



HOME AUTOMATION USING GSM TECHNOLOGY

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Abstract- "Necessity is the Mother of all Inventions". Home automation systems are a result of an attempt to enhance the standards of living around and inside the house and were made possible by the breakthrough in the area of integrated circuits and microprocessors. These systems provide the consumers with increased security and safety, economic benefit through energy control, and convenience by giving them control over every piece of domestic electrical equipment in the house. Designing a home automation system for monitoring and controlling various devices in remote locations can be done through a variety of communications options such as satellite communication, internet, cellular network and so on. Here we are proposing a work on "HOME AUTOMATION USING GSM TECHNOLOGY" as we feel that this is the latest, simple, economical & consumer friendly technology which is to be implemented to help the consumers in the developing nations like INDIA.

Index Terms-Communications, GSM Technology, Home automation.

I. INTRODUCTION

We live in innovative time where everything is becoming smart. Appliances have sensors that could grab the inputs from user environment and also can communicate with other things (devices) and we call this terminology as INTERNET OF THINGS. The Internet of Things is in a huge way and people are rapidly inventing new gadgets that enhance lives. The price of microcontrollers with the ability to talk over a network keeps dropping and developers can now tinker and build things inexpensively. IOT based home automation project is done using low cost GSM Module, It uses relays and a few simple components.

II. LITERATURE SURVEY

Controlling household appliances through computer can also be a possible solution. However, it cannot fulfil the current demand which is to control them from remote places. The advantages of cellular communications like GSM technology is a potential solution for such remote controlling activities. [1]. Home automation systems are a result of an attempt to enhance the standards of living around and inside the house and were made possible by the breakthrough in the area of integrated circuits and microprocessors.

These systems provide the consumers with increased security and safety, economic benefit through energy control, and convenience by giving them control over every piece of domestic electrical equipment in the house [2]. Literature reveals that the main objective for using GSM(Global System for Mobile Communication) network for the communication between the home and the users(and vice versa) is its wide spread coverage which makes the whole system online for almost all the time[3].

Home security system is needed for occupants' convenience and safety. At the same time it is required design and implementation of a low cost, low power consumption, and GSM/GPRS (global system for mobile communication /general packet radio service) based wireless home security system. The system is a wireless home network which contains a GSM/GPRS gateway and three kinds of wireless security sensor nodes that are door security nodes, infrared security nodes and fire alarm nodes. The nodes are easy installing. The system can response rapidly to alarm incidents and has a friendly user interface including a LCD (liquid crystal display) and a capacitive sensor keyboard. The wireless communication protocol between the gateway and the nodes is also suitable for other home appliances. Furthermore, some more methods are taken to ensure the security of system information [4]. In [5] Yuksekkaya et al., a GSM based system for home automation is described which uses voice commands for control.

III. PROPOSED WORK

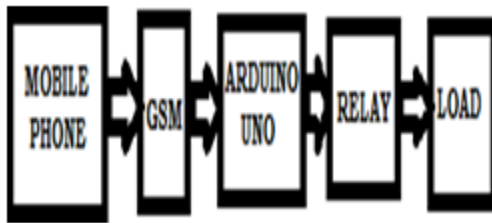
The proposed system is a distributed home automation system, where the system is associated with a GSM module which is configured with a SIM card. This makes the user to control his home appliance with irrespective of his/her distance from their home. Now the question might raised in your mind, that why might one choose to control the home appliance although he is not in his/her home?! There are some appliances that could even work in the absence of the person i.e, they do not need any manual controlling while functioning. For instance, consider an air conditioner at home, the functionality of AC is to carry the room atmosphere from warm to cool. The process might take at least 45minutes, and

assume that the same time is required for the user to travel to his/her home from their office or some other place.

Now to experience the breezy environment immediately after reaching home without any waiting time then this system can help him/her to switch ON the AC machine even when he/she is right in their office. Now the idea of operating an electronic device using his/her mobile phone by just sending an operational command through an SMS service makes the user to control his AC machine prior he reaches his home and can experience a room temperature that he is wishing to have without any waiting time. Similarly, the user can control his various electronic home appliances like washing machine and get his clothes dry right before he reaches his home and save time, can save electricity by switching off any electrical appliances if he was been notified to be ON. An automated system in which an electric appliance can be turned on or off remotely by sending an SMS from a mobile phone.

The user sends the command from his mobile phone to the mobile network, then the message travels through intermediate base stations and finally reaches the base station for which the GSM has been already connected wirelessly. The GSM which is associated with a sim card receives the signal from its nearest tower in analog form. The GSM converts the analog signal to digital signal and transmits it to the Arduino. The Arduino controls the relay with respective the code given. The relay now depending upon its state of input controls the output. Here in my project the lamp is turned ON when the message with the character "*" is sent through SMS. The lamp is turned OFF when the message with the character "#" is sent through SMS.

III. RESULTS AND DISCUSSION



Block diagram of Proposed work

The following are the images that depict the output:

1. The following image depicts the system when the user sent the ON command from his mobile phone to the gsm associated to the system.



2. The following image depicts the system when the user sent the OFF command from his mobile phone to the gsm associated to the system.



IV. CONCLUSION

The goal of this paper is to implement a system which can be controlled remotely. Using GSM module the system is made to change its state from ON to OFF or vice versa with some essential commands sent by the user from anywhere in the world.



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