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Technical Review on Implementation of GSM Integrated Digital Token Counter System

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Abstract: *In this paper, we are going to introduce a new token system which can successfully reduce waiting time of customer and crowd in the bank. The main aim of this paper is to develop a model that integrate alert notification via SMS to be sent to the customers to provide specific services according to the customers requirement also these customers can be updating the progress of data queuing via GSM communication. The target population covers mainly the customer at bank. Though the study focuses on bank line system mostly, the system can be suitably modified and extended further to serve many such application.*
Keyword**:** *Data Queuing, GSM Modem, PIC Microcontroller, Token .*

I. Introduction

Time is an important quantity, which has to be efficiently managed. No one wants to stand in a queue and wait for long time, so to get rid away from this we have implemented a smart queuing system which will take out the burden of waiting in a long queue until one gets attended .In this paper we are going to introduce a new token system which can successfully reduce waiting time of customer and crowd in the bank.
It comprises of three major elements :
1). A GSM (Global system of mobile) modem.
2). A microcontroller (PIC)
3). Automatic SMS powering system

The GSM modem act as an interfacing element between the server machine and the user. The communication is done through GSM communication technology. The system accepts call from (different) various end users and alters the user by SMS.The synchronization between two communication is of highly managed by data queuing system. The software is designed in microcontroller and controls the total system flow. Here we are using AT command for SENDING and RECEIVING short message though GSM module. AT command not only can realize the setting of modules parameters but also can realize sending and RECEIVING of data, including controlling of SMS. GSM AT command has set three control modules for SENDING and RECEIVING short message. Block mode, text mode and PDU (protocol data unit) mode. Text mode is easy in sending and receiving short messages. Block mode is gradually replace by PDU for default mode. Therefore, when selecting GSM module AT command, the content of the message should code or decode according to PDU format.

II. Literature Survey

Peter Sungu Nyakomitta, Vincent N Omollo (Nov 2014) [1] This paper define the building block and derives basic queuing system that provide some sort of services by moving customers in a particular order to a specific service according to the customer requirements and also integrated Alert notification via SMS to be sent to customers updating them of the progress as they wait. The study focuses on the bank line system mostly on credit application, the different queuing algorithms that are used in bank to serve the customer, and the average waiting time. The main aim of this research is to develop a Model that integrate Alert notification via SMS on credit application during queuing system and analyze the queue status to decide on which customer to serve. The researcher adopted empirical approach to achieve his objectives. The target population covers mainly the customers at bank .The researcher applied a probability sampling technique to select respondents.

Xin-kan Mu, Yong-hong Chen (March2014) [2] Short message service (SMS) is a technology that can use mobile devices to Send and Receive text message, with wide covering area, high popularity, high reliability, low expenditure, easy development and other characteristics .Using GSM module or short message platform of network, short message can be Sent and Received between the computer and the mobiles terminal. This paper has designed and realized a set of remote computer supervisory system based on SMS communication. The paper elaborates the communication means hardware and software structure of the system and the working

process of the software. The system has good application proposed in some domains, such as remotes controls, mobile controls, miniature controls etc.

M. Bhuvaneswari 1, S. Sukhumar (Nov2013) [3] This research paper is based on the concept of automatic ticket vending machine by using RFID and Zigbee technique. In order to ensure the passenger journey with no quarrels and mesh we employ this ticket friend solution that replaces the traditional paper ticketing by RFID ticket and vouchers vended though automated machine using smart cards , which improves the convenience and security of transaction. Ticket friend solution though automated machine enables the passenger to predetermine the transport details. In this automated system we replace the traditional ticket system by smart card that contains all details of the user including bank account information which is similar to the ATM card. This automatic vending machine consists of display which shows the availability of buses for all destination. The person can find out the destination places by pressing the buttons available on that machine with the help of Zigbee. If the location is selected then the availability of buses along with the time is displayed. If the people confirm to go in certain bus ,by using smart card the person can receive the ticket employing RFID technique and by showing the ticket in front of the bus the door opens automatically and after some predetermined second it gets closed. If the person is supposed to consume alcohol that is detected with the help of alcohol sensor and that person is not permitted inside the bus. Voice GPS is placed inside the bus and the display shows the route map. For that PIC microcontroller is already pre- programmed to do the operation. By using this we can minimize manpower in buses and ticket counter, predetermining of the bus can be done to find the destination exactly, safe journey can be assured without any disturbances and system based booking for easy usage. Voices talking GPS proposed in the transport make the passenger to identify their departing location.

Aayush Aggarwal, R.C Joshi (2012) [4] In this paper, a sophisticated remote home security system designed by combining the advantages of wireless sensor network and GSM technology is presented. It can detect intrusion, fire etc and inform the user remotely about the incidence with distance playing no barrier. The hardware of the system includes wireless transceiver XBEE along with Atmega microcontroller, real time clock DS 1307,DTMF decoder HT 9170, voice recording and playback IC APR 9600 and some other components. The system software is developed in C language on CVAVR platform.

Khondker Shahdul Hasan, Mashiur Rahman (2009) [5] This paper proposed and implement a low costobjet tracking system using GPS and GPRS. The system allows a user to view the present and the past position recorded of a target object on Google map though the internet. The system reads the current position of the object using GPS ,the data is sent via GPRS service from the GPS network towards a web server using the post method of the HTTP protocol the objects position data is then stored in the database for live and past tracking. A web application is developed using PHP, java script, Ajax and MySQL with the Google map embedded the existing live tracking system that are available now a days use SMS for the communication to the server which turned out to be expensive.(SMS are used for communication to device), We have used GPRS service which made our system low cost tracking solution for localizing an object position and status. This system is very useful for car theft situation (alarm alert engine starting ,localizing), for adolescent driver being watched and monitored by parents (speed limit exceeding leaving a specific area), as well as for human and pet tracking .

Monali R. Dave, Jai Karan Singh [6] an E-voting,electronics voting system also knows as Personal Response System (PRS) Audience response system (ARS) or Classroom Communication System (CCS) use handset as transmitter if the person is within the range of receiver or uses GSM mobile equipment (ME) to replay from anywhere. To minimize the disadvantages of generics E- voting ,we proposed a method in which a voter, who has wireless certificates issued in advance ,uses its own GSM mobile phone without a special registration for a vote. In this paper a polling scheme using GSM mobile technology is resented as most basic application of GSM based Personal Response System, which allows a voter to cost his vote in simple and convenient way without the limit of time and location.Byintegrating an electronics voting scheme with the GSM infrastructure.

III. Proposed Methodology

The below figure is the block diagram of proposed system. The figure consists of microcontroller, LCD display, 7 segment display and GSM modem.

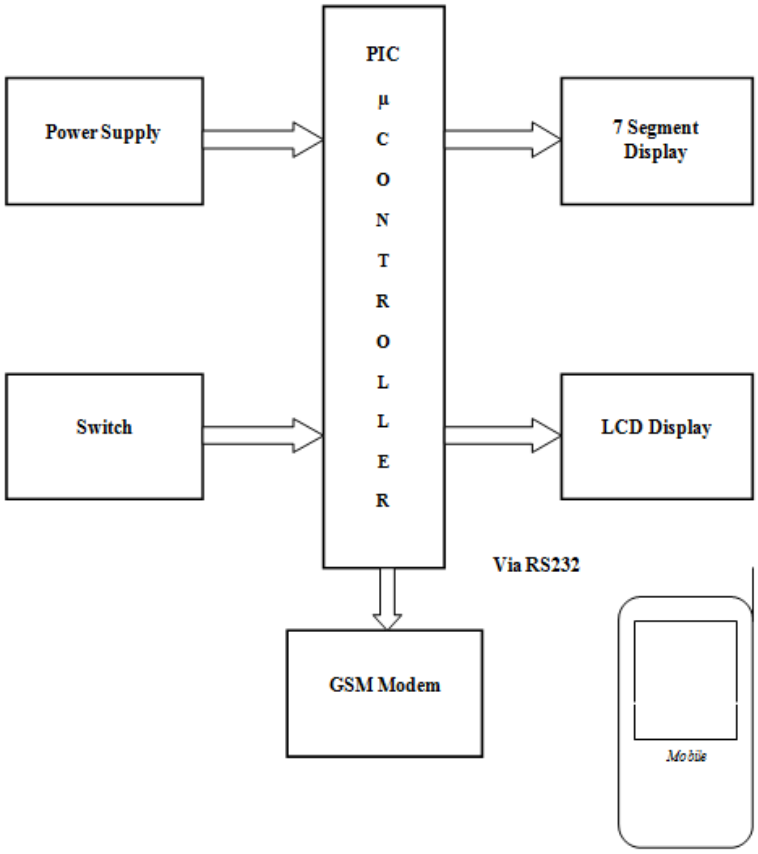

Fig 1: Block diagram of proposed system

The system flow occurs on GSM Modem and microcontroller. The GSM modem is a hardware link in the entire system. The overall working is controlled by specially designed controller code. An embedded C code compile with MPLABIDE compiler controls the functioning of microcontroller. The working of the entire system based on specially designed controller based software. It receives message from GSM modem through RS232 Port, decodes it, send back acknowledgement through GSM modem and performs various tasks based on the call received. The working of the system can be divided into the following steps –

1. Receiving CALL from various Users.
2. Decoding it and updating the data memories in random and in queue format.
3. Sending acknowledgement to the Users via SMS.
4. Displaying Tokens and sending their Token numbers to the Users.
5. Flushing the queue.

In order to register an appointment the User has to CALL to the Server Number (GSM modem at server side) in a fixed format. As the Call is connected to the server it will automatically disconnect the Call of the User and an acknowledgement message with the Token number is send to the User.

The basic function of the system include :

1. Real –Time Monitoring : Makes Real –Time Monitoring towards the operating process of status information of the users and to transmit the present threshold of the monitoring object.
2. Short Message Sending and Receiving : Sends the information content of the message queue to the monitor's mobile phone through Short message service center, Receives the message from the message center.
3. Short Message Command Management : The monitor can set corresponding different monitoring functions of the Short message sentences according to own habit.
4. Remote Control : Make real –time monitoring towards the received message, when discovering new message, start corresponding process to finish remote control through message command analysis and recognition.

IV. Conclusion

This project is a small step towards making life easy. The waiting time for ones turn to come in a long queue could be easily overcome by this project. Mobile phones gave a new dimension to the Remote access mode of communication system.This project exploits the full facilities of GSM communication service. Hence establishing a strong reliable communication link between server and User. This project, guarantees an efficient synchronization between Man and Machine and step much clearer than the existing technology, ensuring the freedom of life.

Mentioning the future scope of the system, making the system database, thus making the system more efficient and smart.

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