

Payment Gateway on E-Canteen Website Application

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Abstract - The Payment Gateway system is intended to simplify the payment process from sales websites to online systems without using cash (cashless). This study discusses the implementation of the buy-sell transaction system to avoid queues in transactions using the System Development Life Cycle method. The purpose of this study is to provide a solution for students to be able to transact more easily. This application is one form of application of information technology in the financial sector that makes buyers and sellers no longer need banknotes to make transactions in a canteen environment, so they can save time and effort. Payment gateway payment system is very suitable for transactions that speed up the transaction process. By utilizing wireless technology called Near Field Communication (NFC), payments can be made only with consumer cellular devices close to the reader or canteen of the shopkeeper. And get the queue in accordance with the order.

Keywords: Payment gateway, NFC, Website, E-Canteen, Application.

I. INTRODUCTION

According to Fajar Ardhanta Hendraswara (2016) Payment Gateway is a system that bridges payments from sales websites to online systems both third parties and direct banks which then if payment is rejected because the balance funds are insufficient, it is returned to our sales system that payment fails. Some payment gateway companies in Indonesia offer services for various types of transactions, such as credit cards, internet banking and mobile payment with security, so that facilities can compete with the international payment gateway, one of them is veritrans.co.id. At present there are many people who make payment transactions using a credit or debit card. Both types of payments use smartcards that are swiped / pasted on the tag reader in places when they want to make a payment transaction. Currently there are innovative services for the payment system using Near Field Communication (NFC) Technology (Violitta Yesmaya, 2013). This electronic payment system using NFC will make it easier for sellers and buyers.

Perbanas Institute Jakarta is one of the campuses that provides a canteen for students shopping for food in that place. Buying and selling transactions grow all the time so

that many transactions in the canteen are increasing. In this transaction, it takes a relatively long time because transactions still use the system manually. Therefore we need a transaction application that can simplify and speed up transactions, so there are no more queues that accumulate in the canteen.

This research is to create transaction applications that can help users, especially Perbanas Institute Jakarta students in conducting transactions by applying the method (System Development Life Cycle (SDLC).

Based on the results of research conducted by Erikson Damanik (2012) who conducted a study on "Designing an Online Payment Information System Using Payment Gateway" this study explained the online payment information system that was made showing steps or processes of how to authorize and settle transaction) is carried out during online transactions.

Another study was also conducted by Fajar Ardhanta H. (2016) who conducted a study on "Designing Tour Package Orders with Online Payments Using Payment Gateway on

Android applications". Android based to find tourist information and tourism facilities.

II. MATERIAL AND METHODS

To achieve the research objectives, the first thing to do is to conduct a literature review. The literature review includes textbooks, journals, and theses. In addition, other knowledge is also presented in the form of references to the results of previous similar studies conducted by several researchers.

2.1 Canteen

Good (1959) in his Dictionary of Education said that: "cafeteria a room or building in which public school pupils or college student select prepared food and serve themselves". The school canteen is a room or building located in a school or college, where it provides selected / healthy food for students served by canteen officers.

2.2 Payment Gateway

Payment Gateway Service is a 3rd party service that connects merchants with banks. With the availability of these services, merchants can provide online payment services on their online shopping website by connecting their website to the payment gateway service using services from the Application Program Interface (API). Payment gateway service is very much needed because of the high initial cost and maintenance cost to connect with the bank, besides that, a system that can connect bank accounts from customers and merchants is needed. (Gulati et al., 2007; Duric et al., 2007).

2.3 Near Field Communication

NFC or Near Field Communication is the development of Radio Frequency Identification (RFID) based technology. RFID itself has the same form and use as an ATM card. But of course there is a difference if to make an ATM transaction must be swiped then the RFID card is only brought to the reader. The way NFC works is that the user must have an NFC chip on his own device and attach or flick the device to other devices that already have NFC reader as well (Jeynotobing, 2016).

2.4 Conceptual Framework

Buyers and sellers are still transacting manually and there are still errors in the order queue, the seller has difficulty finding the location of the buyer's table. Therefore, the application of E-Canteen Perbanas Institute Jakarta was made by applying the Payment Gateway. After the application is successfully installed, then sales increase and service is fast, and minimize errors in the order queue and search for table locations.

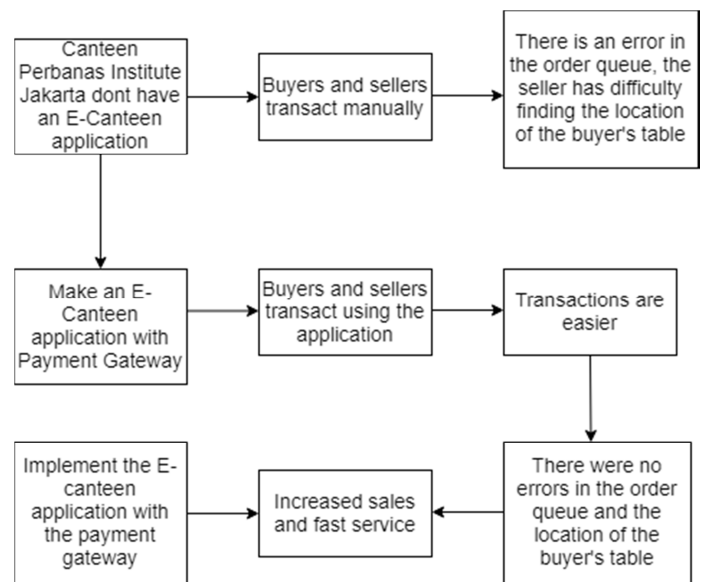


Figure. 1 Theoretical Framework of E-Canteen

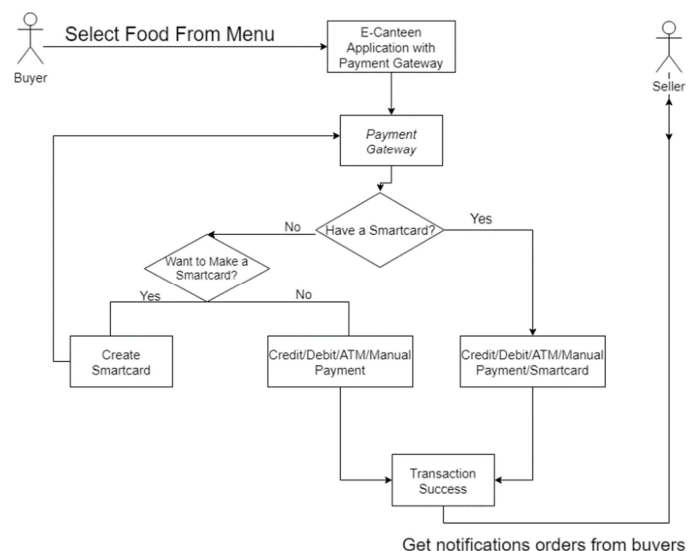


Figure. 2 Conceptual Framework of E-Canteen

The buyer chooses food through the menu found in the E-Canteen application with the payment gateway. If you don't have a card, then you are given the choice to make a card or pay manually. After that the Seller gets a notification of the order from the buyer.

III. RESULT AND DISCUSSION

The following is an illustration of how the payment gateway actually works.

The payment gateway network works in a VPN network with the following steps:

1. Traders submit credit card transactions to payment gateways for the benefit of the customer via a secure internet connection, retail store, MOTO center or wireless device.
2. The payment gateway receives secure transaction information and passes it via a secure connection to the merchant's bank processor.
3. The processor from the bank of the merchant submits information to the credit card network (an entity from a financial institution that communicates to regulate processing, clearing (clearing) and settlement of credit card transactions).
4. Credit card networks forward transactions to banks where customers make credit card requests.
5. The bank where the customer makes a credit card request will approve or reject the transaction based on the available balance of the customer and pass the transaction results to the credit card network.
6. The credit card network conveys the transaction results to the merchant's bank processor.
7. The bank merchant processor delivers the transaction results to the payment gateway.
8. Payment gateway stores the results of transactions and sends them to customers and / or traders. This step completes the authorization process - and everything only runs three seconds.
9. The bank where the customer makes a credit card request sends the right balance for the transaction to the credit card network, which then passes the balance to the merchant bank. The bank then deposits the balance into the merchant's bank account. This step is known as the settlement process and in particular the transaction balance will be deposited into the main bank account in the next two or four days.

3.1 Algorithm

This algorithm is the simplest algorithm. The principle of this algorithm is like the principle of queuing (non-priority queue), the page that enters first will come out first too. This algorithm uses a data stack structure. If there is no empty frame when a page fault occurs, then the selected victim is the frame that is on the bottom stack, ie the page that is the longest in the memory. The FIFO queue technique refers to FCFS (First Come First Serve), the first data package that comes first is processed. Data packets that come out are first entered into the FIFO queue, then issued according to the

order of arrival. The FIFO queuing technique is very suitable for determining the food ordering queue in the canteen of Asri Perbanas Park.

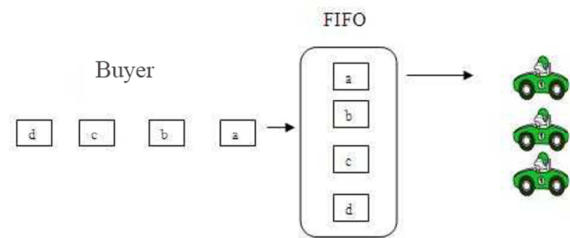
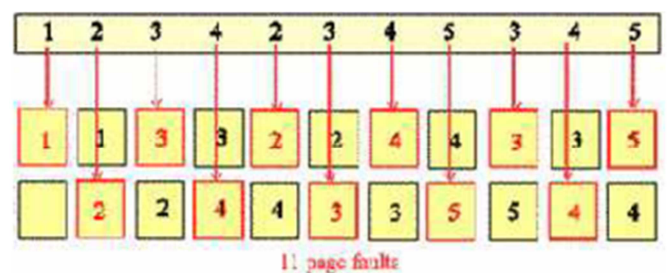


Figure. 3 FIFO Model

Figure 3 shows the arrival of several different data packages, the first package from the order flow that arrived earlier was issued to the port first by the FIFO queue.

Initially, this algorithm was considered sufficient to solve the problem of page turnover, until in the 70s, Belady found an oddity in this algorithm which was known later with the Belady anomaly. Belady anomalies are conditions where the page fault rate increases as the number of frames increases, as can be seen in the example below.



2007. Kemal Nasir & Renggo Pibadi @ CSUI

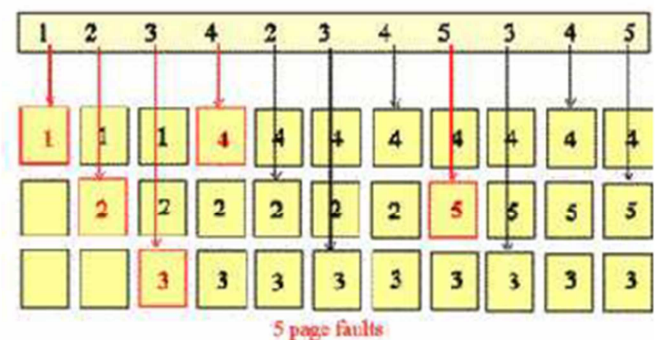


Figure. 4 FIFO algorithm (Kemal Nasir dan Renggo Pibadi 2007)

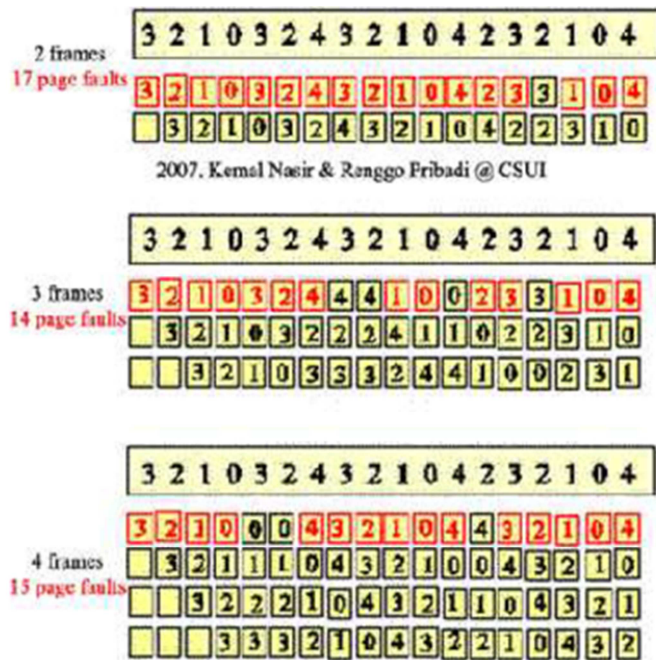


Figure. 5 FIFO Algorithm Anomaly (Kemal Nasir dan Renggo Pibadi 2007)

When the number of frames added from 3 frames to 4 frames, the number of page faults that occurred actually increased (from 14 page faults to 15 page faults). This usually happens in cases that want a page that has just been swap-out before.

3.2 Implementation

The test method can be applied at all levels of software testing: unit, integration, functional, system and acceptance. This usually consists of most if not all tests are at a higher level, but can also dominate unit testing as well. By using the White Box and Black Box implementations.

a. White Box

White box testing is a test that is based on checking the detailed design, using procedural control structures from program design to divide the test into several test cases. At a glance, it can be concluded that white box testing is a clue to get the correct program 100%. Testing is done based on how a software produces output from input. This test is based on the program code.

b. Black Box

Black Box testing is a software testing method that tests the application's functionality as opposed to internal or work structure. Special knowledge of the application code / internal structure and programming knowledge is generally not needed. Test cases are built around specifications and

requirements, that is, what applications should be carried out. Use an external description of the software, including specifications, requirements, and designs to reduce test cases. This test can be functional or non-functional, although usually functional. The test designer chooses valid and invalid inputs and determines the correct output. There is no knowledge of the internal structure of the test object.

3.3 Evaluation & Implication

Model evaluation uses a transaction capability test, where transactions are used to test the reliability and validity of the model. The researcher invited students and employees who were aware of the transaction system problems in the canteen. and evaluations that use the SDLC method in transactions. The theoretical implications of this study are that it is necessary to have a strong understanding of the concepts related to the SDLC method to be translated into the monitoring and evaluation process.

IV. CONCLUSION

The Payment Gateway system is intended to simplify the payment process from sales websites to online systems without using cash (cashless). Payment Gateway will make buyers and sellers no longer need paper money to make transactions inside the canteen environment, so they can save time and effort. Payment gateway payment system is very suitable for transactions that speed up the transaction process.

ACKNOWLEDGEMENTS

The author would like to thank the Perbanas Institute campus which helped in this year's research.

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