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PASSWORD SECURED ACCESS CONTROLLING SYSTEM FOR BTS TO A MOBILE SERVICE PROVIDER IN SRI LNAKA

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ABSTRACT

Mobitel is a mobile phone network in Sri Lanka. It is wholly owned by Sri Lanka Telecom (SLT). To fulfil all requirements Mobitel comprises many elements, each having its own function to complete.The most obvious part of the cellular network is the base transceiver station. The base transceiver station or system, BTS was consisted of a number of different elements. The first wasthe electronics section normally located in a container at the base of the antenna tower.This was contained the electronics for communicating with the mobile handsets and included radio frequency amplifiers, radio transceivers, radio frequency combiners, control, communication links to the BSC, and power supplies with back up.MobitelPvt. Limited was experienced several BTS robberies for a year. Password secured access controlling system was selected as the ideal method to solve the above situations. This system was identified unauthorized entrance from the incorrect password and sent a sms to the relevant site engineer automatically.By this system the company can prevent from robberies, minimize energy consumption and reduction in resources, manpower and maintenance. Meanwhile the company will capable to provide a quality service to the customer continuously.

Keywords: *Base Transceiver Station, Access controlling system, Arduino*

1.0 INTRODUCTION

Access controls was security feature that control how users and systems communicate and interact with other systems and resources. Benefits of access control systems were immense. In this era of technological advancement, access control system has already proved its worth by effectively functioning for the security purposes. Day by day, security and privacy of places, necessary and important areas etc are being critically challenged. Day by day becoming more and more technology oriented, if there were no real benefits of access control systems, people would never be that persistent in using it[1].

The first and foremost responsibility of access control system was to secure the site where it was being used. By monitoring every single accesses done through the system is taken care of. Andaccess control system shows when person have to remember only one key for accessing through it. As there was no acceptable scope of duplication, this fact results in a superior luxury in maintaining security of the related premise or things.For Mobitel, it was ideal to have remote access facilities for the engineers. This was helped to save precious time of them. In case of a stranger tried to enter the site, a sms sent automatically to the relevant site engineer.The cellular network fulfills many requirements. Not only does the cellular network enable calls to be routed to and from the mobile phones as well as enabling calls to be maintained as the cell phone moves from one cell to another, but it also enables other essential operations such as access to the network, billing, security and much more.The most obvious part of the cellular network is the base transceiverstation. This contains the electronics for communicating with the mobile handsets and includes radio frequency amplifiers, radio transceivers, radio frequency combiners, control, communication links to the BSC, and power supplies with back up.The second part of the BTS is the antenna and the feeder to connect the antenna to the base transceiver station itself. BTSs are set up in a variety of places. In towns and cities the characteristic antennas are often seen on the top of buildings[2]. The available security system sent an alarm to the NOC (Network Operation Center) when the door opens in the BTS. It can't detect the entrance is authorized or not. This system provided method to identify the entrance is authorized or not.

2.0 METHODOLOGY

2.1 Used Materials

There were several Arduino shields such as Arduino ADK,Arduino-Compatible Due, Arduino Compatible Mega 2560, Arduino Compatible UNO and etc.For common purpose the UNO was good place to start. The number of inputs in this project was high. The arduino mega 2560 has more hardware serial ports, more timers and more I/O pins.The arduino mega 2560 was bigger both physically and in terms of available FLASH memory and RAM (256kB FLASH/8kB RAM vs. 32kB FLASH/2kB RAM on the UNO).

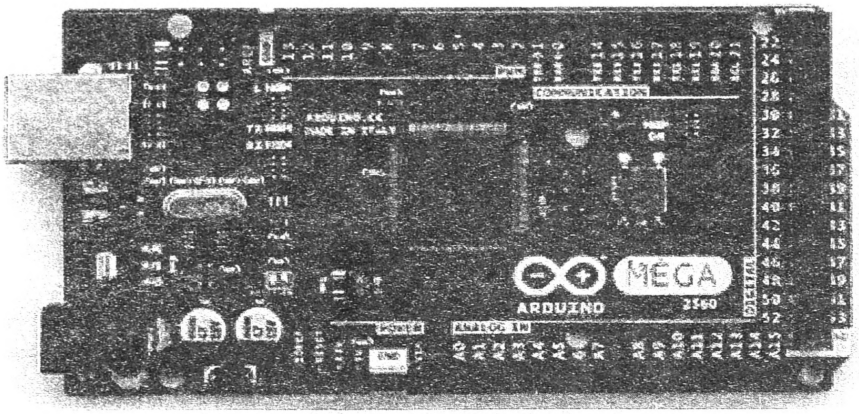

Figure 1: Arduino Mega

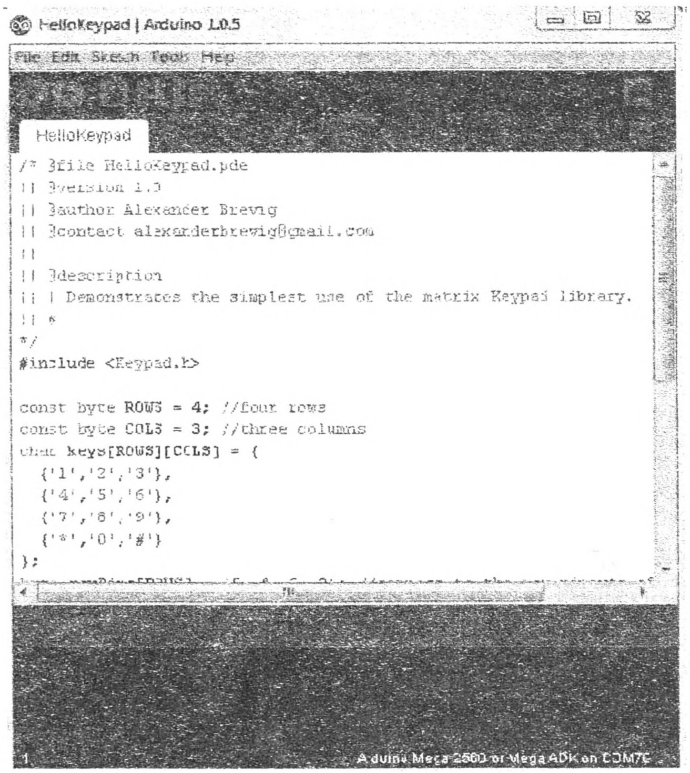

Figure 2: Arduino IDE

arduino programs were written in C or C++. The 16×2 LCD Display, 4×4 Keypad,SIM900 GSM Module and Servo Motor were connected by using the arduino IDE software.Pin numbers were defined and above equipments were connected by using the arduino IDE to function according to the below procedure. Software written using Arduino was called sketches. These sketches are written in the text editor. Sketches are saved with the file extension .ino. It has features for cutting/pasting and for searching/replacing text. The message area gave feedback while saving and exporting and also displayed errors. The console displays text output by the arduino environment including complete error

messages and other information. The bottom righthand corner of the window displays the current board and serial port. The toolbar buttons were allowed to verify and upload programs, create, open, and save sketches, and open the serial monitor.The arduino IDE comes with examples, which makes many common input/output operations much easier[3].

In this proposing system first ask to press the start button. Then ask to enter the password. If password was correct, displays "Access granted". Whether the password is incorrect,displays "Access denied"and it given another chance. Likewise the person can try three times. If the person wasenabled to enter the correct password, then send a sms to the site engineer and the person can't press any button in keypad for 5 minutes.

If you get the permission, then ask to hold the door. If the person needed to hold the door he/she had to press F3. If that person pressed the F3 door was hold. If not door was closed. If the site engineer wanted to change the password he can do it by pressing F1. Then ask to enter the old password and new password. After changing the password sms will send to the site engineer.

3.0 RESULTS AND DISCUSSION

In this proposing system provide good secure to the BTS. It identifies whether the entrance is authorized or unauthorized. If the entrance was unauthorized, the system sent a sms to relevant site engineer. It made them comfortable to take quick actions. Meanwhile person who tried to enter the BTS can't try for another attempt since the keypad is locked for 5 minutes.

If the entrance was authorized, the system asked to hold the door. Because sometimes need to take some equipments into the BTS. It may take much time. So the system was allowed holding the door.

Someone can change the password. It was very risky situation. This system avoided this type of risks. After every password changing, system will send a sms to relevant site engineer. Finally this system provides good security system than the existing one.

LCD and keypad install near to the door lock. Arduino shield and GSM shield keep near to the door separately. Those equipments were kept in safe places. Because the environment factors such as rain, sun shine and etc might damaged to the system.

4.0 CONCLUSION

Eventhough this is a preliminary study, the resultsprovide good secure to the BTS.When considering about the monitory value of those equipments is near about Rs. 800,000.00. Most of the time, thieves tried to steal some kind of wires equipped with copper, battery bank and the copper equipped instruments. As mention in the above paragraph company faces big problem from this kind of situations. Because the company was spend lots of money for a single BTS. As well as the maintenance cost. If the thieves steal air conditioner, it may cause another issues. Because by increasing the temperature, the whole BTS may damage. So having this type of access controlling unit the company can minimize the risk or avoid the risk.

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