

# Home Automation through Smart Phone

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## ABSTRACT

In today's world automation is playing important role in each and every individual's life. Every individual wants to get the work done fast, save time, put less efforts and make things more and more easy. Smart Home Automation is a way to have things around your home in an automatic fashion. This will automatically save time that too with less efforts. The purpose of this research paper is to build a system to control all the home appliances through smart phone. The user can increase or decrease the speed of fan, turn on or switch off light and many more applications at home through smart phone or tablet. So, this is implemented using Wi-Fi, and relay. The devices are controlled through Wi-Fi.

Keywords: Automation, Smart phone, Wi-Fi, relay

## INTRODUCTION

In today's era of 21st century, many things are becoming automated. As technology is advancing, so houses are also getting smarter. The switches in houses are generally converting from normal switches to automatic controlled switches or system which involves wireless control devices. In earlier days conventional wall switches are located in different parts of the house which makes it difficult for the user to go near them to operate. Even more it becomes more difficult for the elderly or physically handicapped people to do so. Automation helps to make the things easier, save time, and reduce efforts. Now a day's many wireless technologies are coming into existence. Home automation based on Internet is one of the most popular home automation systems in today's market. To control and monitor the houses through Internet requires big and heavy computers. So it becomes difficult to carry out. So in this research paper, we are going to use mobile phones or tablet from which we can control the appliances where ever we want.

The different wireless communication standards such as Bluetooth, Zig Bee, GSM are used by the home automation system to exchange the data. This helps us to reduce the installation cost, reduce human efforts and becomes more scalable and flexible. Android based home automation helps the user to provide secure and configurable home automation system.

## METHOD AND IMPLEMENTATION

### Parts of proposed system

1. Arduino
2. Android Phone
3. Wi-Fi Module
4. LDR
5. Energy Meter

6. GSM Module
7. Appliances like LED, Bulb
8. Alarm

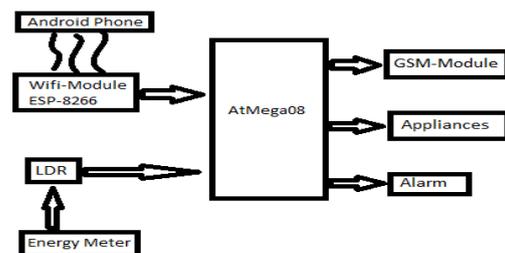


Figure 1: Block Diagram of proposed system

## Description of components

### Arduino

Arduino is a tool for making computers that can sense and control more of the physical world than your desktop Computer. It's an open-source physical computing platform based on a simple microcontroller board, and a Development environment for writing software for the board. Arduino can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. Arduino projects can be stand-alone, or they can communicate with software running on your computer (e.g. Flash, Processing.)

### 2.2.2 Android

User interface is created using android so that the user can easily control the home appliances. The android mobile phone is used to control the home automation system. There are various UI components and layout controls that allow building the graphical user interface. Android also provides other UI modules for special interfaces such as dialogs, notifications, and menus. The interface should allow user to view device status and to control device as shown in figure 2.

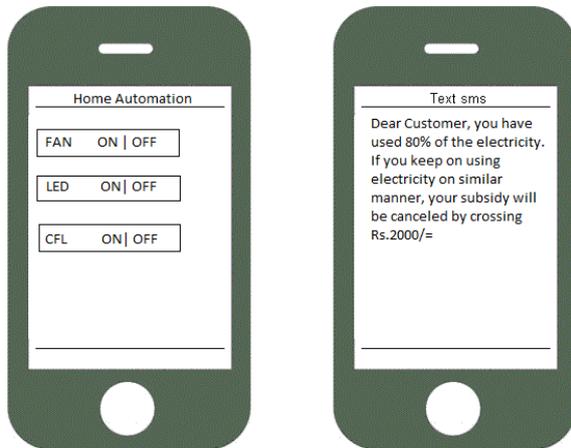


Figure 2: User Interface

#### Wi-Fi Module

The Wi-Fi Module is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to our Wi-Fi network. The Wi-Fi Module used is ESP8266 which is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Each ESP8266 module comes pre-programmed with an AT command set firmware, meaning, we can simply hook this up to our Arduino device and get about as much Wi-Fi ability as a Wi-Fi Shield offers.

#### GSM Module

A GSM module is a chip or circuit that will be used to establish communication between a mobile device or a computing machine and a GSM. The GSM module is powered by a power supply circuit and communication interfaces (like RS-232, USB 2.0, and others) for computer. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities.

#### Implementation

In this project, we are going to automate the home appliances using Android phone. We are going to use microcontroller as our central processing unit (CPU). The remote operation is achieved through any Android smart phone with a Graphical User Interfaced based touch screen operation. GUI is nothing but a type of user interface that allows users to interact with the electronic devices through visual indicators and graphical icons. In this project, things like switching on the Fan or Bulb, getting the energy meter reading, automatically switching the light and exhaust of the washroom, an alarm system in the kitchen for the security purpose etc will be performed by a Smart phone. In order to achieve this, Android smart phone acts as a transmitter and sends on or off commands to the receiver where loads are connected. So, by using wireless technology, we can operate the remote switch on the transmitter and the loads can be turned on or off remotely

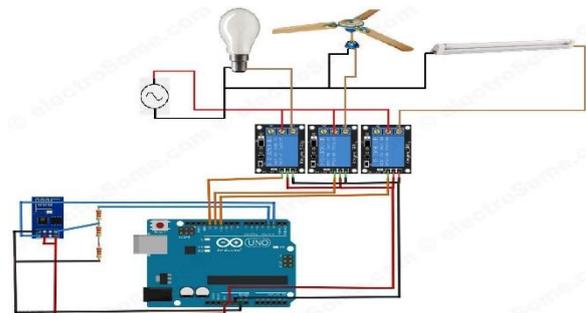


Figure 2: Circuit Diagram of Home Automation using Android

#### CONCLUSION

In this project, a novel architecture for low cost and flexible home control and monitoring system using Android based Smart phone is proposed and implemented. The proposed architecture utilizes a micro web server and Bluetooth communication as an interoperable application layer for communicating between the remote user and the home devices. Any Android based Smart phone with built in support for Wi-Fi can be used to access and control the devices at home.

#### REFERENCES

- [1] N.Sriskanthan and Tan Karand, Bluetooth Based Home Automation System. *Journal of Microprocessors and Microsystems* 26 (2002).
- [2] Muhammad Izhar Ramli, Mohd Helmy Abd Wahab, Nabihah, Towards Smart Home: Control Electrical Devices Online. *Normabihah Ahmad International Conference on Science and Technology: Application in Industry and Education* (2006).
- [3] Al-Ali, Member, IEEE & M. AL-Rousan, Java-Based Home Automation System. *IEEE Transactions on Consumer Electronics*. 50(2) (2004).
- [4] A. Gurek, C. Gur, C. Gurakin, M. Akdeniz, S. K. Metin, I. Korkmaz, An Android Based Home Automation System. *High Capacity Optical Networks and Enabling Technologies IEEE 10th International Conference*. (2013) 121-125.
- [5] S. Deepti, Home Automation System with Universally Used Mobile Application Platform. *IOSR Journal of Electronics and Communication Engineering*. 9(2) (2014).
- [6] D. Javale, M. Mohsin, S. Nandanwar, M. Shingate, Home Automation and Security System Using Android ADK. *International Journal of Electronics Communication and Computer Technology*. (3) (2013) 382-385.