

# Control Home Appliances Over Iot

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## ABSTRACT

This paper presents a system of IOT based smart controlling of electrical devices, which can control the ON/OFF of any electrical devices at home, by using internet. The manual switching of any home appliance in this busy world is an inconvenient method for the physically disabled or elders or even for normal young guys, when frequent switching operation is required. Thus this conventional manual switching method has to be overcome by an easier & cost effective method of switching. This can be done by using an advanced switching method, like a remote control for home based applications.

## I. INTRODUCTION

With the continuous growth of technology & revolution in the usage of mobile devices. It has become a necessity for many people throughout the world. The ability to keep in touch with family, business associates, and access to email and so on. These are only a few of the reasons for the increasing importance of cell phones. Today's technically advanced cell phones are capable of not only receiving and placing phone calls, but also the upcoming smart phones are compatible with the applications that communicate with the various servers and applications through the web services, which are used to perform secure operations, to operate remote devices etc. Now a day's home automation is becoming popular where there are so many busy families & individuals with physical limitations exists.

In the coming days a smart home is a very promising just like our smart phones, which provides great comfort, safety & security with minimal cost. This paper includes more future scope, as it offers powerful means for supporting and helping for physically challenged people. This system as cost-effective and compatible with variety of devices. This can be achieved by providing internet connectivity to ARM Controller based embedded systems. This will work with an ARM Controller, which plays a key role by storing the main application source code, and then web pages and TCP/IP stack which acts as a vital element of the system software. The communications part is handled by the GPRS module and it is interfaced with the ARM Controller using UART protocol, RS232 interface is used for configurations like IP address and other details.

To access this application only little bit of setup is required, it can be accessed on any system which is connected to a network with a static IP address, with provided user credentials. ARM Controller is provided with several I/O pins for monitoring and controlling AC appliances through interfacing with the sensors, LCD displays and relays.

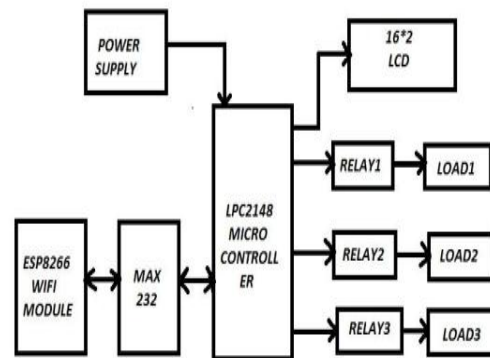
## II. EXISTING SYSTEM

In the already existing method, electrical devices and DC loads are controlled from GPRS message .when ever from our mobile hand set sent a message from GPRS model to microcontroller via UART port. Then load and electrical devices controlled according to message received. If any signal problem occurs then this will not work properly .for every time inbox message must clean. To avoid these problems a new method is proposed.

## III. PROPOSED SYSTEM

We are sending the commands from the telnet app to the ESP8266 module. The ESP8266 module will receive that command and send to the controller to operate the corresponding load. By this way the user can control the loads from anywhere in the world.

## IV. BLOCK DIAGRAM



In this project we use 7805 voltage regulator which gives 5v pure dc voltage this d.c voltage is given to various blocks present in the block diagram. In this project we use lpc2184 microcontroller. This is the heart of this project . MAX232, ESP8266, WI-FI module, LCD, relays all are connected to this lpc2184 microcontroller. Before switch on the kit we should open the telnet app in the mobile handset .Then switch on the circuit .The WIFI module initialized it takes some time .LCD displays as "WELCOME TO THE PROJECT".

## V. POWER SUPPLY

There are many types of power supply. Most are designed to convert high voltage AC mains electricity to a suitable low voltage supply for electronic circuits and other devices. A power supply

can be broken down into a series of blocks, each of which performs a particular function.

#### VI. Max232

MAX232 IC is a circuit which makes standard voltage as required by RS 232 IC. It provides good noise rejection and also provides good reliable against discharges and short circuits. MAX 232 is referred as line drivers



To ensure data transfer between WIFI modem and microcontroller, the baud rate and voltage levels of Microcontroller and WIFI modem should be the same. The voltage levels of microcontroller are logic 1 and logic 0 i.e., logic 1 is +5V and logic 0 is 0V. But for WIFI modem, RS232 voltage levels are considered and they are: logic 1 is taken as -3V to -25V and logic 0 as +3V to +25V. So, in order to equal these voltage levels, MAX232 IC is used. Thus this IC converts RS232 voltage levels to microcontroller voltage levels and vice versa

#### VII. ARM7 MICROCONTROLLER

ARM7 2184 is a 32 bit microcontroller. This microcontroller is the art of this project for this controller all input and output devices are connected. Whenever we receive from monitoring section. Then WI-FI model will activate. Then inform to the microcontroller. Then this microcontroller will control the output devices according to the received data.

#### VIII. ESP8266 WIFI MODULE



The ESP8266 Wi-Fi Module is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. The processing and storage, cost-effective and ever-growing community. This module has a powerful enough on-board processing and storage capability that allows it to be integrated with the sensors and other application-specific devices through its GPIOs with minimal development up-front and minimal loading during runtime. Its high degree of on-chip

Integration allows for minimal external circuitry, including the front-end module, is designed to occupy minimal PCB area. The ESP8266 supports APSD for VoIP applications and Bluetooth co-existence interfaces; it contains a self-calibrated RF allowing it to work under all operating conditions, and requires no external RF parts.

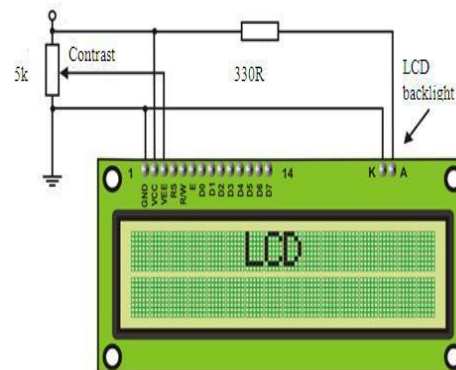
#### IX. LIQUID CRYSTAL DISPLAY

One of the most common devices connected to the ARM7 LPC2184 microcontroller is LCD. This LCD is an Hitachi HD44780 compatible module used to display the status of the project

#### X. LCD SCREEN

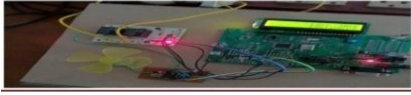
LCD screen shown in figure 3.13 consists of two lines with 16 characters each. Each character consists of 5x7 dot matrix. Contrast on display depends on the power supply voltage and whether messages are displayed in one or two lines. For that reason, variable voltage 0-V<sub>dd</sub> is applied on pin marked as V<sub>ee</sub>. Trimmer potentiometer is usually used for that purpose. Some versions of displays have built-in backlight (blue or green diodes).

When used during operating, a resistor for current limitation should be used (like with any LED diode).



#### XI. RESULTS





In this project we are using ESP8266 WI-FI module ,it I the signal provider to the kit.MAX232 IC is placed between WI-FI module and micro controller ,it is used to make an interaction between WI-FI module and micro controller which are having different voltage levels.

Relay is connected to the micro controller which is nothing but an electronic switch, it switches the loads according to the inputs .Power supply is given to activate the circuit We operate the devices by using telnet app in mobile .Initially ,we have to connect to the WI-FI ,then we should enter the IP address and host name in the mobile and enter the load representation according to the coding and check the loads status whether it is ON or OFF. First these kits are connected to the main supply (230V A.C).then it is step down to 5V d.c supply. 230V A.C supply is given as input to the step down transformer then it is step down that voltage to some 18V A.C supply. Then it is given to the Bridge wave Rectifier. This converts A.C to Pulsating D.C. then this is given to the filter circuit. Here capacitive filter is used. So it converts that pulsating D.C to pure D.C. next this is connected to 7805 regulator. It produces our required 5V D.C supply.

## **XII. PROPOSED SYSTEM RESULTS**

This project is to control the electrical appliances from anywhere in the world by using the web server and using the ESP8266 module. Here in this project we are controlling both the AC and DC loads.

In this project, we are controlling both the AC and the DC loads. For the AC loads, we need TRIAC and the opt-coupler to isolate both the AC and DC section of the controller.

The code was written in the embedded C language and the code was compiled using the KEIL compiler, which will generate the executable hex file. The hex file was dumped into the LPC2148 microcontroller by using the FLASH MAGIC software.

## **XIII. CONCLUSION**

This project presents a high sensitive IOT based device control, designed and implemented with ARM7 LPC2148 in the stream of embedded systems as cost effective. Experimental work has been carried out carefully. The proposed method is verified to be highly beneficial and cost effective in all places which can be accessed from any remote area.

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