

The Development of the Queue Management System that Prioritize Handicapped Person

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ABSTRACT – Queue Management System is a system that manage the sequencing of the customer in obtaining services of an organization. One of the most concern is the long wait, which found to be inefficiency regardless at government or private sector. To make matter worse, the current Queue Management System does not give any priority to elderly people, pregnant woman, and handicapped person. The purpose of this system is to propose a proof of concept of a Queue Management System that able to give priority to handicapped person automatically. This article presents the design of the Queue Management System where the result shows the system follows the expected result.

1. INTRODUCTION

According to a research done by Telegraph, the average wasting time for an adult waiting in a bank is about 27 minutes per month and it is said that 88% of people surveyed dissatisfied with the long queue.

Based on past literatures, several attempts has done to address the long waiting time. The first article is Arduino Based Paperless Queue Management System written by A. Z. Jidin et al. in 2016 [1]. The second article is Automatic Queue Number Reservation System in SMS Mobile Operation Mode written by M. H. A. Wahid [2].

None of the literatures address the need of the needy persons like the handicapped person. Thus, this project aims to propose a proof of concept of Queue Management System (QMS) that has the feature that automatically detects and give priority for the handicapped person.

2. METHODOLOGY

Figure 1 illustrates the architecture of the proposed QMS system in the form of block diagram. Arduino Mega 2560 acts as the processing unit for this system, ESPressor Lite V2.0 module used as communication peripheral and 2.4 TFT LCD screen to display the queue information to the customers. RFID module connects to

the processor unit used to detect the handicapped privilege card, which allows the handicapped to cut the queue.

Figure 2 and shows the overview in a bank where the customer proceeds to the ticket counter to get a digital queue ticket by enter the mobile phone number with select the desired transaction. The system will proceed to send a queue number to the customer mobile phone and customers will be waiting at a designated area. The queue number being call out and customers need to proceed to the counter for the services. Psuedocode 1 shows the pseudocode of the program which the walk-in customer needs to select the desired transaction through keypad and enter the mobile phone number. Then, the customer will receive the queue number through mobile message. For the handicaps, they need to scan their card then follow by select the transaction and key in the mobile number. The system will skip the queue and prioritize to call for the handicaps queue number for the bank services.

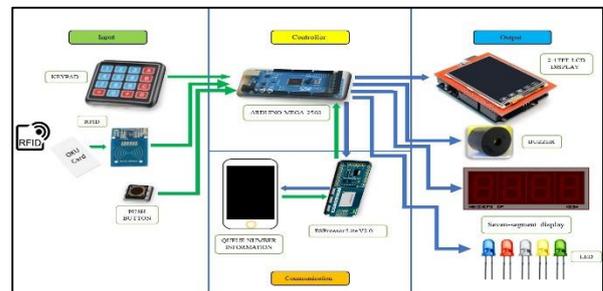


Figure 1 Block Diagram of the project.

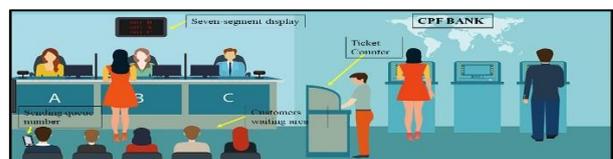


Figure 2 Project overview in Bank.

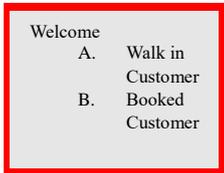
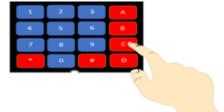
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PSEUDOCODE 1: Pseudocode of the Program
if customer is present then
  if customer is OKU then
    if passcode is correct then
      display que number for customer
      arrange the que number for customer
    else
      request customer to repeat the process
    end
  else
    display que number for customer
  end
end
if customer service press the button then
  if OKU customer is present then
    display que number of OKU customer
  else
    display que for normal customer
  end
end
    
```

3. RESULT

The result of the operation of the project had been illustrated and explained as in Table 1. The scenario is done to access whether the proof of concept obtained as expected result, and the result shows the proof of concept passed all the scenarios. The cost to develop this project is less than RM500.00

Table 1: Explanation of the scenario.

No	Explanation	Result
1.	The TFT LCD display the main menu: Welcome A. Walk in Customer B. Booked Customer	
2.	Customer select the option using keypad: “A” for Walk in Customer or “B” for Booked Customer	 Select the option for the desired services
3.	If option “A” selected, the system will request customer to select the desired transaction either to: C. Create New Account D. Apply Loan	 Figure 4.3: Select the desired transaction

4. If option “C” or “D” selected, the system will request customer key in the mobile number



Figure 4.4: Enter mobile phone number

5. After entering the mobile number, the system will send the digital ticket queue number to customer mobile phone



Figure 4.5: Queue number send to customer mobile phone

6. Seven-segment display shows the queue and counter number - 1011



Figure 4.6: 7-Segment display the queue and counter number

7. If the walk-in customer is handicap person or “OKU” will need to scan the OKU RFID card to get the queue number.



Figure 4.7: Handicap person or “OKU” scan the card for queue number

8. Handicap person or “OKU” will received queue and counter number through mobile phone and having privilege to skip the queue for the bank services.



Figure 4.8: Handicap person or “OKU” received queue and counter number through mobile phone

9. Officer will skip the queue and call the “OKU” number for bank services



Figure 4.9: 7-Segment display the queue and counter number for “OKU”

4. CONCLUSION

This project is attempting to design a user friendly QMS. The paper presented the block diagram and flowchart of the system. A scenario with expected result is run to validate the functionality of the system.

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