

A Review on Daily Life Uses of GSM Technology

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ABSTRACT

This paper presents a feasibility study on GSM technology based applications for document identification in library, monitoring system for energy meters and calling system for coal miners. All these systems are based on field data collection. The data transmission, communication and control are accomplished using GSM technology. Therefore, GSM technology proves to be beneficial in almost every field.

I. INTRODUCTION

GSM (Global System for Mobile Communications) is the world's most popular wireless phone technology. It is used by more than one billion people all around the world. GSM offers unparalleled global roaming capabilities, as well as the purest voice quality in wireless. Its handy data capabilities offer service up to the fastest wireless broadband service presently possible. There are several technologies that companies use to provide wireless services. While there may never be one common and accepted technology worldwide, GSM is currently used in 219 countries and territories serving more than three billion people and providing travelers with access to mobile services wherever they go.

II. GSM APPLICATION IN VARIOUS FIELDS

A. DOCUMENT IDENTIFICATION IN LIBRARY SYSTEM

With the help of GSM technology, a new method to get the information about the availability of a particular book and its location through an SMS has been proposed [1]. The title or author of book can be sent by the user as a SMS request to check the handiness of book by staying at home. As a reply the library database maintained by automatic update and conveys systems send the reply SMS about the

accessibility, its location and number of copies. This kind of service will not only help the user to save lot of time but also help him to search the book availability in all nearby libraries. So, the mobile pervasive technology can be used by the libraries to serve their user as well as the patrons to avail the library services in a better manner. By enforcing this technique the services offered by the libraries to the user will be more effective and efficient manner.

PROJECTED SYSTEM

The projected system uses an integrated library management system for book search. The user can check the availability of a particular book by title or author's name by utilizing his mobile phone. The selective information obtained by the user contains book code number and location of the book within the shelf. MATLAB programming environment has been used in developing the system. This system mainly consists of two sections one is a library management system and another is mobile user unit. The mobile user unit is a mobile with a network supplier facility. The library management system consists of GSM modem with SMS gateway server that accesses the library database as shown in Figure 1 [2].

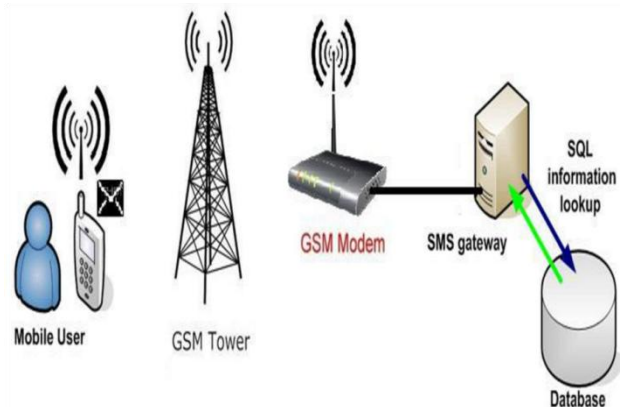


Figure 1. Block diagram of the proposed system

A Library user sends an SMS mentioning the book title through the mobile phone. An SMS is obtained by the

GSM modem at the library. The GSM modem is attached to library database through wired connection. Now the title is checked by the database for the details regarding the availability of the book with the rack number and rung number where the book is kept. This information will be provided through SMS reply by the GSM modem [3]. The sequence of operations performed by the proposed system can be listed as:

- Send an SMS from mobile of user through GSM tower
- Using a computer to receive an SMS message through a GSM Modem.
- Approach the database and collect the information about the requested book title
- Send a reply about the book information from a computer through SMS using a GSM Modem
- The user will receive the reply message through GSM tower[1]

GSM MODEM

The main hardware part of the proposed system is a GSM modem. A GSM modem is a special type of modem which takes a SIM card, and operates over a subscription to a mobile operator, same as that of a mobile phone [4]. From the mobile operator view, a GSM modem looks just like a mobile phone which when connected to a computer allows to communicate over entire network. A GSM modem could also be a standard GSM mobile phone with the appropriate cable and software driver to connect to a serial port or USB port on a computer. Any phone that supports the "extended AT command set" can be used for sending/receiving SMS messages.

SMS GATEWAY AND DATABASE

The next important block is an SMS gateway kept between the SMS messaging application and the GSM modem. To send a SMS message from computer using GSM modem, join a GSM modem to a computer through a serial cable and use the computer and AT commands to instruct the GSM modem to send SMS messages. To send SMS messages, first place a valid SIM card from a wireless carrier into a mobile phone or GSM modem, which is then joined to a computer.

B. GSM BASED ENERGY METER

Traditional metering method for recovering the energy data is not convenient and the cost of the data logging systems is very high. So in this paper we represent the design and development of Automatic meter reading (AMR) system. AMR system give the information of meter reading, power

disconnect, total load used, and tempering on request or periodically through SMS.

This information is basically send and receive by concerned energy Provider Company with the help of Global system for mobile communication (GSM) network. This system monitors the usage level of electricity of every consumer at every instant of time. During excess of electrical energy used by consumer, this system will give the alerts through an alarm circuit. Afterwards, the consumer has to take an alternative step to cut-off excess supply from the Electricity Board (EB) to halt alarming. Otherwise, the circuit breaker will come into OFF position and the supply will be cut-off by EB. The information regarding the particular consumer will be sent to EB through GSM. Then, the consumer has to give the request to EB for making the circuit breaker coming into normal with the help of PIC microcontroller, which is programmed to supervise the parameters of electrical energy. This system facilitate against illegal usage of electricity, monitoring the energy and maintaining data on tariff. AMR reduce the number of traditional visits done by employs of energy Provider Company. AMR system is very useful for remote area or small villages which are not connected by any means of transport such as an island or remote precinct.

FLOW DIAGRAM

Figure 2 [6] below shows that energy meter continuously display the pulse and unit according to power consumption. When Energy Provider Company wants data for calculation of bill then they send a message to AMR. Accordingly microcontroller receives a message and read it and also read user mobile number and checks the authentication. If the number is valid; it read current data from EEPROM and sends the data to authenticated number. If mobile number is not authenticated; GSM based AMR sends a SMS alert to energy provider. It also provides the facility of power disconnect to customer that have large outstanding dues by sending a code to the energy meter. Microcontroller contain a program of matching of this code to power disconnect code. If this code is match then power disconnect to respective meter. It also provides a facility to power re-connect due to submission of the outstanding previous bill amount by respective meter. It also provides a facility to power reconnect due to submission of the outstanding previous bill amount by sending a code to the energy meter. Microcontroller has a set of program for matching of this code to power re-connect code. If the code matches then power is reconnected to respective meter. Power cut feature is performed by using interrupt signal.

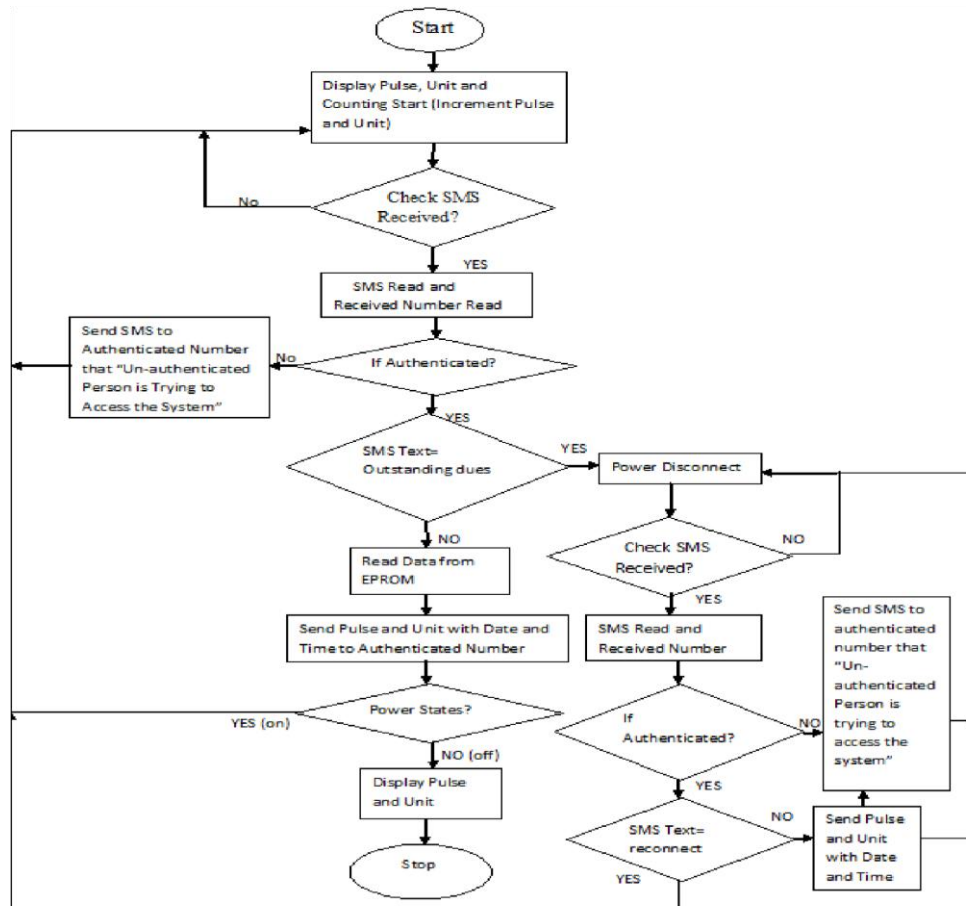


Figure 2. Flow diagram of controlling program for AMR

C. GSM BASED CALLING SYSTEM FOR COAL MINERS WORKERS

It is an emergency flexible calling system which consists of GSM module, solar panel, vibration sensor, battery sensor and fire sensor which are connected to a centralized control room by wireless communication [2]. Proposed system can be installed near coal mine where even basic emergency services are not available. It is totally based on GSM signal strength. If in case of medical & accidental emergency happen in the coal mine, when the worker doesn't have the mobile phone or having no tower in coal mine, this system may be very much helpful. This System will be protected from theft attempts and has flexible timer for calling to the control room. This system will get power through a solar panel continuously. It will be useful even for illiterate people as well as for coal mining worker. The objective of this project is to help people in emergency in remote areas as early as possible. This system can be useful in villages having no electricity.

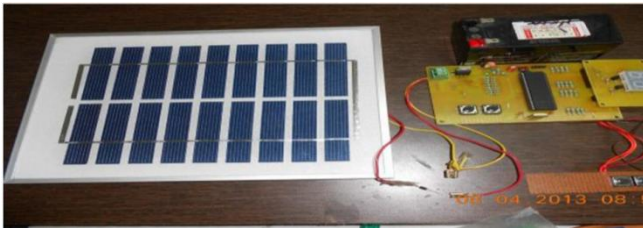
OPERATION

Strength of GSM network plays an important role in this system. Microcontroller 8051 is used with GSM module SIMCOM SIM 300. For getting desire time setting for emergency calling to the control room, keypad is implemented in this system. Here battery sensor is provided to keep battery safe. Fire sensor will be present to alert the control room about any sort of short circuit, if happens. There will be vibration sensor which will directly inform the control room about any theft attempt. People in control room can check the operation status of the system through a message response feature. Once the person from control room calls the system, then system will automatically respond him by sending message on mobile. This will let us know that system is working properly. Here programming is done in a "C" language with use of AT commands. Figure 5 [9] shows the components of the system.

Thus, we have presented how GSM applications are being used and proved to be beneficial in almost every field.

III. CONCLUSION

It is always a better idea to start every design with a good proposal, which will act as a reference point to the work as it proceeds. This paper has presented the design and



Mining Workers “International Journal of implementation of low cost, compact, low power GSM-GPS Engineering Trends and Technology (IJETT) - based monitoring systems. The monitoring service is Volume4Issue4- April 2013,

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- 2) Solar panel: This will convert solar energy into Abhinandan Jain, Dilip Kumar, JyotiKedia,
- 3) ” Design electrical energy. It will provide 12V supply to the and Development of GSM based Energy Meter GSM module, so system will get continuous power International Journal of Computer Applications (0975 supply at any remote area. – 888) Volume 47– No.12, June 2012.
- 4) Emergency switch: By pressing this switch, it will call [6] Bharath P, Ananth N, Vijetha S, Jyothi Prakash K. V. the control room. So anyone can use this system 2008. Wireless Automated Digital Energy Meter. without difficulty. Once the button is pressed, green LED will on until call is on. Technologies, pp: 564-567.
- 5) Timer keypad: By using this, worker can fix the timer Dr. MohdYunus B Nayan1, AryoHandoko by pressing numbers from keypad. Primicanta 2009. Hybrid System Automatic Meter

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