



IoT Based Solution to Reduce Queue in the Banking Sector

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Abstract:

Nowadays, more time has to be spent for banking and transactions in queues for hours. In order to save time and crowd queues, this paper brings the idea of mobile acknowledgement message informing the token number or the queue position. This technique is IOT based which generates token and senses the position of queue and is uploaded in the cloud which is then informs the token holder's mobile phone or computer. The cloud instantly gets informed by the position or the token number and informs the customer. Thus he/she can avoid crowd queues and saves plenty of time of the day.

I. INTRODUCTION

The major problem today is the stress of the customers and employees of the bank. It can be overcome by a simple and effective solution. Most of the banks are having the token dispenser unit and the token display unit as shown in Fig.1. In our example, it is considered that there is one token dispenser unit and two counters for processing the token. The token number which is in process and the counter number which is processing the token will be displayed in the token display unit. In this article, total token issued (by the token dispenser unit) and the processing token number in the bank is uploaded to the cloud and can be viewed in your mobile/PC through internet.

II. CONVENTIONAL METHOD

A) General Token System in Bank

Security tokens are used to prove one's identity electronically (as in the case of a customer trying to access their bank account). The token is used in addition to or in place of a password to prove that the customer is who they claim to be. The token acts like an electronic key to access something. Some may store cryptographic keys, such as a digital signature, or biometric data, such as fingerprint details. Some may also store passwords.^[1] Some designs feature tamper resistant packaging, while others may include small keypads to allow entry of a PIN or a simple button to start a generating routine with some display capability to show a generated key number. Special designs include a USB connector, RFID functions or Bluetooth wireless interface to enable transfer of a generated key number sequence to a client system.



Figure.1. Token Display unit

III. PROPOSED METHOD

A) Block Diagram

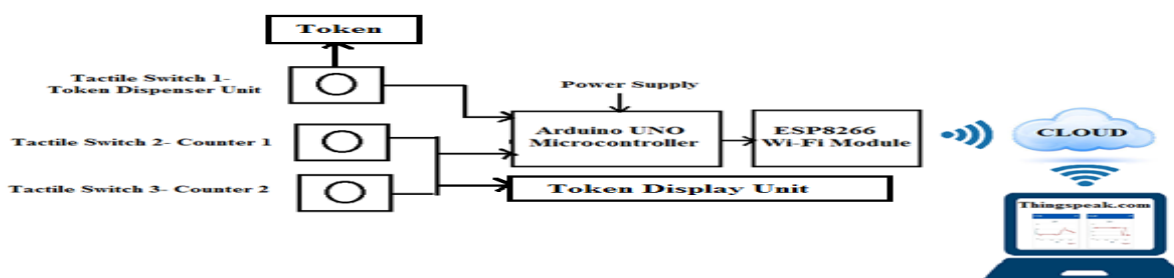


Figure.2. Token dispenser unit and Token display unit.

When customer of the bank is pressing the tactile switch 1 in the token dispenser unit it will give the token (i.e. total token number issued). When the employee of the bank sitting in the counter is pressing the tactile switch 2 & 3 it will display the token number to be processed (i.e. token number in process). If the token number issued to the customer and the token numbers in process have a big difference then that customer has to wait for a long time. In this module, for every press in the tactile switch it will also upload the total token number issued and the token number in process to the cloud through

Arduino MCU ESP8266. From the cloud, total token number issued and token number in process can be seen graphically one Thing speak platform from anywhere in the world. So, customers don't need to wait in the bank. At any time the customers of the bank can check the total token issued and the token number in process in their mobile phone/PC through internet. If this module was implemented in every bank then from the home itself the customers can know which bank will have fewer crowds. The module can be restart at any time by clicking the restart button in Arduino MCU.

B) Circuit and Working:

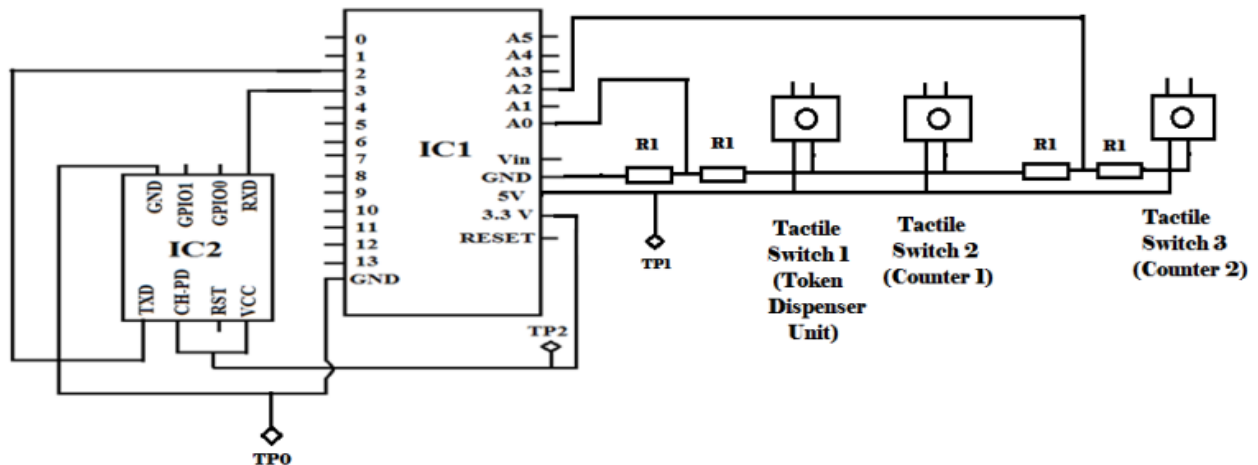


Figure.3. Working Block

Circuit diagram for reducing crowd in the bank is shown in Fig.3. It is built around Arduino MCU, tactile switch and ESP8266 Wi-Fi module.

C) Construction and testing

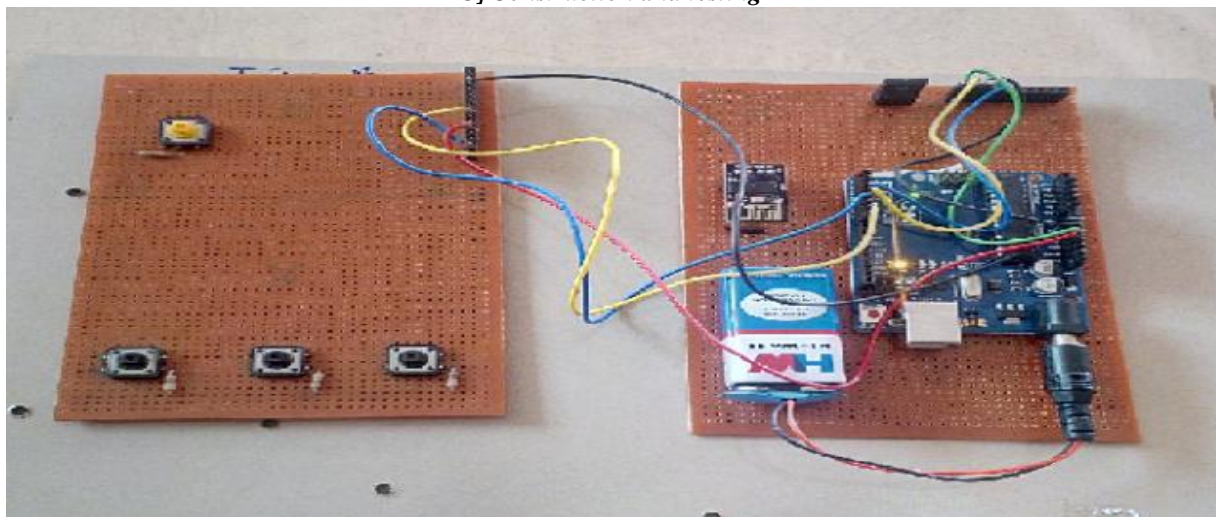


Figure .4.Propotype model

Thing speak is an open source data platform but you need to register to use it. After registering, login to your account and create a new channel with total token issued as one field and token number in cvv/process as another, as shown in Fig. 4. Once a new channel is created, it will generate two API keys, namely, write API key and read API key. Replace the line given below in the program with your write API key.

```
String apiKey = "NTIM1RXET6YVUVWF"
```

Next, substitute Host_Name and password with your Wi-Fi name and Wi-Fi password in the two lines given below in the program.

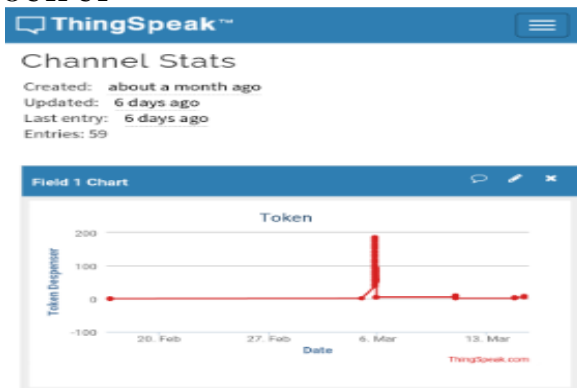
```
String Host_Name = "sidhu";
```

```
String Password = "force";
```

Compile the program and upload it to the Arduino MCU through Arduino IDE. Once the program is uploaded, for every press in the tactile switch 1 the field called total token issued will have an increment in the number and, for every press in the tactile switch 2 and 3 the field called token number in process will have an increment in the number. Author's prototype is shown in Fig.5. IOT means many things; from smart homes to connected bank with different developer population is massive and growing fast, as vision Mobile. Internet of Things represents a general concept for the ability

of network devices to sense and collect data from the world. Automatic tracking of exercise habits and other day-to-day personal activity including goal tracking and regular progress reports. Wi-Fi module has a powerful enough on board processing and storage capability that allows it to be integrated with the sensors and other application specific devices through its GPIOs with minimal loading during runtime. Its high degree of on-chip integration allows for minimal external circuitry, including the front-end module, is designed to occupy minimal PCB area.

OUTPUT



TOKEN DISPLAY



D) Other applications

This module can be used in any sectors which is using the token management system. By getting the token number of the customer through internet it is also possible to give notification when the token number in process is nearer to his/ her token number.

IV. CONCLUSION

Thus the new technical method has been developed and successful results are obtained, that reduces the risk faced by the customers and the officers at the bank. Through this system one can save his/her time by updating themselves by opening the site which is a open source to every user.

V. REFERENCE

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