PASSWORD PROTECTED GSM BASED DEVICE CONTROL

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Abstract-
This paper mainly focuses on the controlling of home appliances remotely and providing security when the user is away from the place. The system is SMS based and uses wireless technology to revolutionize the standards of living. This system provides ideal solution to the problems faced by home owners in daily life. It is wireless therefore more adaptable and cost-effective. Upon being properly authenticated, the cell phone-based interface at home (control unit) would relay the commands to a microcontroller that would perform the required function/action, and return a function completion code that would be sent to the source of the original command (user's cell phone). This system will be a powerful and flexible tool that will offer this service at any time, and from anywhere with the constraints of the technologies being applied**.**

Keywords- Cellphone, Microcontroller, GSM Modem, LCD and Relay.

I. INTRODUCTION
In this competitive world human cannot spare his time to perform his daily activities manually without any fail. The most important thing he forgets is to switch off the room lights wherever not required. With this, even the power will be wasted up to some extent. This can be seen more effectively in the case of lights, fans. This project gives the best solution for electrical power wastage. Also the manual operation is completely eliminated.

The project PASSWORD PROTECTED GSM BASED DEVICE CONTROL allows the user to control the electrical loads in homes or offices just by sending predefined messages to the controlling system. Each electrical device will be provided with a unique password. These electrical appliances can be operated only if the correct password is sent to the device through controlling unit. This method of operating the appliances helps in providing security to the devices and also power saving up to some extent.

The user has to send a predefined SMS to the modem and the modem will intimate the controller about the received message and the controller will act in accordance with the received message such as switching on/off an industrial electrical load. The status of the devices will be displayed on LCD.
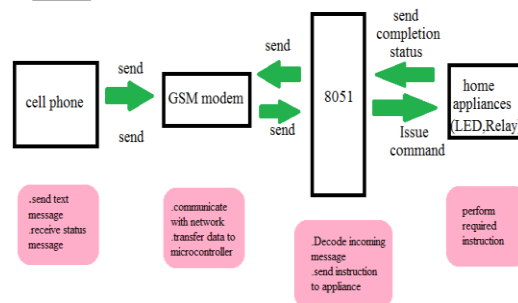

Fig. 1: block diagram depicting working of the system.

II. WORKING:

Assuming that the control unit is powered and operating properly, the process of controlling a home device will proceed through the following steps:-

1. The remote user sends text messages including authentication information and commands to the receiver.
2. GSM receiver receives messages sent from user cell phone.
3. GSM receiver parses the string for the authentication information, and the commands.
4. GSM receiver sends the commands to the microcontroller.
5. Microcontroller issues commands to the appliances.
6. Microcontroller checks for completion status and sent it back to the GSM receiver.
7. GSM receiver informs the remote user of the outcome of their request by sending a completion status message back to remote user in the form of another SMS message.
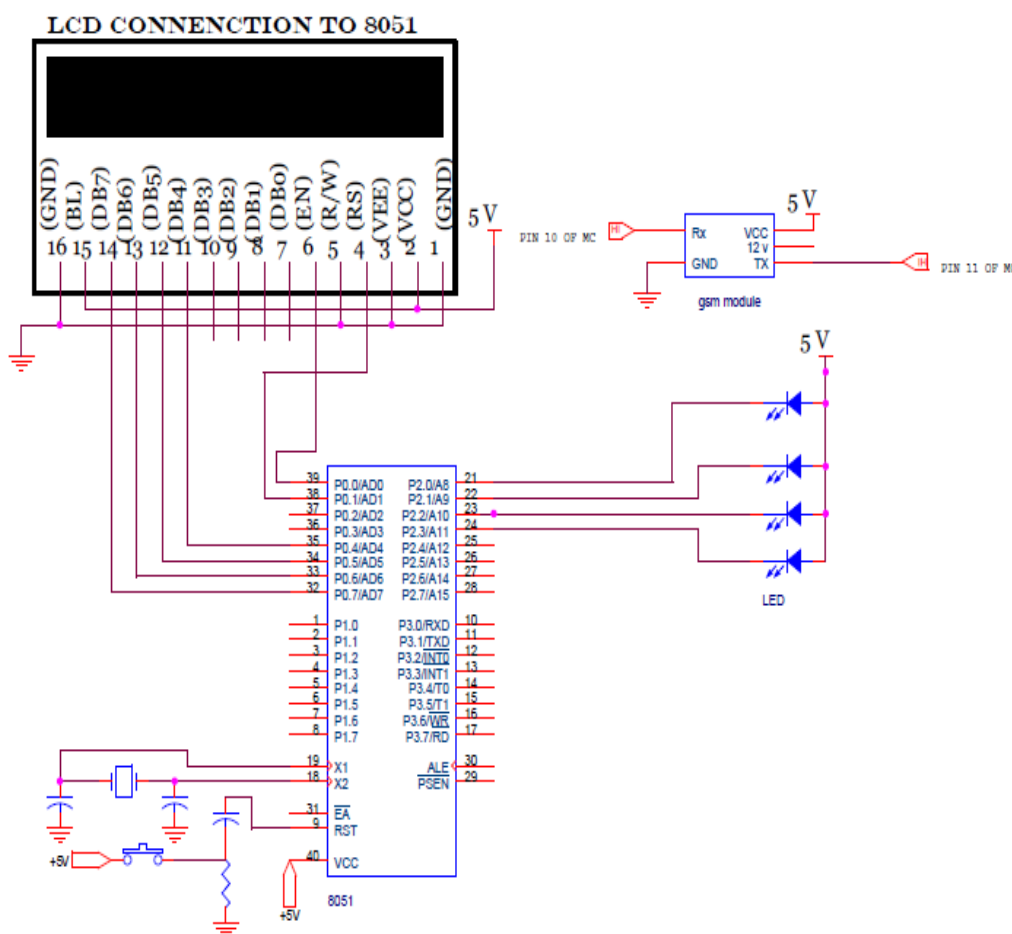
CIRCUIT DIAGRAM:

Fig.2: Circuit diagram of system.

III. COMPONENTS USED:

1. MICROCONTROLLER

Fig.3: Picture depicting microcontroller

A microcontroller is a small and low-cost computer built for the purpose of dealing with specific tasks, such as displaying information in a microwave LED. Microcontrollers are mainly used in products that require a degree of control to be exerted by the user.
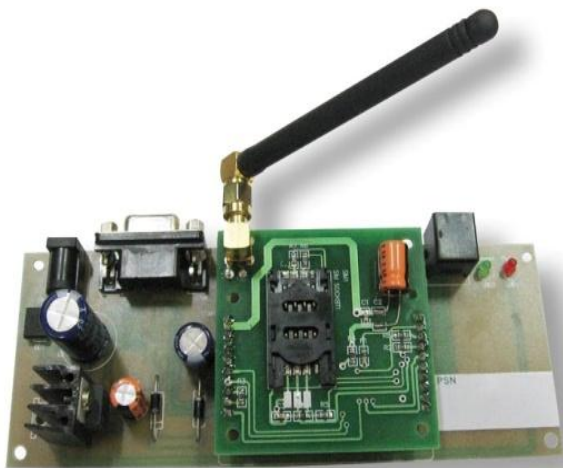
2. GSM MODEM

Fig.4: Picture depicting GSM modem

GSM is the most popular standard for mobile phones in the world. It is based on TDMA (time division multiple access) technology.
We are using the SIMCOM 300, a GSM modem. This is a powerful GSM/GPRS Terminal with self-contained unit.
This has standard connector interfaces and has an integral SIM card reader.
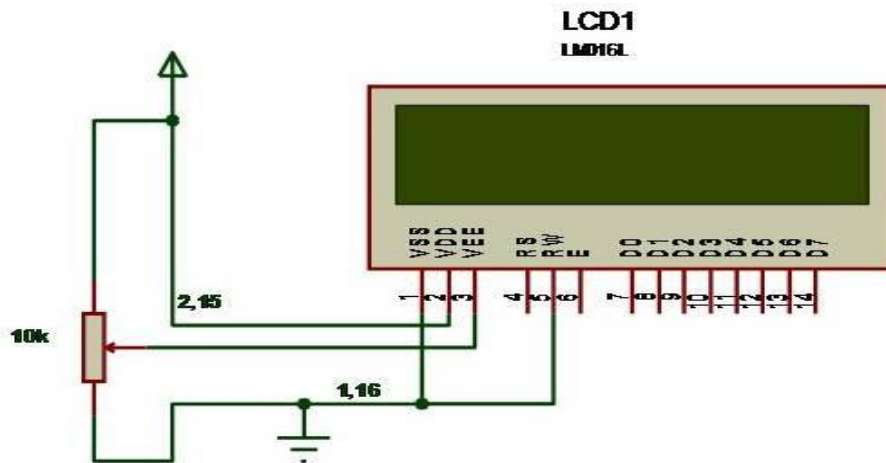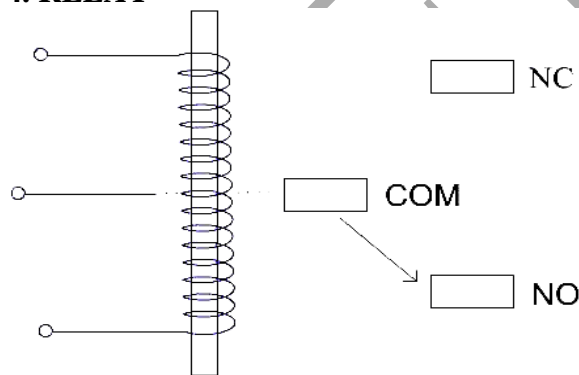
3. LCD

Fig.5: Circuit showing LCD connection.

Enable (E)-This line allows access to the display through R/W and RS lines. When this line is low, the LCD is disabled and ignores signals from R/W and RS. When (E) line is high, the LCD checks the state of the two control lines and responds accordingly.

Read/Write (R/W)- This line determines the direction of data between the LCD and microcontroller. When it is low, data is written to the LCD. When it is high, data is read from the LCD.

Register select (RS)- With the help of this line, the LCD interprets the type of data on data lines. When it is low, an instruction is being written to the LCD. When it is high, a character is being written to the LCD.

4. RELAY

NC: - Normally Connected
NO: - Normally Open
COM: - Common

Fig.6: Relay switch connection

A relay is used to isolate one electrical circuit from another.It allows a low current control circuit to make or break an electrically isolated high current circuit path.

5.CRYSTAL OSCILLATOR:

It is often required to produce a signal whose frequency or pulse rate is very stable and exactly known. This is important in any application where anything to do with time or exact

measurement is crucial. It is relatively simple to make an oscillator that produces some sort of a signal, but another matter to produce one of relatively precise frequency and stability. An ordinary quartz watch must have an oscillator accurate to better than a few parts per million. One part per million will result in an error of slightly less than one half second a day, which would be about 3 minutes a year.

Fig.7: Crystal Oscillator

6. VOLTAGE REGULATOR IC (78XX):

A voltage regulator is an electrical regulator designed to automatically maintain a constant voltage level. It may use an electromechanical mechanism, or passive or active electronic components. Depending on the design, it may be used to regulate one or more AC or DC voltages.

Fig.8: Voltage regulators
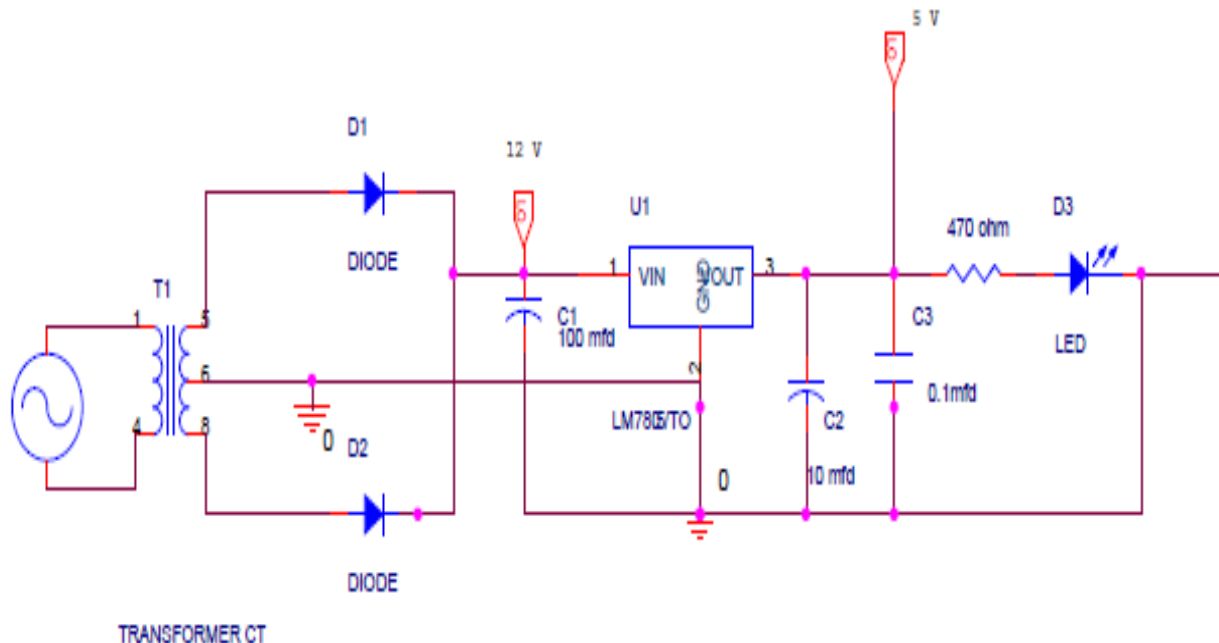
IV.POWER SUPPLY:

Fig.3: Circuit diagram for power supply of the system.

V.CONCLUSION:

The project we have undertaken has helped us gain a better perspective on various aspects related to our course of study as well as practical knowledge of electronic equipments and communication. We became familiar with software analysis, designing, implementation, testing and maintenance concerned with our project.

The extensive capabilities of this system are what make it so interesting. From the convenience of a simple cell phone, a user is able to control and monitor virtually any electrical devices. This makes it possible for users to rest assured that their belongings are secure and that the television and other electrical appliances was not left running when they left the house to just list a few of the many uses of this system.

This document presents a mobile controlled and user-friendly approach to the available home automation system. This system can easily be implemented because of its wireless communication standards.

Till now, we have researched the literatures for all the topics that include GSM automation system using SMS. Then we have to built the main control program, hardware and the warning system via GSM network

REFERNCES:
1. Vini Madan ,S.R.N Reddy "GSM-Bluetooth based Remote Monitoring and Control System with Automatic Light Controller" International Journal of Computer Applications (0975 – 8887) Volume 46– No.1, May 2012
2. "Microcontroller Technology:16F84A", prentice hall , 7th edition, page32, 2002
3. Ahmad A.W., Jan N., Iqbal S. and Lee C., " Implementation of ZigBee-GSM based home security monitoring and remote control system", IEEE 54th International Midwest Symposium on Circuits and Systems (MWSCAS), 2011, pp. 1-4.

4. Daldal Nihat, "GSM Based Security and Control System" (In Turkish), M.Sc. Term Project, Gazi University, Ankara, 2003.
5. A. Z. Alkar, and U. Buhur, "An Internet Based Wireless Home Automation System for Multifunctional Devices,"IEEE Transactions on Consumer Electronics, vol. 51, no. 4, pp. 1169-1174, Nov. 2005.
6. Yuksekkaya, B.; Kayalar, A.A.; Tosun, M.B.; Ozcan, M.K.; Alkar, A.Z.; "A GSM, internet and speech controlled wireless interactive home automation system", IEEE Transactions on Consumer Electronics, Volume: 52 , Issue: 3, 2006 , pp. 837 – 843.
7. Md. Wasi-ur-Rahman, Mohammad Tanvir Rahman, Tareq Hasan Khan and S.M. Lutful Kabir, "Design of an Intelligent SMS based Remote Metering System", Proceedings of the IEEE International Conference on Information and Automation, 2009, pp. 1040-1043.
8. Sankar, P.; Norman, S.R.; "Embedded system for monitoring atmospheric weather conditions using weather balloon"; International Conference on Control Automation, 2009, Page(s): 1 – 4.
9. Carelin Felix and I. Jacob Raglend, "Home Automation Using GSM", Proceedings of 2011 International Conference on Signal Processing, Communication, Computing and Networking Technologies, pp. 15-19, 2011.

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