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An Integrated Cloud Based Smart Home Management System

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Abstract: This paper presents smart management of the home. Nowadays a lot of energy is wasted without putting off the electronic devices or electrical loads; this project can regulate this, and also we can decrease the effort of the human,i.e., we can get control of total home into our hands. Controlling the total apartment or community will be easy with this type of systems, in this system we will connect all the loads to the wifi module. Weconnect to that wifi module through our phone, and we will get control of loads which connected to the module, for connection between the module and the phone we will have anapp named' device control' we should install theappon the phone, and we can get control on the loads. The app works on thephone with the internet connection.

I. INTRODUCTION

Nowadays the technology is rapidly developed, wehave to move with the technology. We can control the electronic and electrical devices through the phone with the help of internet for example if the induction stove is in on condition if we want to put off the stove we can do it with the phone which connects to wifi module. In this way, the electronic loads can control without any effort. This type system is used nowadays for energy management in the home. Cloud-Based services are used to provide more services, it reduces the human energy, for example, a lot of workforces is needed to control the community and that increases the maintenance of the community we can reduce the maintenance and workforce by this system.

II. EXISTING SYSTEM

In the recent years, the technology is rapidly developed,in the existing method the human should present in the surroundings to control the devices or loads

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III. PROPOSED SYSTEM

The proposed system act as the mediator between the loads and the human. In this system we can control all the loads or devices in the home without using the manual power .we can control the loads in the home through the Android app the .apk file should installon the phone.The phone will connect to the wifi module of the system to which all the loads are connected. Once the phone is connected all the loads will be displayed on the screen, we can browse them by selecting them. The internet will be compulsory to communicate with the wifi module. Once we connect to the module, the app starts working,and we can regulate all the loads we can put off, or we can put on the loads when we need.
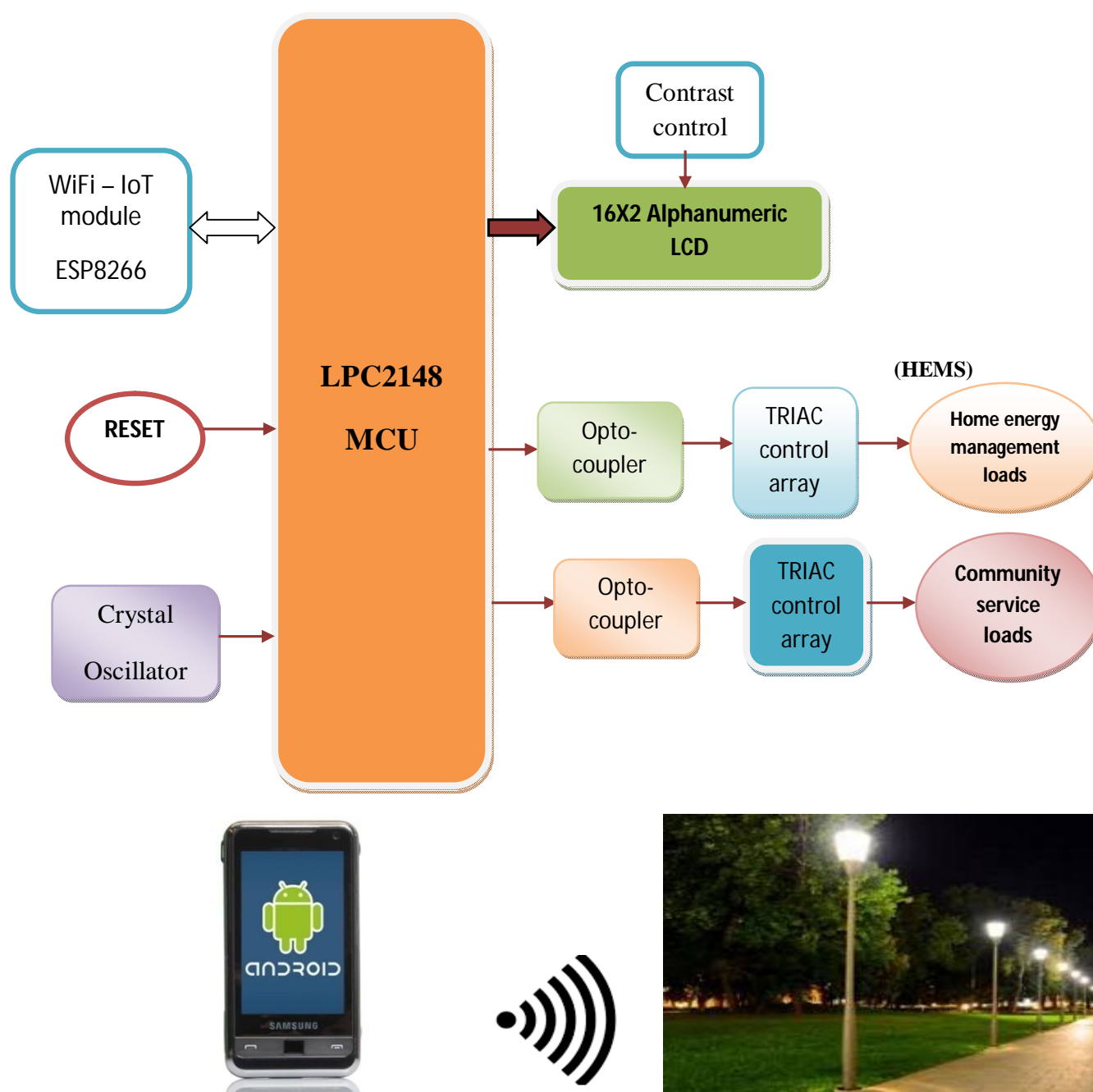
A. Block Diagram
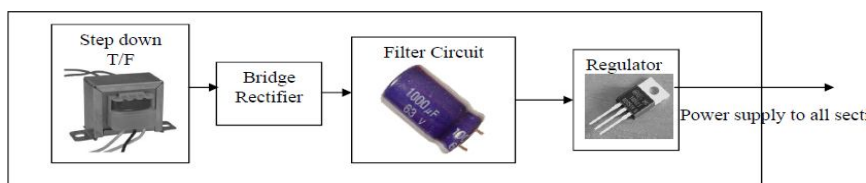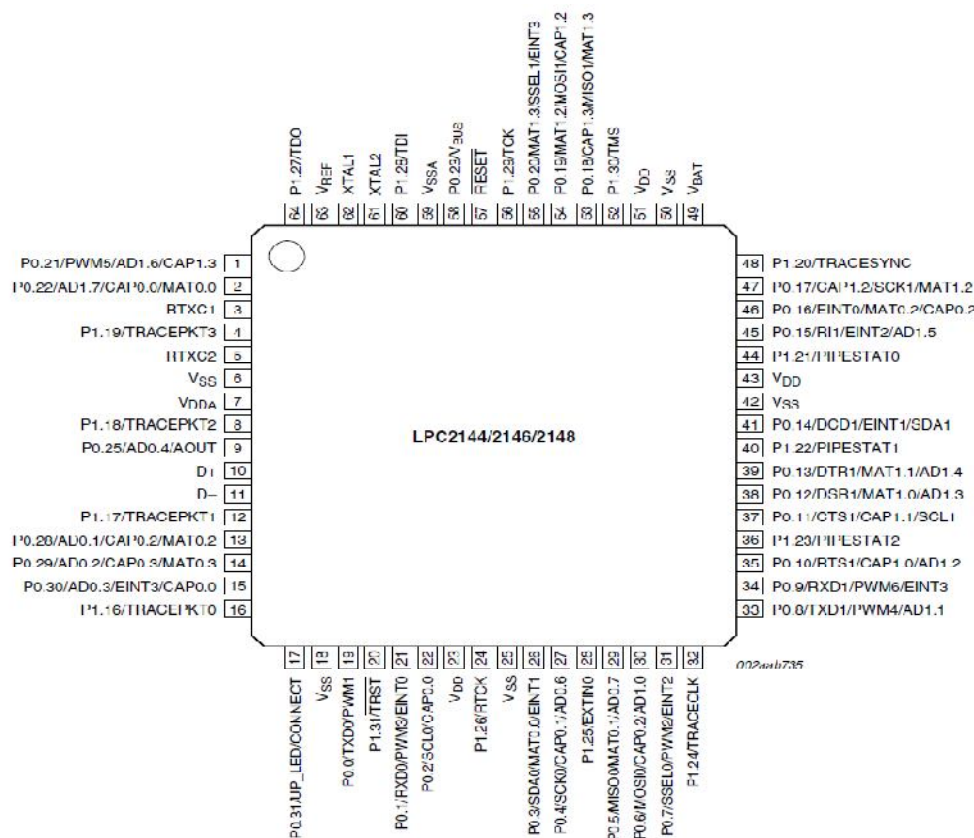
Block diagram

Fig2: Block diagram

Fig3: Power supply

IV. HARDWARE COMPONENTS

A. Lpc2148

Lpc2148 is an arm7architecture microcontroller. It widely used in the embedded system;it has many inbuilt features preloaded in it.


A. pin diagramfeatures of lpc21487

1) 16-bit/32-bit Arm7 TDMI-s microcontroller
2) It has 40 kb flash memory
3) 512 on-chip flash memory
4) low power real time clock and it has 32 kHz clock input
5) It has multiple serial interfaces along with two UARTS
6) It also has power saving mode
7) c.p.u operating voltage will be 3.0v to 3.6v

B. Wifi module-EPS8266:

Here is the power module having enough onboard processing and it has enough storage capacity; the modulewas integrated with the sensors and other application specific devices, it also supports Bluetooth coexistence,it can work under any operating conditions.
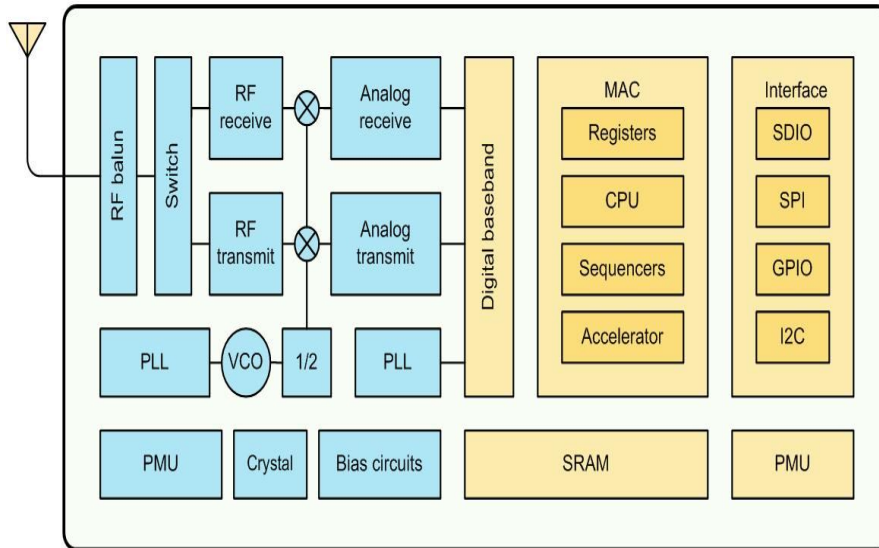
C. Features

1) 802.11 b/g/n
2) Integrated low power 32-bit MCU
3) Integrated 10-bit ADC
4) Integrated TCP/IP protocol stack
5) Integrated TR switch, balun, LNA, power amplifier and matching network
6) Integrated PLL, regulators, and power management units
7) Supports antenna diversity
8) WiFi 2.4 GHz, support WPA/WPA2
9) Support Smart Link Function for both Android and iOS devices
10) Wake up and transmit packets in < 2ms
11) Standby power consumption of < 1.0mW (DTIM3)
12) Operating temperature range -40C ~ 125C

D. crystal oscillator

Thecrystal oscillator is an electronic device used to generate the electronic signal periodically. The signal generated by the oscillator will be a sine wave or a square wave, it also converts D.C signal to A.C signal.The broadcasting of radio and televisions done by the signal generated by the oscillator. It is mainly used to generate the clock signals in processors (or), controllers.

E. ptocoupler

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The optocoupler is nothing but the optoisolator (or) photocoupler. It interconnects two electrical circuits using alight-sensitive optical interface. Optocoupler provides electrical isolation between theinput source and output load using light. The optocoupler design consists of an led which emits infrared light and a photosensitive device which detects the infrared beam. Both led, and thephotosensitive device is enclosed tightly with metal legs as shown.

F. TRAIC
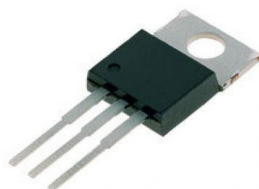
The TRIAC is a device used for switching the A.C applications, and also it can control the current flow.TheTRIACwas used in the light dimmers, the usage of TRAIC makes efficient use of power it can control the speed of electric fans and small motors. It provides the cost advantages

V. SOFTWARE IMPLEMENTATION

The software was implemented on the board is done throughthe DB9 cable with the help of RS232. RS232 is the mediator between the microcontroller and the personal computer so that we can dump the whole program into the board
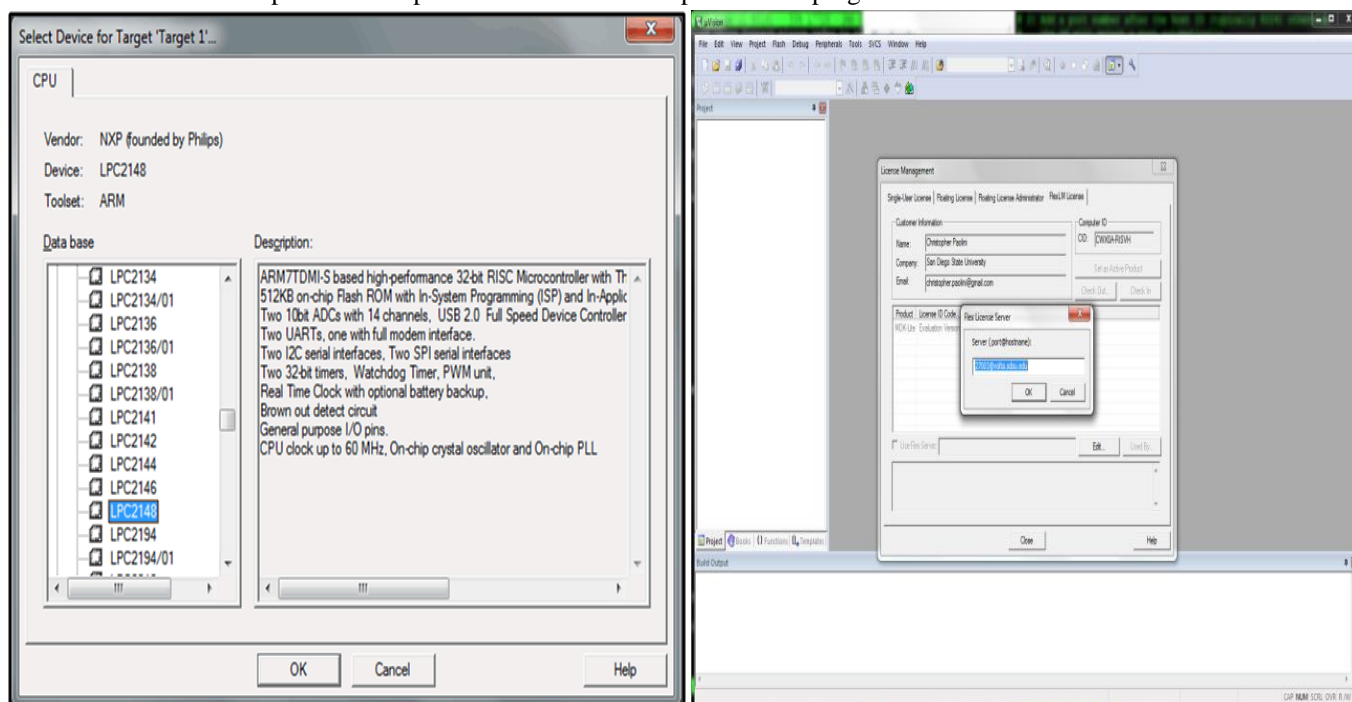
VI.   RESULTS

We can turn off or turn on the loads as shown in the figure the app contains the off button as well as on button as shown we can choose the needed button by this app we can get control on all loads at a time for example all street lights or the balcony lights in the apartment can control by the only watchman with this app this is an android app which has all the history of loads. As shown in the figure at right side we can turn on the bulb which we want to glow if it is first to glow we should choose the first button in the same way each load contains the button in the app by choosing that button we can customize the loads.
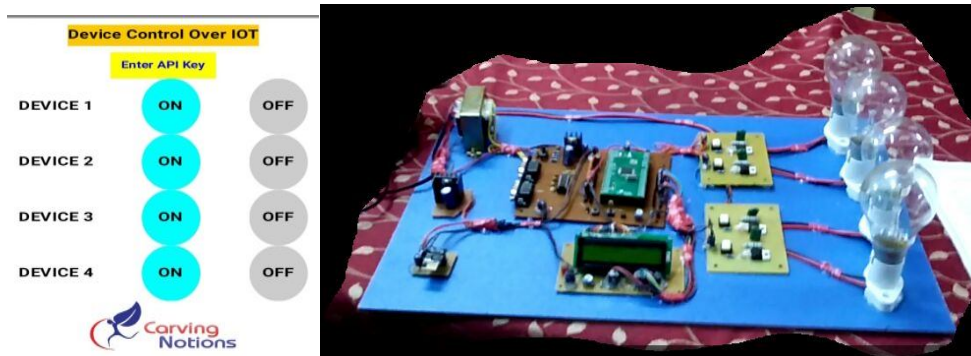
VII.   CONCLUSION

This study applied a community mediator in theintegrated smart home to manage the operations, and it reduced the workforce required for management providing electronic informationservices, supporting diverse services, and extending thecommunity's integration with the surrounding environment.Therefore, a complete and integrated smart home system can achieveAlso, integrating cloud-based services with community services provided location-based services.

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