



A REVIEW PAPER BASED ON ANDROID-POWERED HOME AUTOMATION SYSTEM

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ABSTRACT

In this era this is common to access and control you home through remote location, for this we use IOT. IOT stands for Internet of Things. This is use for internet connected device. It is network of all internet connected devices, and these devices easily accessed and controlled by IOT. This feature of IOT is use for smart home automation. Here smart means to manage home IOT devices through speech, command and gesture. We can create centralized system for home automation and also manage devices through remote locations through different technologies. All the technologies i.e. web based or android based are important for IOT. We need more user friendly applications and proper internet connection for this.

INTRODUCTION-

Modern technology has been incorporated into everyday life. In daily life, there is more interaction between humans and machines. IoT home automation is the practice of employing various control system techniques to automatically operate home equipment. Windows, refrigerators, fans, lights, fire alarms, kitchen timers, and other electrical and electronic appliances can all be controlled using a variety of control approaches. IoT home automation refers to the capability of electronically controlled, internet-connected systems to control domestic appliances. Complex heating and lighting systems, alarms, and home security controls, all connected by a central hub and operated remotely by a mobile app, may be set up in preparation.



Home Automation System

Now more than ever, home automation systems are the subject of intensive study and development. Because of the obvious benefits of automating our home, we will likely adopt wireless communication methods such as Bluetooth, Wi-Fi, and GSM. Because of its long-range operability and reliably precise output, GSM is the optimal mode of communication for such tasks. Using a GSM modem, we are able to send a single text message and take control of every appliance in the house. This GSM modem essentially interacts with the cell provider via a SIM card and a subscription. Here, closeness or farness from the action makes no difference.

Global System for Mobile Communications, or GSM, is the name by which this system is often known. It is a modem for wireless communication, and its main function is to allow one GSM device to talk to another GSM device, computer, or processor on the same network or another network. The Time Division Multiple Access (TDMA) protocol employed by this modem is standard in several forms of digital wireless telephony, including GSM, CDMA, and TDMA. For this GSM modem to function within the network coverage area to which the network operator has granted access, a SIM card is required. A computer can connect to this GSM modem via wired or wireless means, such as Bluetooth, Wi-Fi, or a USB cable. A regular GSM mobile phone, this GSM modem may be connected to a computer via a USB port with the help of the included cable and driver software. This GSM modem can be used in place of a mobile phone using the Global System for Mobile communications standard. In order to gain access to information from any location Putting a Wi-Fi adapter in the cloud is also an option.

The microcontroller will be programmed in such a way that it will not only turn on or off the

appliance in response to an SMS command sent from an operating mobile device to the SIM within the GSM module, but will also record this information in real time on a distant server. The method can be improved upon by allowing us to notify a user anywhere in the world by short message service (SMS) or electronic mail.

History:

Though the phrase "smart house" was first used by the American Association of Home Builders in 1984, the concept of "smart homes" as we know it today didn't emerge until the early 2000s with the advent of the Internet of Things. Smart homes suddenly became more accessible to middle-class families as a variety of cheaper but smart house technologies entered the market.

1966 saw the creation of the first Internet of Things (IoT) home automation system. Users were able to manage the temperature in their homes, turn on and off appliances, and make grocery lists.

There was never a commercial release of Echo IV, the first home automation system in history. In 1966, Jim Sutherland developed ECHO (an acronym for "Electronic Computing Home Operator"), a device that could automate tasks like making grocery lists, turning on lights, and storing recipes.

How to smart home work:

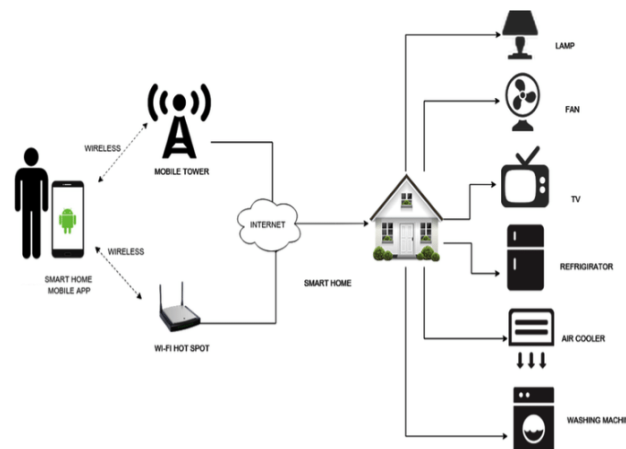
Both an internet connection and a device for remote control, such as a smartphone, are necessities for a smart home. A typical internet-connected hub controls all of the various devices in an IoT-based smart home. We also require a smartphone app that regulates the brain of the smart house. Setting up an IoT smart home might be difficult since there are so many different components that are incompatible with one another.



Tools Required for smart home automation:

1. **GSM module:** The SIM 800/900 MODULE is the GSM module we utilise. Bluetooth is interfaced by default in this modem. There are essentially three types of GSM modules. They constitute Data Loggers Data Pushers Data Pullers
2. **LCD Display 16*2:** LCD is typically used to display the limited output statements. Currently, we primarily employ 16*2(4 bit communication) and 16*4(8 bit communication), which correspond to 16 letter spaces with 2 lines and 16 letter spaces with 4 lines, respectively (each line will have 16 letter spaces)

3. **N-Channel Relay Module:** The operating voltage of the n-Channels Relay module is 5V DC and the drive current is 20mA. This relay is compatible with a variety of microcontrollers, including Arduino, AVR, PIC, ARM, and MSP430. Here, we choose Arduino because programming is not all that common. This relay module has ports labelled "NC" for "Normally connected to COM," "NO" for "Normally open to COM," and "COM" for "Common." In addition, there will be two types of LEDs, one for displaying the power condition of the board and the other for relay status. "N" denotes that there are no relays on a single board. There are 2, 4, 6, 8, 10, and 12-Channel Relay Modules on the market.
4. **Wi-Fi Module:** Wi-Fi module ESP8266 is commonly used to establish wireless connection between devices. However, this module is incapable of logic level shifting from 5V to 3V and requires an external logic level converter.
5. **Arduino/Genuino Uno:** This board's digital and analogue input/output pins can communicate with various expansion boards and other devices. This board features a serial connection interface, as well as USB, which will be used to load programmes from a computer.



Operation involved:

When the GSM modem is linked to a microcontroller, it communicates with a mobile device via the UART protocol and requires three fundamental signals, including TXD, RXD, and GND. The microcontroller is connected to the GSM modem, which controls the appliances via SMS. This modem continuously examines the input signals. When the modem receives an SMS from a functioning phone, the data is transmitted serially to the microcontroller. This microcontroller compares this data to those that have been saved. If the compared data are identical to the stored values, the microcontroller generates load-controlling signals.

Implementation:

1. Firstly we will create interface of GSM module and then LCD and Relay with Arduino Board after this we Insert an operational SIM card into the GSM module now Upload the code into the Arduino board, Once all the components are online, send the Particular SMS to control the household appliance.



2. The data regarding which device is being controlled can be updated in remote cloud rather and can be retrieved whenever we want

Conclusion:

With the aid of smart home automation enabled by IoT, we are able to remotely access and control all internet-connected gadgets. In addition, we provide solutions to facilitate access and provide time for response. We can control IoT devices from any location on the planet.

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