 200.129.666	13/12/11	27/12/11	Asih	Tidak ada
9			27/12/11	Bank Jatim	Sementara Tiga PT	Rp. 162.540.509	13/12/11	27/12/11	Asih	Tidak ada
10			27/12/11	Bank Jatim	Sementara Tiga PT	Rp. 194.874.526	13/12/11	27/12/11	Asih	Tidak ada
11			27/12/11	Bank Jatim	Sementara Tiga PT	Rp. 134.800.096	13/12/11	27/12/11	Asih	Tidak ada
12			27/12/11	Bank Jatim	Sementara Tiga PT	Rp. 235.527.174	13/12/11	27/12/11	Asih	Tidak ada
13			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 44.600.880	01/12/11	14/02/14	Asih	Tidak ada
14			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 60.681.720	01/12/11	14/02/14	Asih	Tidak ada
15			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 201.396.360	01/12/11	14/02/14	Asih	Tidak ada
16			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 45.918.888	01/12/11	14/02/14	Asih	Tidak ada
17			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 44.699.038	01/12/11	14/02/14	Asih	Tidak ada
18			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 65.918.888	01/12/11	14/02/14	Asih	Tidak ada
19			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 41.474.756	01/12/11	14/02/14	Asih	Tidak ada
20			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 36.311.664	01/12/11	14/02/14	Asih	Tidak ada
21			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 36.311.664	01/12/11	14/02/14	Asih	Tidak ada
22			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 40.455.096	01/12/11	14/02/14	Asih	Tidak ada
23			30/11/11	Bank Bukopin	PT. Anugerah Cipta Semesta	Rp. 27.223.500	01/12/11	14/02/14	Asih	Tidak ada
24			30/11/11	Bank Bukopin	PT. Kharisma Citra Perkasa Abadi	Rp. 70.162.820	01/12/11	14/02/14	Asih	Tidak ada
25			30/11/11	Bank Bukopin	PT. Kharisma Citra Perkasa Abadi	Rp. 48.842.960	01/12/11	14/02/14	Asih	Tidak ada
26			30/11/11	Bank Bukopin	PT. Kharisma Citra Perkasa Abadi	Rp. 44.699.038	01/12/11	14/02/14	Asih	Tidak ada
27			30/11/11	Bank Bukopin	PT. Kharisma Citra Perkasa Abadi	Rp. 82.894.616	01/12/11	14/02/14	Asih	Tidak ada
28			30/11/11	Bank Bukopin	PT. Kharisma Citra Perkasa Abadi	Rp. 53.186.892	01/12/11	14/02/14	Asih	Tidak ada
29			30/11/11	Bank Bukopin	PT. Kharisma Citra Perkasa Abadi	Rp. 17.430.834	01/12/11	14/02/14	Asih	Tidak ada

Figure 1. The Bank Guarantee List in office application (source: field data)

Bank Guarantee is a valuable certificate. Thus, the mistake in the safekeeping of it will cause loss of huge amount of money for both PT. XYZ Eastern Java Distribution Unit, the guaranteed party (in this case is usually vendor). The tracking using Microsoft Excel has few disadvantages like the data must be backed-up periodically to prevent data loss when the computer is error, the inability to access it real-time using other device, and the safety of the data is hard to guarantee. The Bank Guarantee certificates are kept in file folder binder called Ordner. Each Ordner contains Bank Guarantee was given number based on order of data in the Microsoft Excel. These Ordner and order number is what needs to be tracked using a better system.

Although there is a website for these Bank Guarantee, but the website itself does not facilitate the tracking of the Bank Guarantee certificates. Moreover, there is no information when the Bank Guarantee was taken back by the guaranteed party (vendor). That information was recorded in the Microsoft Excel that has been made. Therefore, there is a need to further develop the website to facilitate the tracking of Bank Guarantee. Therefore, the purpose of this research are as follows: Analysing the current system then designing the proposed system model to track Bank Guarantee and also, making display mock-up of the proposed tracking system for Bank Guarantee.

2. Methods

The research conducted within 3 simple steps as describes in Figure 2 below.

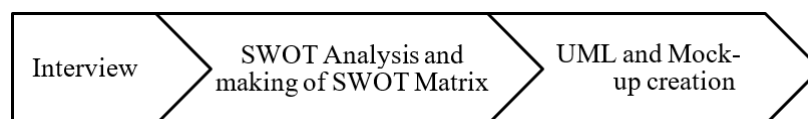


Figure 2. Research Steps

The first step is interview. Interview is done to find out the problem that needs to be solved with the use of the website. Aside from that, interview is also done to find out the functions that are needed in the website. The result of the website will be poured in the form of SWOT matrix in the second step so that the current situation can be depicted easily.

2.1. Interview

Interviews are more powerful tools in eliciting narrative data that allows researchers to investigate people's views in greater depth [2][3]. In a similar vein, [4] add that interviewing is “a valuable method for exploring the construction and negotiation of meanings in a natural setting”.

2.2. SWOT Analysis and SWOT Matrix

SWOT is a thorough evaluation regarding the strength, weakness, opportunity, and threat of a company that is used to observe the internal and external marketing environment [5]. SWOT analysis is used to picture the situation and strategy of the company in general through four point of view, which are: strength, weakness, opportunities, and threat [6].

Factors in the company can be arranged in the SWOT matrix so that the external opportunities and threats can be illustrated and adjusted with the strength and weakness [7]. SWOT matrix form can be seen in Table 1. The factors are generally divided into two, which are internal and external factors.

1. Internal Factors (strength and weakness) factors in the company. Can be in the form of resources (human resources or other physical resources) financial, and activity and process.
2. External Factors (opportunities and threat): factors outside the company. Can be in the form of trend, economy, funding, demography, physical environment, and legislation.

Table 1. SWOT Matrix format

Internal	Strength	Weakness
External		
Opportunity	SO Strategy: Use strength to make benefit of opportunities	WO Strategy: Take care of weakness by making use of opportunities
Threat	ST Strategy: use strength to anticipate threat.	WT Strategy: Minimize weakness to anticipate threats.

2.3. UML and Mock-up creation

The third step is the making of UML (Unified Model Language). UML is a universal language that is used to illustrate in detail a certain system in the form of model [8]. The purpose to model using UML is to understand how the system behaves [9]. From this model, the system can be made.

UML has few types of diagram. Use case and activity diagram are the diagrams used. Use case diagram is used to illustrate process in a system, how the actor (user) uses the system, and what are the activities that can be done in the system [10]. User in the use case diagram can initiate the system activity [11].

Activity diagram can be used to illustrate the flow of business process activity and the usage systematically [11]. After the creation of those two diagrams, mock-up design is made. Mock-up is an initial web design that is made with image editor software or software that specializes in the making of mock-up. The purpose in the making of mock-up is to model the prototype thoroughly, especially for the user interface.

3. Result and Discussion

3.1. SWOT Result

The result of interview process and SWOT Analysis, the component of strength, weakness, opportunities, and threats in PT. XYZ Eastern Java Distribution Unit regarding the Bank Guarantee was obtained. The overall result is shown in Table 2.

The strength components are:

1. There are human resources in the IT division that can help in the system development
2. PT. XYZ Eastern Java Distribution Unit accepts ideas that can be developed. Thus, funding can be taken care of relatively easier

There are also some weaknesses in PT. XYZ Eastern Java Distribution Unit regarding the Bank Guarantee as follows:

1. Data regarding the Bank Guarantee cannot be accessed real-time using other devices

2. Data needs to be backed-up to prevent data loss when there is problem with the device that stores the data
3. Data can be accessed by anyone that uses the device that stores the data.
4. Searching for Bank Guarantee is done by Ordner that is made per sheet in Microsoft Excel. Which must be searched one by one.

There are few opportunities that can be taken advantage of, such as:

1. The development of technology makes it possible to create a website that accommodates the tracking feature for Bank Guarantee.
2. They already available website can add its feature to fulfil the tracking feature.

There are few threats that must be anticipated, such as:

1. If the Bank Guarantee is missing, it cannot be reprinted thus the company cannot claim the amount of money in the Bank Guarantee if vendor did default, and the company cannot give the Bank Guarantee back to the vendor if the job have already been done or the Bank guarantee is no longer within the valid date.

Table 2. SWOT Result

		Strength	Weakness
Internal		<ol style="list-style-type: none"> 1. There are human resources in IT 2. New ideas are welcomed 	<ol style="list-style-type: none"> 1. Data regarding Bank Guarantee cannot be accessed real-time using another device 2. Data must always be backed- up to prevent data loss when the device keeping it has a problem. 3. Data can be accessed by anybody that uses the device that stores the data. 4. System to search and track the Bank Guarantee must still be done one by one.
External			
		Opportunity	Threat
		<ol style="list-style-type: none"> 1. Technological development 2. Further development can be applied to the website that have already been developed and available 	<ol style="list-style-type: none"> 1. Human resources in the IT division can be used to develop a new system by proposing the idea regarding the new system. 2. The available website regarding the Bank Guarantee can be further developed with the help of human resources from the IT division.
			<ol style="list-style-type: none"> 1. Tracking system can make use of the technology to make a website thus the Bank guarantee can be searched through this website easily. 2. Tracking system can be further developed in the website that is already available.
		<ol style="list-style-type: none"> 1. Losing Bank Guarantee can cause loss for both vendor and the company itself 	<p>To prevent the loss of Bank Guarantee, the IT division can help develop the new system so that the Bank Guarantee can easily be traced from the coming in of the verified Bank Guarantee until it is taken back by the vendor.</p> <p>The tracking system that has already been applied can be further developed to minimize the probability of the loss of data and loss of the Bank Guarantee itself.</p>

From the SWOT matrix above, it can be concluded that the proposal to solve the problem regarding the Bank Guarantee can be done with the development of website that is used for tracking. The features of this website can further be applied in the already available website.

3.2. Recommendation for UML and Mockup design for simple Bank Guarantee tracking website system

Use case planning that is made in the form of diagram is as shown in Figure 3.

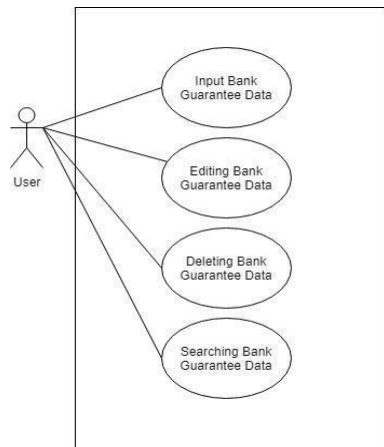


Figure 3. Use case diagram

Based on the need, there are four Use Case that is wanted in the website, which are functions to input data of the Bank Guarantee, to edit the inputted data, delete data, and view the data. These four functions are then explained in detail through activity diagram. The first activity diagram is for the login activity. The process steps for these four functions are then explained in detail using the activity diagram. The first activity is the login. The activity diagram for the login can be seen in Figure 4.

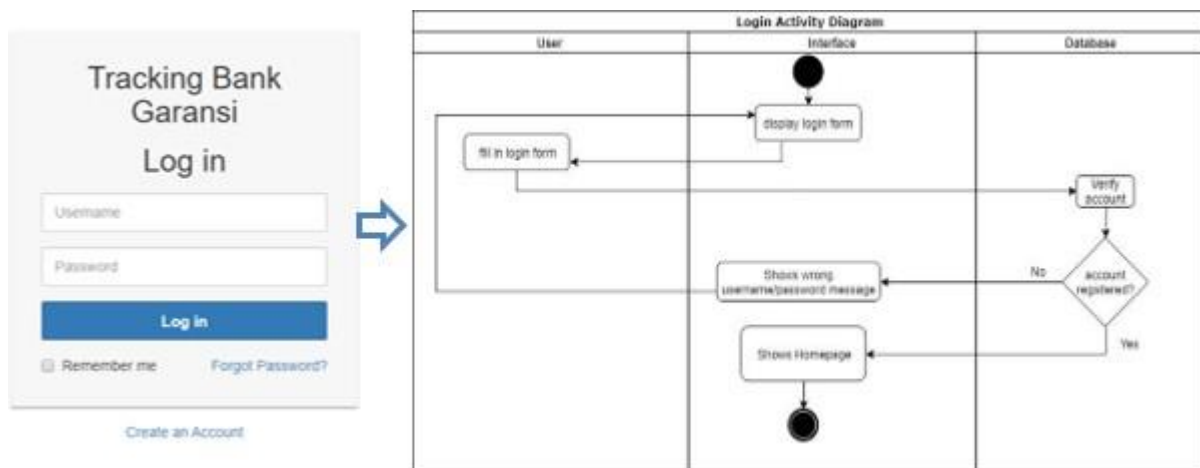


Figure 4. Login Activity Diagram and Login Page

The login activity starts with the display of login form. The form consists of username and password. The user can fill in the form. Afterwards, the username and password will be confirmed to make sure that the account is registered and is able to access the website. If not, then the website will show that the username/password is wrong and the user will be led back to the login form.

After logging in, the website will show the homepage. In the homepage, there is a table showing the list of Bank Guarantee. On top of the table, there are buttons of add data, and on top of it is the search data form. In addition to that, there is a button to delete data and edit data at the side of every data in the table. The display of the homepage can be seen in Figure 5. Next, the activity diagram for inputting data can be seen in Figure 6.

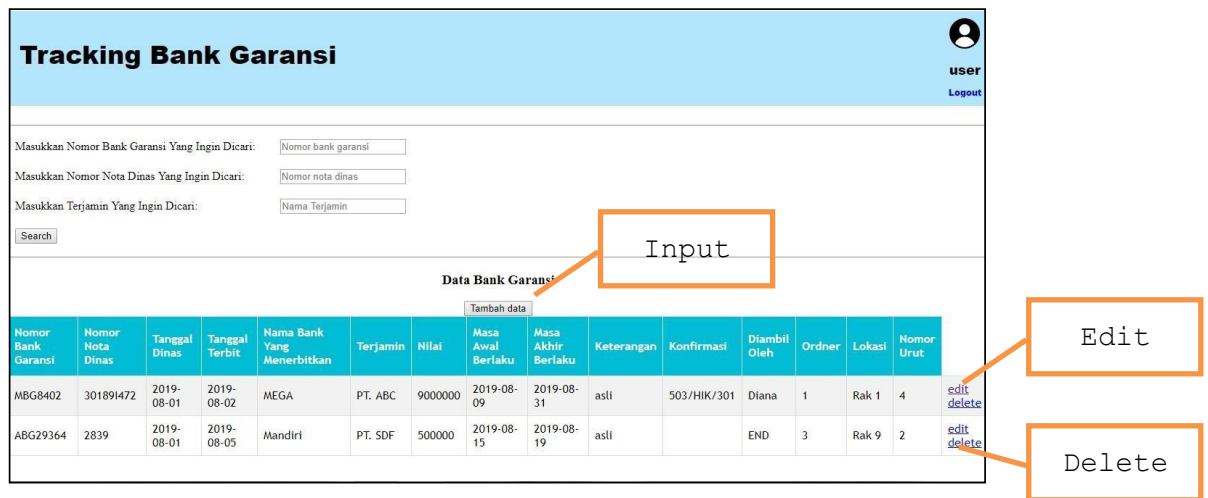


Figure 5. Homepage

The activity diagram in the input data process starts with the homepage display. When the user clicks the button add data on top of the table of Bank Guarantee list. Then, a form to input data will be shown. After filling up the information regarding the new Bank Guarantee, the user can click add data, and the data will directly be inputted in the database and the display will go back to the homepage.

Next, the activity diagram for editing data can be seen in Figure 7.

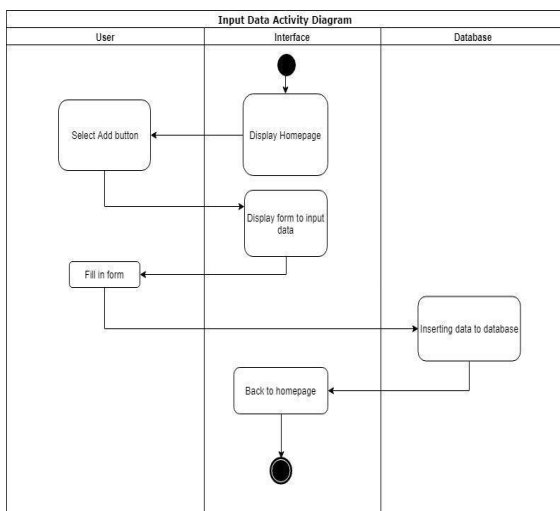


Figure 6. Activity diagram for inputting data

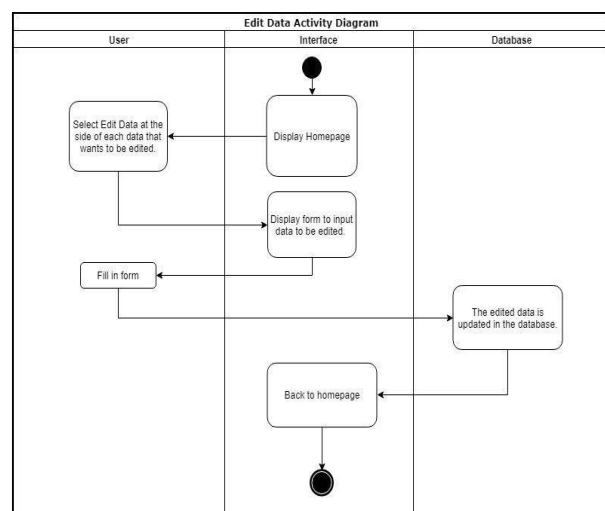


Figure 7. Activity diagram for editing data

Activity starts with the display of homepage. Next, the user can click the edit button at the side of every data list of the Bank Guarantee in the table. The form to change the information regarding the data will be shown. The user does not need to change the whole data, the previous data is automatically inputted in the form. The user just needs to change the ones they need to change and click the edit data button again. Then, the changes will automatically be saved in the database. Afterwards, the user will be directed back to the homepage.

The activity diagram for deleting data can be seen in Figure 8.

Activity for deleting data starts with the homepage display. Then the user can click on the delete button at the side of every data in the Bank Guarantee list table. Then, the data will be deleted in the database and the display will be directed back to the homepage.

The last, the activity diagram to search data is as shown in Figure 9.

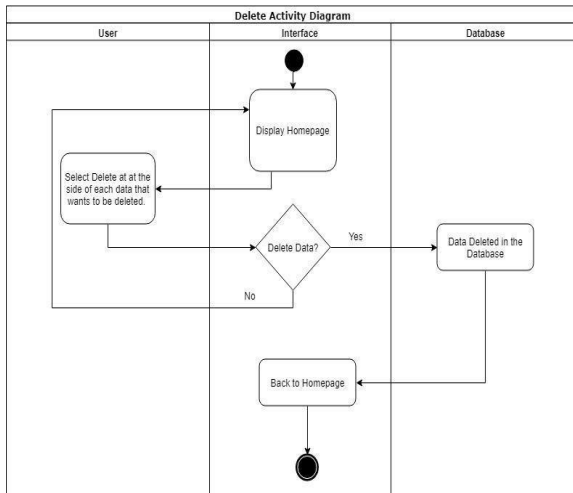


Figure 8. Activity diagram for deleting data

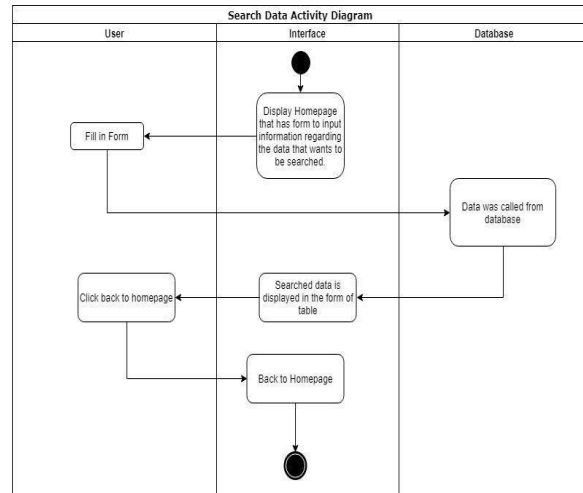


Figure 9. Activity diagram for searching data

The activity starts with the display of homepage. Then the user can fill in the search form at the top of the homepage. The fields for the form are Bank Guarantee number, the number of official memos, and the name of guaranteed party. The display of the form is as shown in Figure 10. After filling the form, the user can click search. The data will be called on from the database and displayed in the form of table. When the user is done, they can click on the homepage button to return to the homepage.

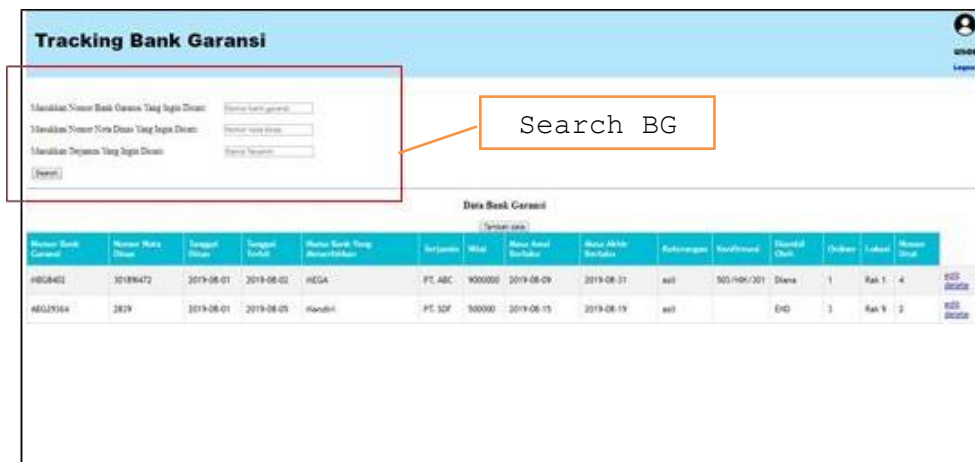


Figure 10. Page for searching data

4. Conclusion

From the research and the mock-up design, we conclude that, there is a need to make a web-based tracking system to ease the tracking of Bank Guarantee. The purpose of doing this is to prevent the difficulty on knowing the location in which the Bank Guarantee is kept. The loss and misplacement of Bank Guarantee can cause loss for both the guaranteed party and PT. XYZ Eastern Java Distribution Unit. Design for the website-based Bank Guarantee tracking system is then made in the form of UML before then the mock-up is made to depict the prototype. This system, in the future is hoped to be applied

in the website of PT. XYZ Eastern Java Distribution Unit that is currently only used for the verification of Bank Guarantee.

5. References

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