Home Automation   Based On IOT

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Abstract: Home Automation using cloud network is a system that uses computers or mobile devices to control basic home functions and features automatically through the internet from anywhere around the world, an automated home is sometimes called a smart home. This network uses a consolidation of a mobile phone application and PC based program to provide the means of the user interface to the consumer. The home automation system differs from another system by allowing the user to operate the system from anywhere around the world through an internet connection. In this paper, we have developed a Home Automation system that employs the integration of multi-touch mobile devices, cloud networking, wireless communication, and power-line communication to provide the user with remote control of various lights and appliances within their home. This system uses a consolidation of a mobile phone application, handheld wireless remote, and PC based program to provide a means of the user interface to the consumer. The home automation system differs from other systems by allowing the user to operate the system without the dependency of a mobile carrier or Internet connection via the in-home wireless remote. This system is designed to be low-cost and expandable allowing a variety of devices to be controlled.

Keywords: Cloud Networking, Multitouch Mobile Devices.

INTRODUCTION

Home automation is automation of the home, housework or household activity. Home automation may include centralized control of lighting, HVAC (heating, ventilation and air conditioning), appliances, and other systems, to provide improved convenience, comfort, energy efficiency and security. The concept of home automation has been around for a long time and products have been on the market for decades, though no one solution has broken through to the mainstream yet. Home automation for the elderly and disabled can provide increased quality of life for persons who might otherwise require caregivers or institutional care. It can also provide a remote interface to home appliances or the automation system itself, via a telephone line, wireless transmission or the internet, to provide control and monitoring via a smartphone or web browser. This paper will describe the approach which we are implementing to control various home appliances with Android smartphone.

LITERATURE REVIEW

[1]. **AUTHOR: Sirsath N. S, Dhole P. S, Mohire N. P, Naik S. C & Ratnaparkhi N.S DESCRIPTION**

This paper proposes a Home Automation system that employs the integration of multi-touch mobile devices, cloud networking, wireless communication, and power-line communication to provide the user with remote control of various lights and appliances within their home. This system uses a consolidation of a mobile phone application, handheld wireless remote, and PC based program to provide a means of the user interface to the consumer.

[2]. **AUTHOR: Basma M. Mohammad El-Basioni, Sherine M. Abd El-kader and Mahmoud Abdelmonim Fakhreldin DESCRIPTION:**

This paper proposes a new design for the smart home using the wireless sensor network and the biometric technologies. The proposed system employs the biometric in the authentication for home entrance which enhances home security as well as easiness of home entering process. The structure of the system is described and the incorporated communications are analyzed, also an estimation for the whole system cost is given which is something lacking in a lot of other smart home designs offers.WB-SH is designed to be capable of incorporating in a building automation system and it can be applied to offices, clinics, and other places. The paper ends with an imagination for the future of the smart home when employs the biometric technology in a larger and more comprehensive form. The paper ends with an imagination for the future of the smart home when employs the biometric technology in a larger and more comprehensive form.

[3]. AUTHOR: Basil Hamed
DESCRIPTION:
    The main objective of this Paper is to design and implement a control and monitor system for the smart house. Smart house system consists of many systems that controlled by LabVIEW software as the main controlling system in this paper. Also, the smart house system was supported by the remote control system as a sub-controlling system. The system also is connected to the internet to monitor and control the house equipment's from anywhere in the world using LabVIEW.

BLOCK DIAGRAM:
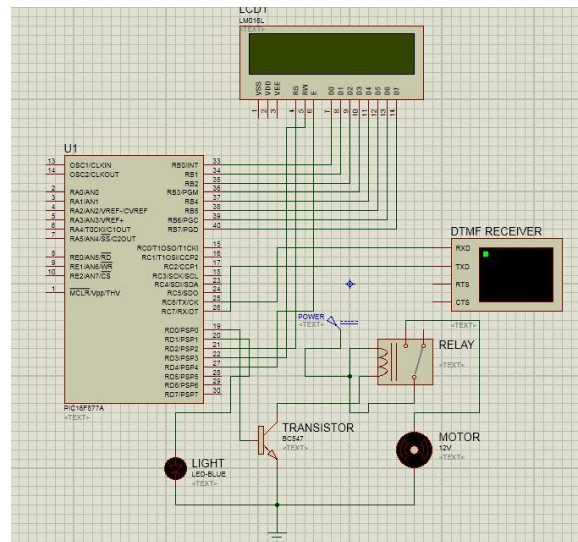
Android Device - It is the device through which application interacts with sensors.
USB Connector - It is the hardware port in the kit through which the USB device is attached to the embedded kit.
Android Accessory Development Kit (ADK) - ADK allows Android Phone to act as USB Device whereas the "Arduino-Mega2560 ADK" will act as USB Host. This allows communication between Android Powered Devices (like phone, tablet) and external Hardware like industrial controls.
Embedded Device - It consists of individually embedded kits along with respective sensors
**System analysis:**

1. Proposed system:
    The markup tags tell the Web browser how to display the page. HTML files must have an HTML file extension.
EEPROM Storage: EEPROM computing is the practice of using remote servers on the internet to manage, store and process data instead of using a personal computer. Cloud computing is a general term that is better divided into three categories: Infrastructure-as-a-Service, Platform-as-a-Service, and Software-as-a-Service. IaaS (or utility computing) follows a traditional utility model, providing servers and storage on demand with the consumer paying accordingly. PaaS allows for the construction of applications within a provider's framework, like Google's App Engine. SaaS enables customers to use an application on demand via a browser. A common example of cloud computing is **Gmail**, where you can access your stored data from any computer with internet access. Here we are using Gmail for the storage of the data

2. Proposed block diagram:
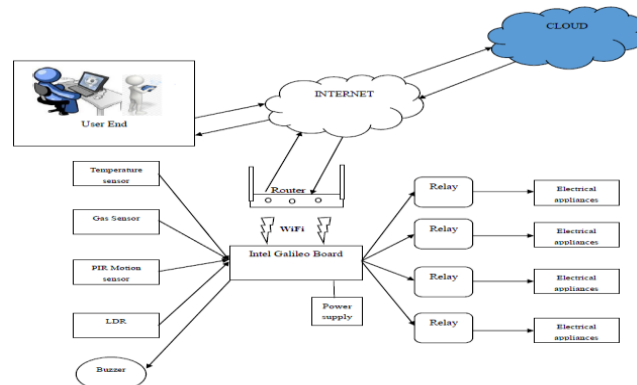
3. Problem Definition
    Many people are always on the move from place to place due to business demands. Some people can spend a couple of days away from their home leaving all their household appliances without any kind of monitoring and control. Some devices are left plugged into power sockets whereas others are supposed to be plugged into and out of power sockets at different intervals depending on the time of the day. All this requires an individual to manually attend to each of the devices independently

from time to time. All such monitoring and control can be done without necessarily being around or inside the home. Some devices if not controlled properly consume a lot of energy which leads to extra expenditure on electricity. Therefore we propose to design an internet based home automation system which will enable one to remotely manage his/her appliances from anywhere, anytime.

4. Proposed System Feature

As we enter the 21st century, the interaction between humans and computer is breaking old barriers and entering a new realm. In the highly technology driven world of today's mobile phones have become a part of our Lifestyles. Mobile phones are not a just communication tool. Our project tries to derive solution providing better control on a home appliance with help of cell phone. The Existing System consists of physical appliances in our home that are been controlled through switches. These devices can be switched ON & OFF manually whenever needed. This system is less secured and prone to electrical hazards. Also, the wastage of electricity tends to be a major factor of concern. The proposed project is conceived networking our mobile phone to all appliances via a smart logic circuit. The proposed system consists of Smart Logic Circuit connected to the appliances. Status of all home appliances could be controlled by the user from a remote location with help of user's mobile phone.The proposed home automation system can control the following appliance:

• Lights on/off/dim
• Fan on/off
• On/off different appliance

• Leakage of gas

5. Software design
Front End Design:

HTML is a format that tells a computer how to display a web page. The documents themselves are plain text files with special "tags" or codes that a web browser uses to interpret and display information on your computer screen. HTML stands for Hyper Text Mark-up Language; an HTML file is a text file containing small mark-up tags. The mark-up tags tell the Web browser how to display the page. HTML files must have an HTML or html file extension.

Database Storage:

The system generates forms to collect data and stores the responses in a database. The system is very flexible since the data can include HTML, allowing the system to perform additional processing using JavaScript or other HTML techniques.
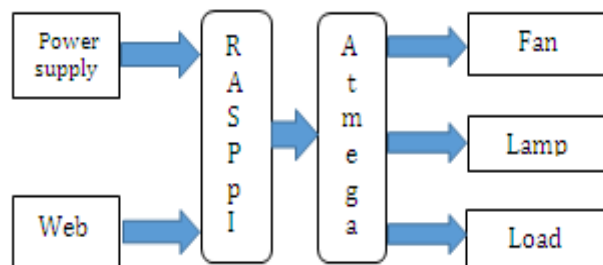
6. Implementation Setup

Figure. 2 sequences of activities in WHAS

Figure 2 illustrates the sequence of activities in the WHAS. When the connection is established it will start reading the parameters of sensors like a fan, tube light, gas sensor etc. The threshold levels for the required sensors are set as t1, t2, and t3 etc. The sensor data are sent to the web server and stored in the cloud. The data can be analysed anywhere any time. If the sensor parameters are greater than the threshold level then the respective alarm a1, a2, a3 etc. will be raised and the required actuation is done for the controlling of the parameters. A model house is built for the home automation system and is as shown in the figure. Light 1 will turn on automatically when the light sensor detects the darkness. A cooler/Fan will turn on when the room temperature exceeds the set threshold and in turn reduces the room temperature. The gas sensor LM35 is placed in the kitchen to detect any gas leakage if any leakage is detected the alarm in the hall is raised. The relay is used to switch the electrical appliances like light, fan etc. The Intel Galileo is placed in the store room or garage. The Raspberry PI B is connected with WiFi or LAN for the connectivity with internet

7. EXISTING SYSTEM

This system is designed to provide control of home appliances through landline by dialing the designated number for the particular load. Dialing can be done from the home phone or a call made to the home number from outside. This system is designed without engaging a programmable microcontroller but is based on digital logic using DTMF technology (Dual Tone Multiple frequencies) which receives the command from the landline phone to develop digital output.
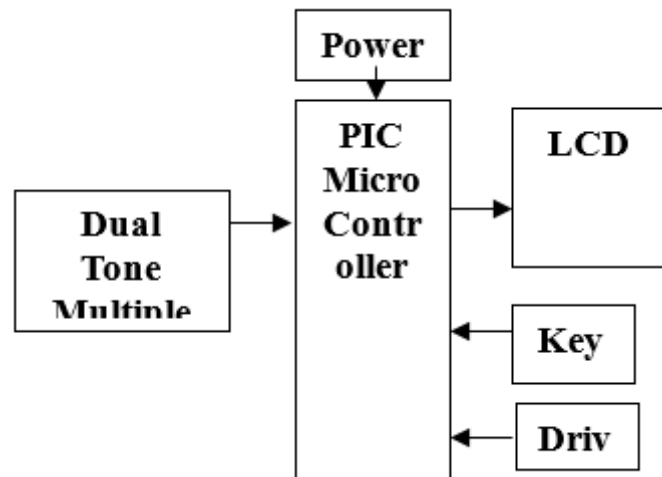
CONCLUSION

The home automation using Internet of Things has been experimentally proven to work satisfactorily by connecting simple appliances to it and the appliances were successfully controlled remotely through the internet. The designed system not only monitors the sensor data, like temperature, gas, light, motion sensors but also actuates a process according to the requirement, for example switching on the light when it gets dark. It also stores the sensor parameters in the cloud (Gmail) in a timely manner. This will help the user to analyze the condition of various parameters in the home anytime anywhere.

FUTURE WORK

Using this system as a framework, the system can be expanded to include various other options which could include home security feature like capturing the photo of a person moving around the house and storing it in the cloud. This will reduce the data storage than using the CCTV camera which will record all the time and stores it. The system can be expanded for energy monitoring or weather stations. This kind of a system with respective changes can be implemented in the hospitals for disable people or in industries where the human invasion is impossible or dangerous, and it can also be implemented for environmental monitoring.

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