Design of the Bank Customer Queue Application Based on the Switch and Sound Visualization

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Abstract

Activities or community needs the same individuals, especially in the public interest would lead to an activity that requires a service. Limitations of service will cause the queue. This sort of thing (queue), often found at the center of public interest, such as the line at the bank, bill payments (electricity, telephone, water), and so forth. Services at the bank, for example, customers who would require the service is to be in line to wait his turn to receive services. However, it must gain an awareness of costumer that public services should be optimal and primed with an adequate level of discipline from the culprit himself and cooperation among them. In order for such activities as expected, it is necessary to raise awareness in the culture culprit line up with the queue system, namely in the form of electronic line computer-based program. The device is designed in the form of software which is controlled by the switch, the line number is displayed on the monitor screen, and dialing by voice from the speaker. In this research, the Visual Basic 6.0 as an application developer, Ms. Access as DBMS, and Cool Edit Pro version 2.0 as a recorder and sound manipulator. Thus, this application can help a bank officer to call a customer in the queue to get the service, so that more optimal service to customers, excellent and efficient.

Keywords: Queue Systems, Bank, Customer, Visual Basic 6.0, Ms. Access.

1. Introduction

In daily life, there are still many activities or work procedures that are still done manually by the workers. Activities or needs of the same community among individuals, especially in the public interest will certainly lead to an activity that requires service. Limitations that provide services will certainly cause a queue [1]. A queue often found in public interest centers, such as lines at banks, hospitals and clinics, bill payments (electricity, phone, water), and etc. In the bank servants, customers who will make deposits and cash withdrawal or customer service will queue to wait their turn in obtaining services [2-4]. However, it must obtain an awareness of customer that the optimal and excellent public services must be with adequate level of discipline of the perpetrators

themselves and cooperation between them. In order for these activities to be as expected, it is necessary to increase the awareness of the perpetrators in the queue culture with the queue system [5-6].

The customer queuing service system encountered in certain banks still uses the usual way, ie the customer's deposit file will be collected and then will be called by the teller based on the first to the last collector [7-10]. This way would be less efficient if the customer needs many services, so there will be mistakes in the sequence of file collection, and the less keen the tellers to concentrate on having to call the names of each customer. Therefore, an application is required in this public service process and for its implementation required the implementation of a system into the form of

computer-based electronic queuing program [11]. The applications have been designed and embedded on a computer. To be able to control it will be given 2 pieces of each switch on the teller and customer service in voice dialing from the speakers. The queue number and banking information for the customer will be displayed on the monitor screen [12].

In daily life, has found many tools used in electronic queue service facilities using a microcontroller as a controller. But if viewed in terms of cost in making these tools require a small fee, the information displayed is limited, which is only a queue number only, and if there is addition of counter queue, then existing tools will be modified [13-14].

Therefore, the authors are interested in to conduct a research on the problem by designing a queue application program by using the switch as a controller and voice visualization in the call of customers by utilizing the facilities already available to the bank, such as a computer set. So that later will be able to assist the smoothness of transaction in a banking service.

In an effort to avoid deliberations that deviate from the purpose of research, then here are some limitations that need, they are:

a. This application will use a set of computers to run the program.
b. Call queue number in sequence from number 1 to 999, for each of 2 teller counters and 2 customer service counters.
c. User interface with computer through DB-25 port by using switch connected to each counters, with details of each of 2 switches for teller and customer service in calling customer first, and also 1 switch for teller and customer service for each Redial.
d. The discipline of the line applied in customer service in this system is First Come - First Served (FCFS) or First In - First Out (FIFO) means, first come (in), first served (out).
e. Prior to the transaction, the customer must collect the pre-supplied and printed queue number (from number 1 to 999) in accordance with the purpose, which is the teller or customer service.
f. Voice visualization to do customer calling is done through output port, that is speaker.
g. A queue number that gets a turn and banking information is displayed on the monitor.
h. This application is built on Windows XP Professional Service Pack 2 operating system, Visual Basic 6.0 as application developer, Microsoft Access as Database

Management System (DBMS), Cool Edit Pro version 2.0 as voice recorder and manipulation, and Adobe Photoshop CS4 as display number editor Queue.

The purpose and intent of this research is to design and implement a bank costumers queue application based on switch and voice visualization program. This research is a design study, which is designing an application of queue system by using switch on / off (controller) and visualized by sound and monitor. Thus, the results of this design are expected to be implemented and beneficial to the company (bank) or counters that provide a service in performing services to customers. This research was conducted at BRI Office Unit of Kec. Koto XI Tarusan, Kab. Pesisir Selatan and research time is planned for 6 (six) months, ie from February to July 2014.

2. Material and Method

The tools and materials used in the design of this queue system application is, as follows:

1) Hardware
   a. A set of computers, with Intel Core i7 processor specifications 2.67GHz and 4096MB RAM memory.
   b. Harddisk with 500GB of storage space.
   c. Soundcard, speakers, and microphone.
   d. On / Off switch and diode.
   e. DB-25 parallel port.
   f. Multimeter.

2) Software
   a. Windows XP Professional Service Pack 2 operating system.
   b. Developer of Microsoft Visual Basic 6.0 application program.
   c. Database Management System (DBMS) Microsoft Access.
   d. Sound recorder and editor Cool Edit Pro version 2.0.
   e. Image manipulation (image editor) Adobe Photoshop CS4.

Context Diagram, Entity Relationship Diagram (ERD) and Input/Output Design

Context diagram is consisting of a process, input and output to the system, which describes the scope of a system in general. In Figure 1 depicted the context diagram of the application system of the queue number. The customer requesting the service will retrieve the queue number provided, ie the queue number greater than the previous queue number.
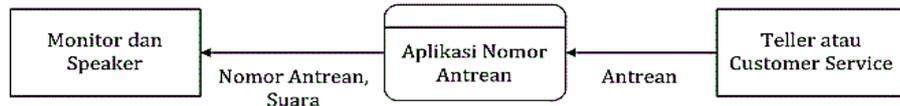
Figure 1. Context Diagram
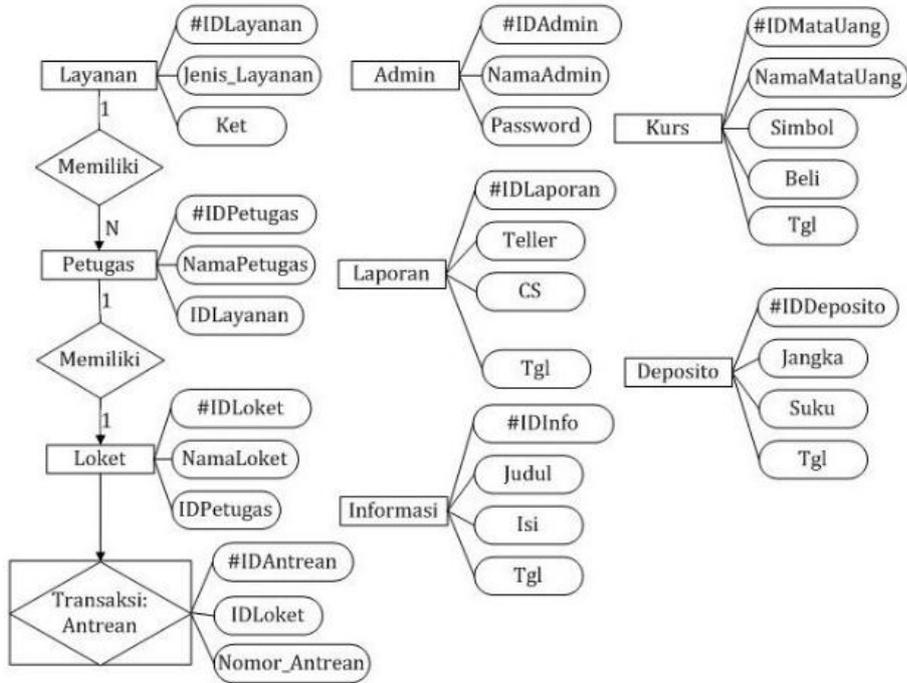
Figure 2. Entity Relationship Diagram
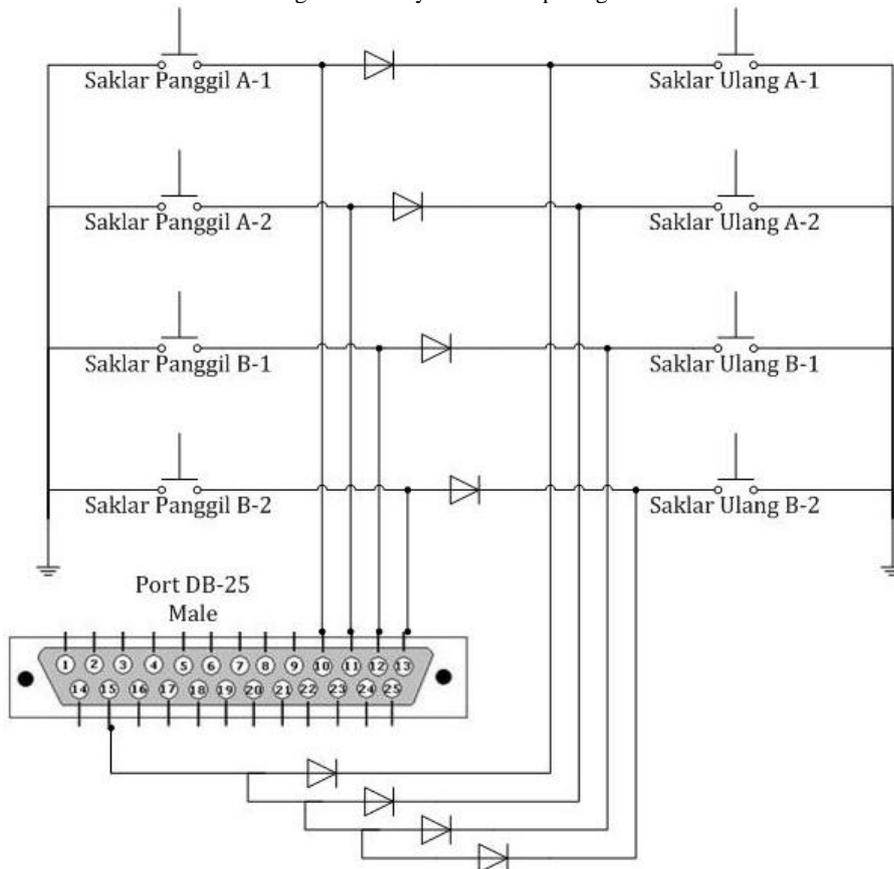
Figure 3. The electronic circuit is a switch on / off as an input device (control)

The queue number that has been running when be logged into the database. When the teller calls by dialing the on / off switch, it checks the database, then visualized by voice

for call and displays the queue number called on the monitor screen.

3. Results and Discussion

A. Hardware Design

In order for the switch to act as a control, it is like a circuit diagram of electronics in Figure 4 and the result of the circuit is shown in Figure 5.

B. Voice Recording

The sound recording process uses a microphone paired to the sound card input device and is processed using Cool Edit Pro version 2.0 software. The sounds to be recorded are 'one' to 'nineteen' sounds, 'twenty, thirty, forty, fifty, sixty, seventy, eighty, ninety', 'hundred, two hundred , Three hundred, four hundred, five hundred, six hundred, seven hundred, eight hundred, nine hundred ', the voice of' queue number ',' A, B 'and' go to the counter 'vote. In addition to the mentioned sound, the voice to call other queue numbers can combine recorded sounds. The sound file is stored with the file type * .MP3, because this file type has good compression (although it is lossy) so the file size can allow it to be smaller than other sound file types, such as * .WAV.
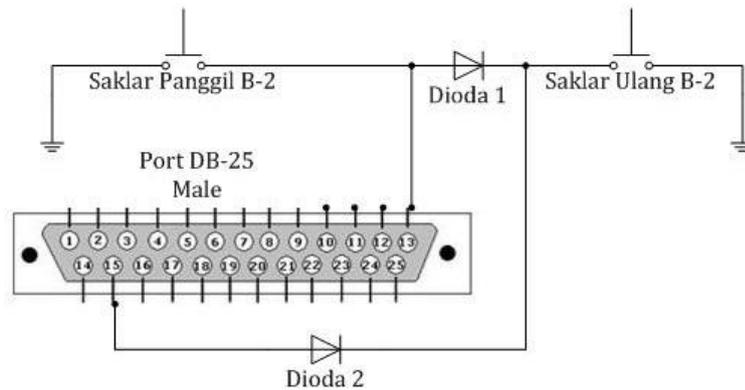

Figure 4. Switch circuit electronics diagram

(a) Tpo View of The call and reset switches
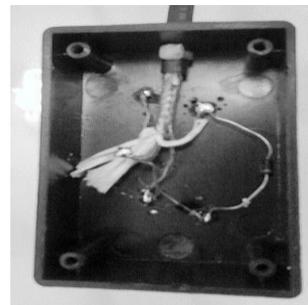
(b) Switch circuit
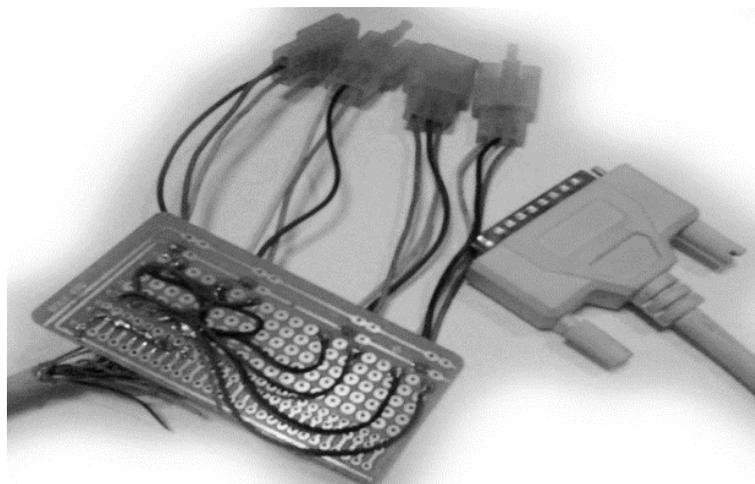
(c) Series of cables with male DB-25 connectors

Figure 5. Switch electronics circuit with male DB-25 connector

C. Database Design

The database is used as a medium or place of storage of queue numbers, officer data, exchange rate data (rupiah), rupiah deposit rate data, banking information, administrator data, and data pengantre number every day. In designing this application program database management system (Database Management System) used is Microsoft Access 2002-2003 with file extension *. MDB. This software is usually included in the Microsoft Office package. In this case, Microsoft Access is Microsoft Access 2013, but at the time of file storage, the file type chosen is the extension * .MDB.

D. Design of Customer Queue Program

This customers queue application program is designed and built using Visual Basic 6.0.

1) Login Form

The login form is the initial step to log in by authorized users in accessing this application by providing username and password.

Figure 6. Form Login

2) Main Form

The Main Form is used as a page to access menus or other forms.
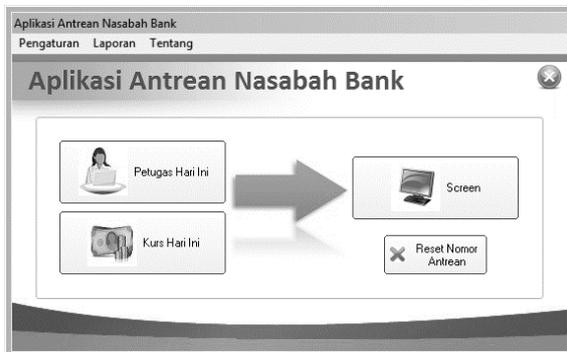
Figure 7. Main Form

3) Officer Form Today

Form Officer Today is used to set the name of the officer who will fill the 4 locations of the counter, each of which is 2 counters for Teller and 2 counters for Customer Service.
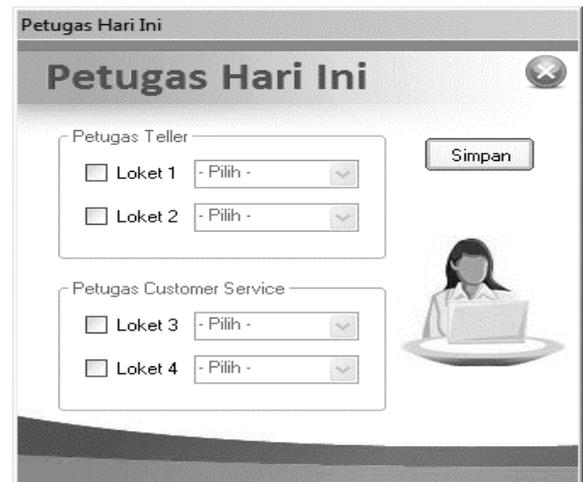
Figure 8. Officer Form Today

4) Screen Form

The Screen Form is a form that displays the queue number and customer information displayed on the monitor as a visualization by the customers.

Figure 9. Screen Form

5) Administrator Form

Administrator Form is used to manage user data that can use this application. This form is only accessible by users with the username 'Admin'.
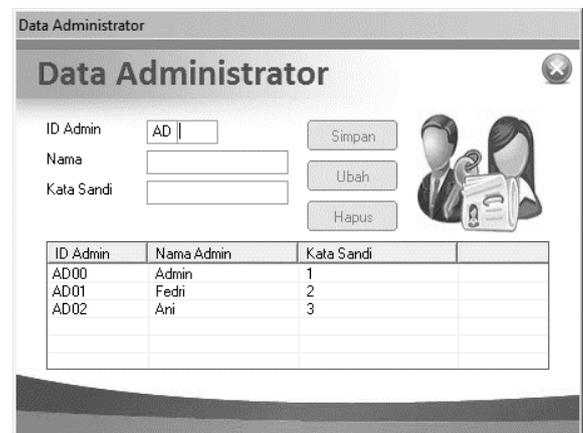

Figure 10. Administrator Form

6) *Rupiah Exchange Form (Exchange Rate)*

The Rupiah Exchange Form is used to update the rupiah exchange rate.


Figure 11. Rupiah Exchange Form

7) *Report Form*

Report Form is used to display data pengantre amount in Teller and Customer Service every day.


Figure 12. Report Form

4. Conclusion

The bank customer queue application based on switch and voice is designed by using Visual Basic 6.0. This application can be assisted by bank officers in calling customers queuing for services, such as cash service (withdrawal and deposit of money) and customer service (opening new account, Questions, or complaints), so that customer service is more optimal, prime and efficient.

This application be able to handle customer service needs in the queue process, such as officers no longer call the names of customers who be served directly, but has been replaced by the application. However, it was recommended that the application has a facility that can print out the queue number cards directly connected to the application, so that the number of unsupervised queues can be known.

In addition, this application is expected to accommodate temporary dialing of the queue number performed by officers from other booths, at the time of dialing the queue number in progress without interrupting the call. So,

after the first queue numbering is completed then the next queue number will be continued without needing to press the switch back by the clerk.

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