

GSM BASED DOOR OPEN AND CLOSE, LOCK AND UNLOCK SYSTEM

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Abstract - To control more number of swing doors with advance technology, electrical devices and smart electronics we proposed a GSM based door open and close, lock and unlock system. We developed a prototype model for one swing door. In this system GSM module SIM800C, 4x4 keypad, two DC servo motor, Buzzer LTE12 and Arduino UNO (ATmega328) are used. The two DC servo motor SG90 control the door open and close, lock and unlock using GSM module or with keypad password. Buzzer is used for alarming if the password entered is wrong.

Key Words: GSM module, Arduino UNO, DC servo motor, keypad, buzzer, LCD display and swing door.

1. INTRODUCTION

In big infrastructures like institutions, government offices, IT parks, corporate offices etc where there are more number of floors, more number of rooms and hence more number of doors, it is tedious to unlock and open, close and lock the door daily and it requires man power. In this proposed system we developed a prototype model to control a swing door by using GSM module. With a first message door unlocks and opens, with second message door closes and locks automatically by operating DC servo motors. A keypad is also provided on the door to unlock and open by entering a password incase the door fails to operate by GSM. A buzzer is also provided as a security backup.

Murakami et al. [1] portrayed a home security framework which incorporates various sensors distinguish a disturbing circumstance in various areas inside an office. Also, Pyle et al. [2] had built up a framework which cautioned an interruption aggravation at a section highlight a cautioning as to other crisis conditions by creating an alert. The security systems interfaced utilizing GSM module was proposed by Zhao et al. [3]. The structure was a distant home association that contained a GSM door and 3 types of distant security detector centers that area unit portal security. Another structure was planned by the creator Ushie et al.[4], whereby security door which will be indirectly obligated by a GSM phone set going in all probability because the transmitter and another GSM phone. Likewise, SMS Technology was cooperated with GSM organizations to realize dominant of door lock by Pratiksha et al [5], where they could close/open the portal by getting a predefined message from the client. The improvement of GSM based mostly advanced ready home reposition prosperity security structure mistreatment the Arduino and SIM900 [6]. Back

capability security system mistreatment RFID and GSM development [7].

This technique can be extended to control more number of doors by sitting at one place. The whole system is controlled by Arduino UNO.

2. METHODOLOGY

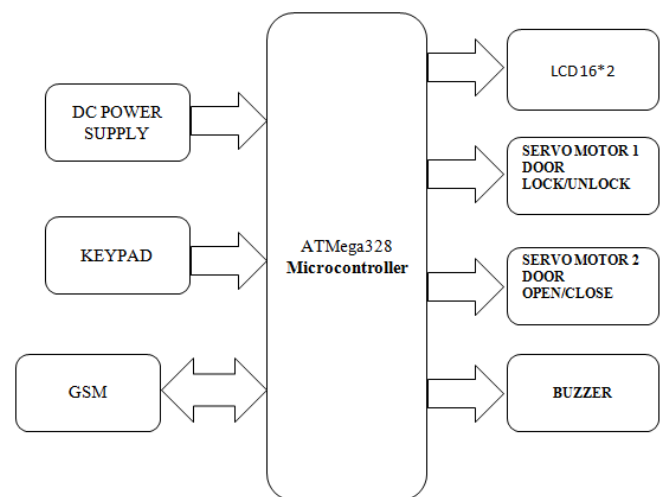


Fig. 1. Proposed system

Controlling units in the proposed system are Arduino UNO(ATmega320), GSM module SIM800C and 4x4 keypad. The block diagram of the proposed system is shown in fig.1. In this paper there two modes of operation to unlock and open, lock and close the door, one is GSM mode and the other is keypad mode. In GSM mode the mobile phone user sends an SMS1(short message service) to the Arduino to unlock the door by operating DC servomotor -1 and for SMS2 door opens by operating DC servomotor-2. Same process is repeated for door closing and locking. Every status of the door is received by the mobile phone user and it is also displayed on LCD. In case due to network issue, GSM fails to work there is a keypad implemented on the door to control all functions of the door by entering a password, if password entered is wrong the buzzer is turned on and an SMS is also received by the user. The buzzer is for security backup. Fig.2 shows the development of flowchart for the proposed system in GSM mode and fig.3 shows the flowchart in keypad mode.

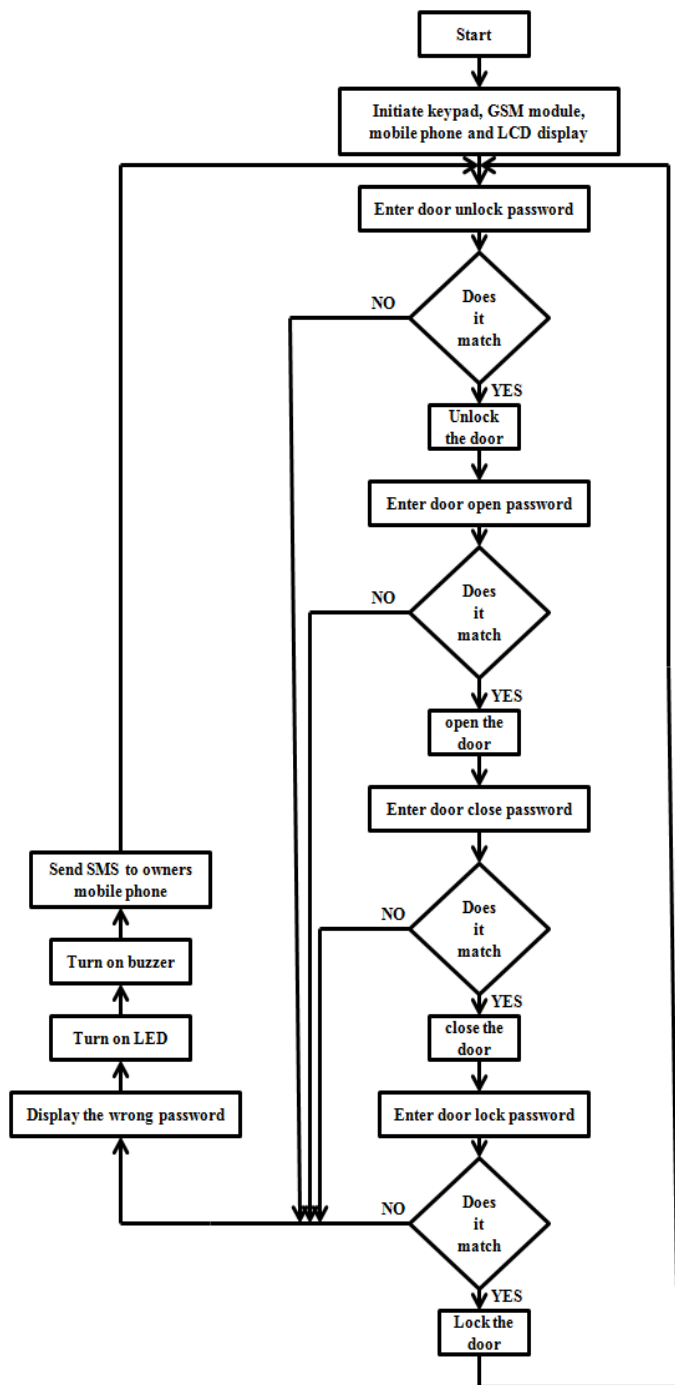


Fig.2 Flowchart for the proposed system in GSM mode.

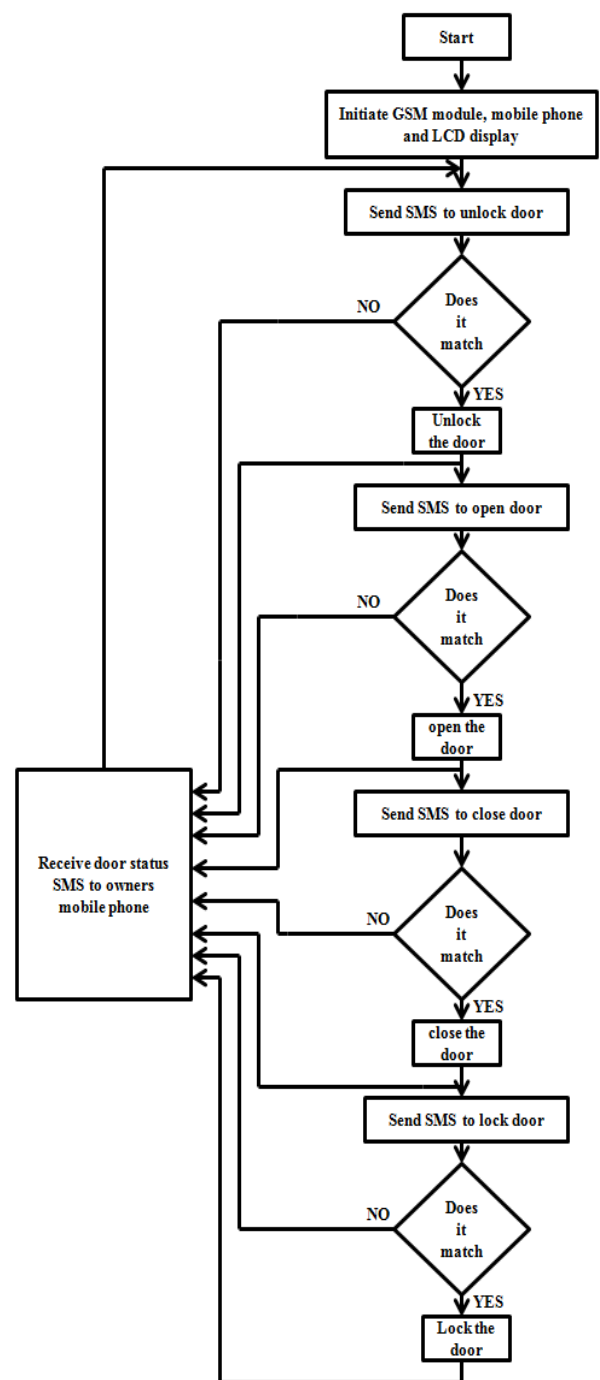


Fig.3 Flowchart for the proposed system in keypad mode.

3. RESULTS

Table 1. Motor Direction Control & Status Indication

Mobile phone SMS	DC servomotor1 rotation	DC servomotor2 rotation	Door status
MS1	90° clockwise		Unlock
MS2		90° clockwise	Open

MS3		90° anticlockwise	Close
MS4	90° anticlockwise		Lock



Fig.4 Implementation Setup



Fig.5 Implementation Results

4. CONCLUSION

The door open and close, lock and unlock was implemented successfully using GSM module. The prototype for controlling one swing door through short message service is implemented. This can be used to remotely control opening and closing, locking and unlocking of multiple doors in big infrastructures.

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