Advance Home Manipulation System using Internet of Things

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Abstract

Home Automation is a way to have many things around your home happen automatically. The first thing that comes to mind when traditional and typical think of home automation are robots, flashing lights, automatic car, complicated electronics and a general feeling that their home is more of a cold science experiment. However, in most homes today, you can easily find some simple forms of automation such as: door openers, Remote Controls, Irrigation / sprinkler control systems, Motion activated, Fan Controls, lights dimming, Security systems, Programmable thermostats, Light timers If you want to keep going, you can throw many more things such as: in dish washer, washing machine and dryers, ovens, lights and switches…. The list goes on and on. The concept of automation feeling of fear and revulsion from this very need the need to control things to make life secure. But the all attempts would be successful only with the right technology. We have started automatically with this maiden effort of home automation. Home automation devote the idea of controlling lights and fan. The most of feature which makes automation so unique and particular beside the fact that it runs on www that is world wide web is that it has the user end fixed as AndroidOS, which, today has emerged as the most remunerative and user friendly technology We have compete this idea of combining AndroidOS platform along with Internet of things to save electricity as well time. This initiative can well be applied to any electrical appliance since here we must have switching on and off the lights along with controlling its dimming ratio and fan as well as gas.

Keywords: Android App, IOT, Router, Wi-Fi Module, Relay

I. INTRODUCTION

Home automation is the use and controlling and handling of home appliances any place or any time. Early days home automation starts with labour-saving machines like washing machines. Some home automation appliances are stand alone and do not transmit information, such as a programmable light switch, while others are part of the internet of things and are networked for remote monitor and information transfer. Hardware devices can include sensors (like gas sensor, cameras and thermometers), controllers, actuators and communication systems. Remote control can range from a simple remote control to a smartphone with Wi-Fi, to a computer on the other side of the world attached with internet. Home automation systems are available which consist of products designed to work unitedly. These typically connected through Wi-Fi or power line communication to a hub which is then control with an application. Popular applications include thermostats, security systems, Sensor, lighting, and door locks.

The Internet of Things (IoT) is a determine concept that explain a future where every day physical device will be attached to the Internet and be able to identify themselves to another machine. The term is closely identified with RFID as the method of transfer information, although it also may include other sensor technologies, wireless technology

The IoT is implication because a machine that can present itself digitally becomes something bigger than the object by itself. No longer does the machine relate just to you, but is now connected to surrounding device and database information. When many devices act in unison, they are known as having "ambient sound intelligence."

The Internet of Things is a hard concept to explain precisely. In fact, there are many different organizations that have defined the term, although its starting use has been attributed to Kevin, an expert on digital innovation. Each term shares the idea that the first edition of the Internet was about data developed by people, while the next edition is about data created by things.

II. LITERATURE SURVEY

Mohammad Mohsin, Shreerang Nandanwar , Deepali Javale, and Mayur Shingate has imlement a standalone embedded system board Android ADK (Android Development Kit) at home. Home devices, which are to be automated, are interfaced to the ADK and then information is communicated between Android device and ADK. Appliances are attached to the I/O ports of the embedded System and the status is transfer to the ADK. The embedded System exploited here is Arduino Embedded System

Smart Home manipulation is the word which normally exploited to explain home, room or company, which has a peculiar system that does some intelligent actions according to problem. The element is connected to each other in such a way that they can be monitor by a mobile app. This remote machine does not require to have a physical connection with the system. For example, when a person is feeling barf and regard to switch off the fan. The person can use the application to switch of the fan without taking the problem to get up. Such applications can use by companies to upgrade their rooms. Research on smart homes began in the late 1981"s with the aim on making homes more intelligent. By the mid 1991" the focus had turned to these innovations into the lives of the elderly and disabled people. In Africa, the elderly population had been quantity added faster relative to the younger population and still does so Today.

As such, home manipulation is becoming a desirable state for the elderly and disabled people and there is a lot of development being carried out in this location. it focuses on making it possible for disabled people to rest their life at home, safe and comfortable as well as time efficient. All combined WSN (Wireless sensor network) and Radio Frequency Identification technology for door control system as well as light control. Their projects are deals with the Radio Signal Strength Indicator (RSSI) of WSNS. This technology consists of many readers which reads an approaching small piece to identify the person who is carrying badge. The problem in their project is that Wireless sensor nodes always make radio transmission in a very short period of time. A sensor expends lots of energy in radio communication both for user and server. Thus, it causes to absorb the battery of node shortly because of their limited source of power.

III. MOTIVATION

Having listed the above-implemented systems for home automation we concluded that there might be some more methods to make it. more august. Then we found out that the main demerit which outdoes these systems were mainly the mediocre effective communicating area. Therefore, to make it more practically viable we thought to implement it on the World Wide Web, which makes it easily accessible pragmatically throughout the globe. It although, has some scope for improvement in the future, it can really serve the purpose for the day! We were pleased to work on this embedded system project since today's world demands everything automated because lives have become busier and the very little nuances in life that may make big differences must demand little attention.

IV. METHODOLOGY

The system, which we have implemented fairly, takes a front seat from the rest of the implemented systems. Our Home Automation System (HAS) has been the interface of more than one technology. The main advantage of this system is that it has the widest range, possibly the entire globe. This system can be extended to a properly a deployable HVAC (Heating, Ventilation and Air Conditioning) system. Our project can be studied by dividing it to the following parts:

A. Android

Android is the operating system, which is based on Linux and developed by Google. Google releases android's source code under open source licenses. The operating device, which we are using, is an Android mobile phone. An Android version anything above Ice Cream Sandwich (4.0 to 4.0.4) has been found suitable for running this system. The Android code is installed as an executable on the phone, which communicates with the java server on the Computer System.

B. Java

All our communication is between the Android and the Java Server. We have built a communicating module in Java with the help of Sockets. Normally, a server runs on a specific computer and has a socket that is bound to a specific port number.

C. Microcontroler

ATmega328 is the microcontroller, which we are using in this process. It is an 8-bit high performance microcontroller with low power consumption. Atmega328 is based on enhanced RISC architecture with powerful process. Most of the instructions execute in one machine cycle.

D. Relay

A relay is an electrically operated HUB. An electromagnet is used to operate the circuit off.

V. SYSTEM ARCHITECTURE

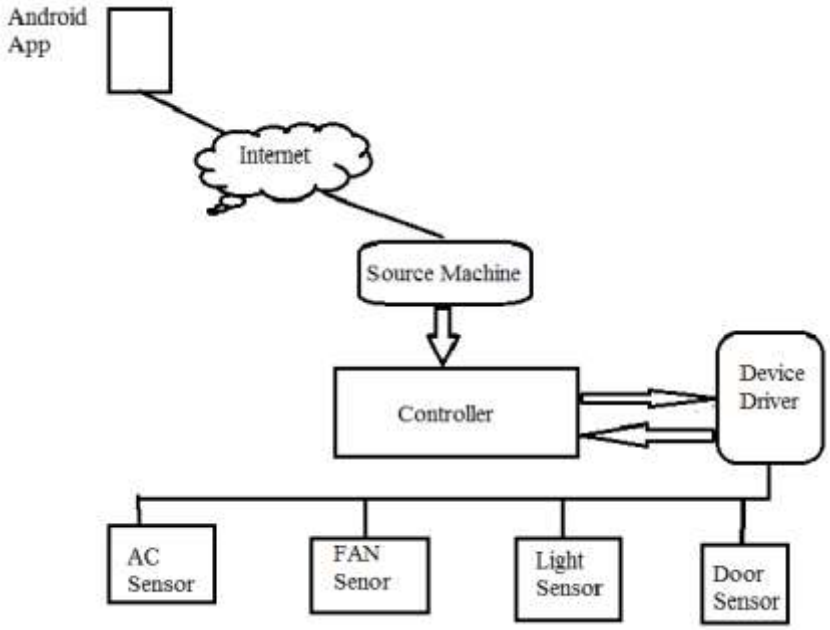

Fig. 1:

Above figure shows the block system architecture of the home automation system with their components. The architecture includes the controller, various sensors, device drivers, router for internet connection and the main is android application. Through this android application we can control our whole system. the sensors are working with the help of controller. For device communication we use the relay circuit. Mobile application and the hardware board are connecting each other with the help of internet and router which is connected to the hardware board. In this project we using the concept of internet of things. With this we connect the real world object to the internet. A home automation system can involve switching on and off electrical appliances like, lights, door, fan etc.

VI. RESULT

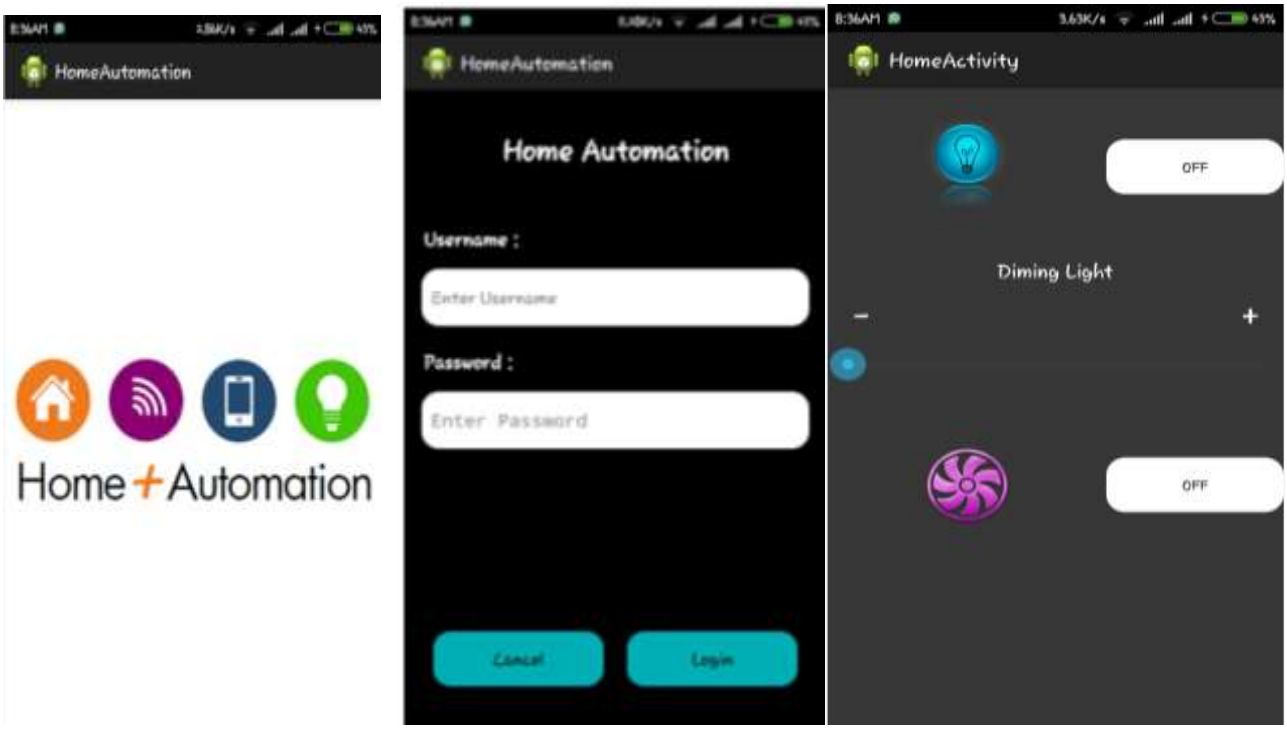

Fig. 2:

VII. CONCLUSION

In spite of the holding away features of the system, it can become the most successfully implemented Home Automation System. The main advantage of this system is that, firstly it inculcates the sense of saving energy in a tech-efficient way. Besides, it also has a very low cost of implementation since the way of communication is only through Internet. The widely arguable disadvantage, which can be a future scope as well, is that it can only use a static IP address. Also, this automation requires a dedicated computer system throughout its working.

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