Android Based Bluetooth Home Automation

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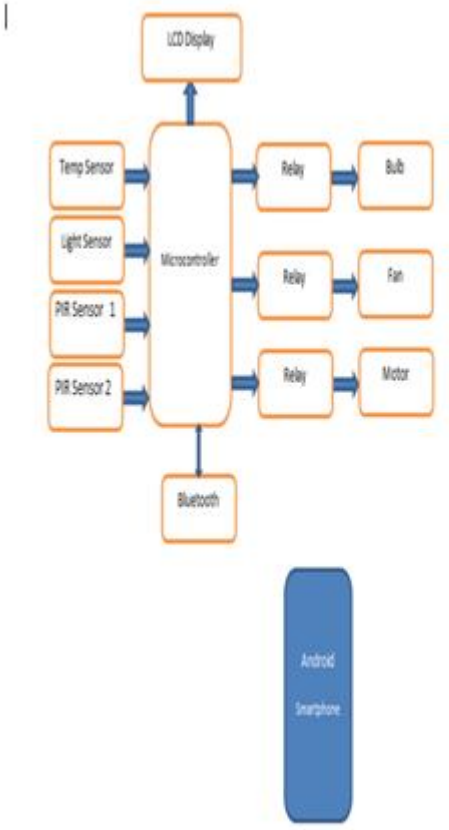
Abstract- *Android operating system is one of the prefered and most popularly used system in smart phone. Many people can use smart phone in day by day life. The operator has one application on his phone to control the home appliances. This project is an android application which possesses the capability to control any sort of electrical appliances providing remote access from smart phone using Bluetooth. Bluetooth technology is wireless radio transmissions in a short distance providing a necessary technology to create convenience ,intelligence and controllability. This generates Personal Area Network in home environment, where all these appliances can be interconnected and monitored using a single controller. Home automation involves a degree of computerized or automatic control to certain electrical and electronic systems in a building. Busy families, individuals with physical limitation represent very attractive market for such networking. This system will also assist and provide support in order to fulfill the needs of elderly and disabled in home.*

I. INTRODUCTION

Focusing on the use of home area networks to improve disabled people's autonomy at home, this paper presents a display design for accessible home control. In the past years, computational devices have turned faster, smaller, connected and cheaper. It brings the "intelligent house" vision, promised for decades, closer to reality. This pervasive, smart home, a luxury item for many people, could have a key role in assuring the autonomy of people with disabilities. In Brazil, assistive resources and their use are relatively recent as compared to the United States, for example, where specific laws were established in 1988. In Brazil, similar regulations have existed since 2004 and establish general standards and basic criteria to promote accessibility. Thinking about users with disabilities, it is necessary to invest efforts in the researchand development of accessible interfaces, through the perspective of a universal design that is easy to use and to learn how to use. The design for all, also called universal design, began focusing on physical aspects (buildings, urban spaces, transport, health, leisure), and nowadays is extended to the digital world (computer networks and communication systems). In this perspective, accessibility is defined as "a condition for autonomous and safe use of space, furniture and urban facilities, buildings, transport services and devices, systems and media and information by people with disabilities or reduced mobility." It is worth stressing that accessibility is not the creation of exclusive spaces for people with disabilities, which could be a form of discrimination, but rather of thinking of systems and environments, which can be used by everyone.

II. IDENTIFY, RESEARCH AND COLLECT IDEA



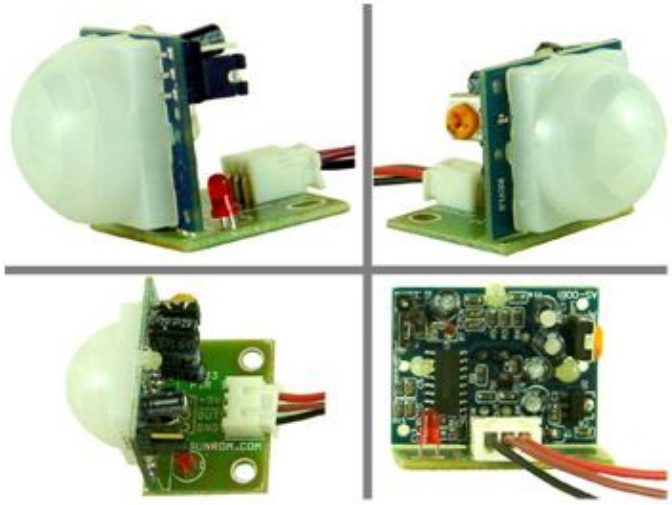
In our block diagram following blocks are shown:

1) Microcontroller: We use a ARM7 microcontroller it is 32 bit microcontroller RISC processor core and it has a 37 pieces of 32 bit integer register.
2) LCD display: LCD display shows the person count ,light intensity and room temperature lcd used here is the 16*2 liquide crystal display it has two lines of 16 character.
3) Tempetuare sensor: we use the LM 35 tempertuare sensor. It sense the temperature and display on the LCD display if the temp is below than 40 degree the fan is in off state. And if the temp is above 40 degree then realy is

on and fan ias also on

4) Light sensor: ight sensor is use for detect the light intensity if the light intensity is above the 45 then bulb is OFF. And when light intensity is below 45 the relay ia ON and bulb is also ON.
5) PIR sensor: PIR sensor is use for detect the person in the room if the person count is increase then and then only all above operation are performed.
6) Relay: relay is a type of switch it is used for ON/OFF condition
7) Bluetooth: Bluetooth model is used for controlling home appliance using smart phone.

PIR Motion Sensor Module:



PIR Sensor

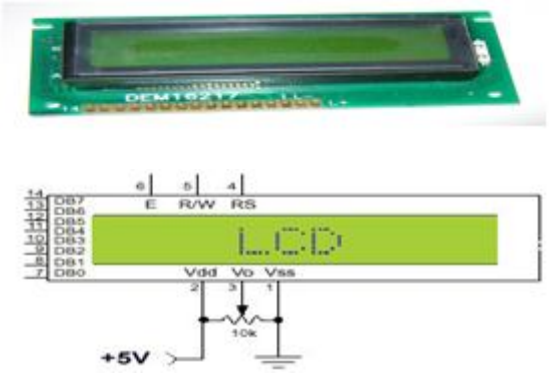
It is Pyro-electric Infrared (PIR) Sensor Module for human body detection, easy to use and complete and compact. Incorporating a Fresnels lens and also the motion detection circuit.small noise and large sensitivity device. Output is a std. 5V active low output signal. Module gives an optimized circuit that will sense movement up to 6 meters away and can be used in burglar alarms and access control systems. Inexpensive and easy to use, it's best for alarm systems, motion-activated lighting, holiday props, and robotics applications.

FEATURE:

The most important is movement finding IC and Fresnel lens

- High Sensitivity
- Rang of is Supply Voltage: 5V DC
- Standard active low output pin for connecting to microcontroller directly
- Sensing range is 6 meters
- LED indication
- Low noise
- Module size: 25mm Length, 32mmWidth, 25mm Height

LCD:

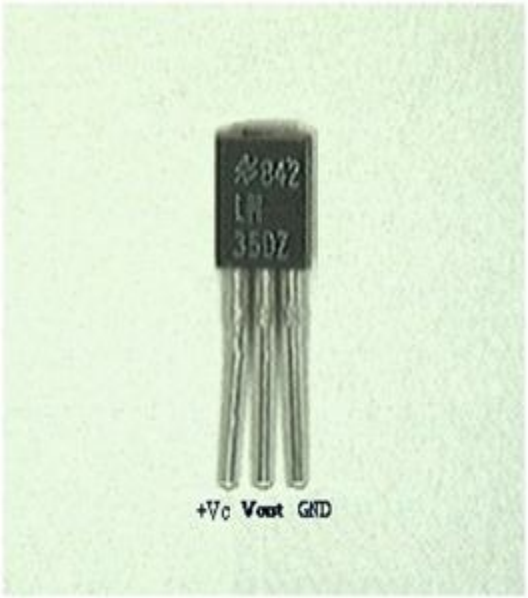


LCD Display

A general purpose alphanumeric LCD, with two lines of 16 characters.

LCD used here is the 16×2 line LCD. Liquid Crystal Display which is known as LCD.LCD is an Alpha-numeric Display it means that it can shows Alphabets and Numbers as well as particular symbols thus LCD is a user friendly Display device.which can be used for displaying various messages unlike seven segment display which can display only numbers and some of the alphabets. The only drawback of LCD over the seven segment is that in the seven segment is robust display device and be visualized from a long distance as compared to LCD. Here we have used 16 x 2 Alpha-numeric Display, which means on this display, we can display 2 lines with maximum of 16 characters in only 1 line.

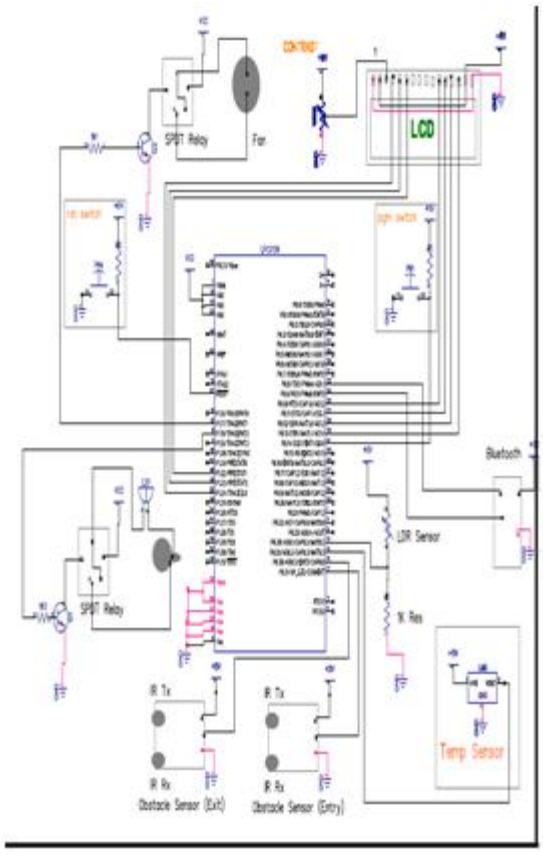
LM 35:



LM 35 Temperature sensor

The LM35 sequence are precision integrated-circuit temperature sensors, The LM35 output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors measured in °K(Kelvin), as the user is not needed to deduct a large constant voltage from its output to obtain convenient Celsius (Centigrade) scaling. The LM35 not needed any external calibration or trimming to provide typical accuracies of ±1⁄4°C at room temperature and ±3⁄4°C over a full −55 to +150°C temperature range. Low cost is assured by trimming and calibration at the wafer level. The LM35's small output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy. It can be used with single power supplies, or with plus and minus supplies. As it draws only 60 microampere from its supply, it has very low self-heating, less than 0.1°C in still air. The LM35 is rated to operate over a −55° to +150°C temperature range, while the LM35C is rated for a −40° to +110°C range (−10° with improved accuracy).

III. WRITE DOWN YOUR STUDIES AND FINDING



In our circuit diagram there is a microcontroller ARM 7 LPC2138.It required a +5 volt supply for working of microcontroller therefore we design a power supply. A microcontroller has a 4 port. Port 0 is used for connecting a LCD and Bluetooth model. The PIR sensor are connected to the pin no 17 &15. Here a port 1 is also used for connecting a 2 realy. The first relay is connected to the pin no 8 of port P1.18 with a lamp . The second relay is connected to the pin no 12 of port P1.17 with the fan. resert switch is connected to reset pin no57. The relay are a SPDT relay. LDR is a light detect sensor it is connected to the pin no 13 of port 0. It is used for detect the light intensity.

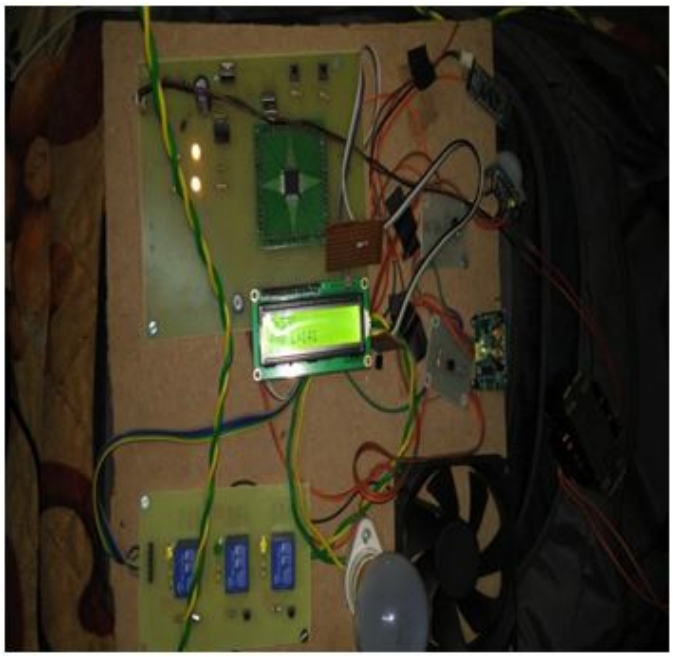
Tempertuare sensor LM35 is used for tempertuare measurement. It is connected to the pin no 14 of port 0. It has a 3 terminal IC.

PIR sensor is used for detect the person count there are 2 PIR sensor are used one at entry and another one is at exit point. It is connected at pin no 15 & 17 at port 0.

IV. RESULTS

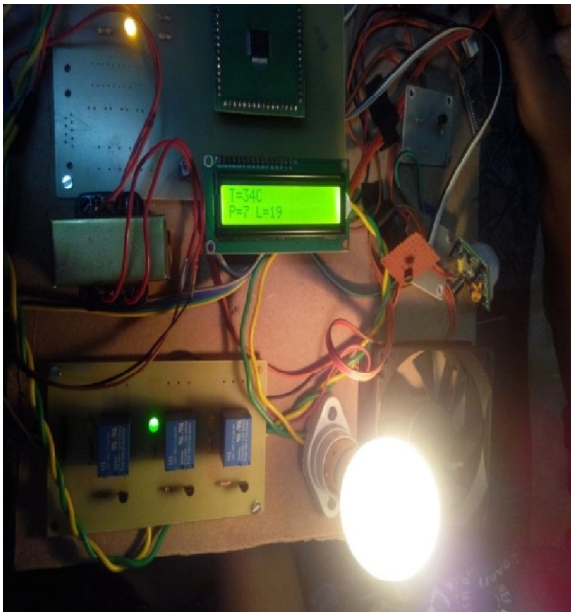
When light intensity is more than 45:

In the microcontroller ARM 7 programming if the person count is non-zero and then we give the condition that when the light intensity is goes above the 45 the then the LAMP is in OFF state and when the intensity of light is below than 45 the then the LAMP is ON state.



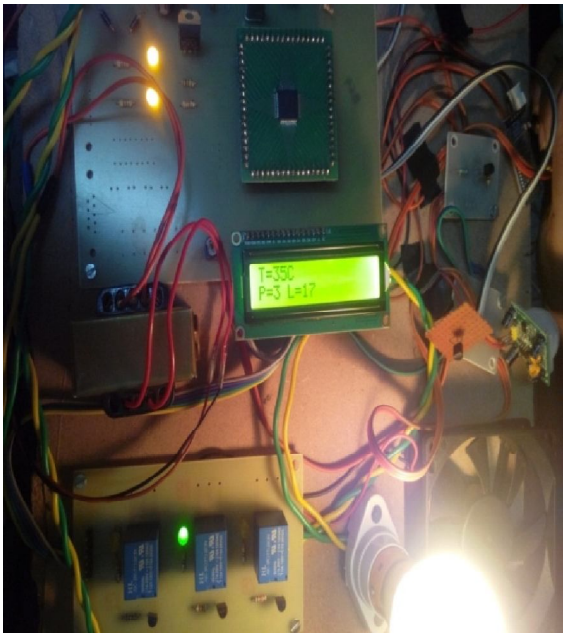
When light intensity is below 45:

In the microcontroller ARM 7 programming if the person count is increase and then we give the condition that when the intensity of light is below than 45 the then the LAMP is ON state



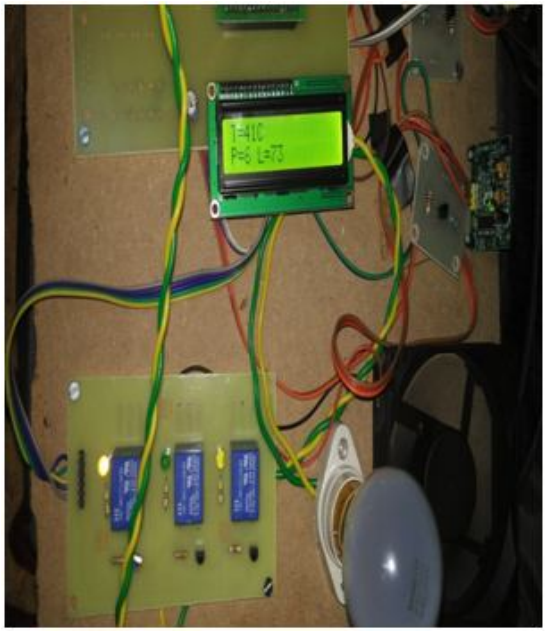
When temperature is less than 40 degree:

In the microcontroller ARM 7 programming if the person count is increase and then we set the condition that when the temperature is goes above the 40 degree Celsius the then the FAN is in OFF state and here intensity of light is below the 45 degree, therefore LAMP is in ON state



When temperature more than 40 degree:

In the microcontroller ARM 7 programming if the person count is increase and then we select the condition that when the temperature is goes above the 40 degree Celsius the then the FAN is in ON state and here also the intensity of light is above 45 therefore LAMP is in OFF state



V. CONCLUSION

Despite working with a considerably varied group of users, with different needs, an interface suitable to them was achieved. Our interface integrates accessible interface ideas in a single portable interface that can contribute to people with disabilities' autonomy at home. Despite being a good solution to improve the autonomy of people with impairments, the interviews have shown that home automation is not even considered as a possible solution to these people's reality. They consider home automation a high technology solution out of their reach. It points out to the demand for researching and developing lower cost and simpler solutions. As the next steps to this research are the improvements of the interface with the 'interviewers', to integrate the new explore by touch features available in the new tablets' operating systems libraries and the repetition of the described experiments with larger groups of users.

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