Smart Appliance Control System Using Touch Panel

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Abstract:

This project is designed for operate the load from inside the home (manually by 4 switches)when person present in home and secondly when person will not be home that means IR count get 0 loads will able to ON/OFF outside the home that is controlled by touch screen. The concept is behind this project when any person present in home, loads will operated from inside the home i.e. loads are ON/OFF by manual 4 switches. When all person are goes out of home i.e. IR check P:00 and if they forget to OFF any loads then the LOGIN WINDOW AND PASSWORD will come on LCD . If it's correct then touch screen activated and those loads are ON at manual mode these should be OFF by touch screen. Suppose when the person is inside the home and 2 & 4 load was ON and he forget to OFF load before goes out of home. Then this 2 & 4 load gets continuously ON and when P:00 LOGIN WINDOW AND PASSWORD will display and after that activate touch screen and person has able to get OFF /ON that load ..

Keywords: Appliance control, IR sensor, ARM7, Touch panel etc.

INTRODUCTION:

This paper mainly aims in designing completely automated switch board with the help of touch screen sensor to control the house hold appliances to operate the devices effectively to provide a user friendly environment. It majorly aims in providing a reliable system for illiterates and old people who finds difficulty in operating few high end devices like washing machine,

microwave oven etc. Touch screen based devices can be easily reachable to the common man due to its simpler operation, and at the same time it challenges the designers of the device. These touch screen sensors can be used as a replacement of the existing switches in home which produces sparks and also may results in fire accidents in few situations.

Considering the advantages of touch screen sensors an advanced automation system was developed to control the appliances in the house. The device consists of a microcontroller, which is interfaced with the input and output modules, the controller acts as an intermediate medium between both of them. So the controller can be termed as a control unit. The input module is a touch screen sensor, which takes the input from the user and fed it to the microcontroller. The output module is the appliances to be controlled.

In my circuit, a touch panel is interfaced to the microcontroller which sends ON/OFF commands to the microcontroller where loads are connected. By touching the specified portion on the touch screen panel, the loads can be turned ON/OFF. The microcontroller used here is from ARM 7(LPC2148) family.

LITERATUREREVIEW:

Intuitive Appliance Control System Based on a High-Accuracy Indoor Positioning System (IEEE 2014)
Authors:- Jun Komeda ; Yutaka Arakawa ; Morihiko Tamai ; Keiichi Yasumoto
In this paper, we propose an appliance control system, which leverages the advantages of remote controls and

gesture recognition. In our system, a user can select the target device just by pointing to the appliance using a remote control. After selecting the device, the user can control the appliance with buttons displayed on a touch panel attached to the remote control. The system is based on a high-accuracy indoor positioning system embedded in a smart house. We evaluated the proposed system through an experiment, and results show that the system can be used in daily life.

Resistive Touch Screen Based Home Automation System Design
Authors:- G.Sankar a, K.N.Sreekumar b, M.Kumaresan a

This paper concentrates primarily on experimental experiences on home automation system with a low-cost [resistive] touch screen technology. The proposed system provide an environment in which user can give commands by touching desired position on the touch screen to automate the control of electrical devices. The interfacing circuit is designed using electronic components available in local market to keep the cost at low level.

Touchscreen Based Home Automation System
Authors:- Preeti D Baranda, Pritish Pandya, Khyati Chaudhary.

Home automation system is basically a home control system which uses touch screen panel or remote control to control various home appliances, temperature control and video surveillance. Home Automation is a way to have things around our home happen automatically. We have designed and implemented such a system using a resistive touch screen. In order to achieve this, a touch panel is interfaced to the microcontroller on transmitter side which sends ON/OFF commands to the receiver where loads are connected. By touching the specified portion on the touch screen panel, the loads can be turned ON/OFF remotely through wireless technology.

Touch Controlled Home Appliances Based on Arm and Zigbee
Authors:- Yarlagadda Sruthi, A.Sirisha.

This paper introduces the intelligent home appliance control system, the system is developed through ARM microprocessor, embedded Linux operating system, ZigBee wireless communication technology and network technology. It gives the overall framework of hardware and software design, and describes ways to implement the system. User can control appliances through hand-held mobile terminal.

SYSTEM ARCHITECTURE:

The concept is behind this project when any person present in home, loads will operated from inside the home i.e. loads are ON/OFF by manual 4 switches. When all person are goes out of home i.e. IR check P:00 and if they forget to OFF any loads then the LOGIN WINDOW AND PASSWORD will come on LCD . If its correct then touch screen activated and those load are ON at manual mode these should be OFF by touch screen.

Suppose when the person is inside the home and 2 & 4 load was ON and he forget to OFF load before goes out of home. then this 2 & 4 load gets continuously ON and when P:00 LOGIN WINDOW AND PASSWORD will display and after that activate touch screen and person has able to get OFF /ON that load . We use 2 IR (IR IN For person enter in home & IR OUT For person goes out of home) Keypad for login , switching circuit , touch screen and now additional add the 4 push button switches .
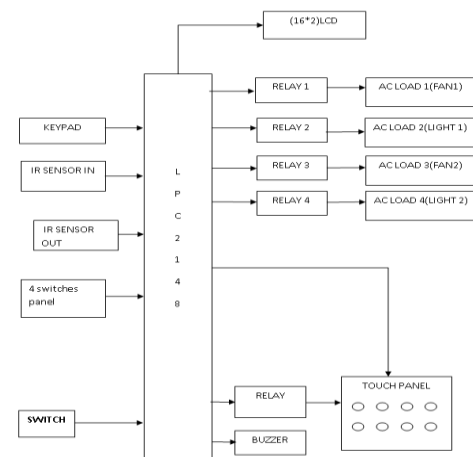

Fig. Block diagram of the system

Flow of project (Working Description)

1. Start or reset

2. LCD "Home automation control system"

3. Check for IR IN when person in inside the home i.e. check by IR IN is incremented then

4. Show on LCD "load status & person count on second line as before as same likeP:002"

5. And also manual mode active i.e. right now loads are operated by 4 switches for 4 loads to ON/OFF the load. And related load status show on lcd .

6. Now if all persons gets out of home i.e. check by IR OUT means when P:000 and also if person forget to OFF any load suppose 2 & 4 no load then and then Buzzer will beep for 5 sec also show LOGIN window will shows on lcd .

7. Person will enter the USER ID and Password if it correct then Touch screen activated

8. Now the loads ON/OFF controls shifted on touch screen .and also show on lcd loads status which person forget to OFF.

9. Another condition is that person forget the 2 & 4 load to off load before goes out of home that load continuous are ON when LOGIN window show on screen and user enter USER ID and PASSWD(means these load should ON till user will not OFF by Touch Screen)

10.Now after login successfully can OFF that load 2 & 4 and when all load get OFF give delay of 5 sec if any load will not ON by person then goes to LOGIN again.

11. Flow continuously in LOGIN mode till person will not reset the circuit

12. After reset again working is from start.

COMPONENT DETAILS:
4.1 LPC2148 controller

Founded in November 1990, it is spun out of Acorn Computers, it Designs the ARM range of RISC processor cores. Licenses ARM core designs to semiconductor partners who fabricate and sell to their customers. ARM does not fabricate silicon itself, it also develop technologies to assist with the design-in of the ARM architecture. Software tools, boards, debug hardware, application software, bus architectures, peripherals etc.

4.2 liquid crystal display:

LCD stands for Liquid Crystal Display. LCD is finding wide spread use replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the following reasons: The declining prices of LCDs, The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters. Incorporation of a refreshing controller into the LCD, thereby relieving the CPU of the task of refreshing the LCD. In contrast, the LED must be refreshed by the CPU to keep displaying the data. Ease of programming for characters and graphics.

4.3 Relay

A relay is an electrical switch that opens and closes under control of another electrical circuit. In the original form, the switch is operated by an electromagnet to open or close one or many sets of contacts. It was invented by Joseph Henry in 1835. Because a relay is able to control an output circuit of higher power than the input circuit, it can be considered, in a broad sense, to be a form of electrical amplifier.

4.4 IR sensor

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measures only infrared radiation, rather than emitting it that is called as a passive IR sensor.

The sensor module light is adaptable to the environment, it has a pair of infrared transmitting and receiving tube, Effective distance range: 2 ~ 30cm, Detecting angle: 35 degree, Working voltage: 3.3V to 5V.

4.5 touch panel

A touch screens is an input and output device normally layered on the top of an electronic visual display of an information processing system. A user can give input or control the information processing system through simple or multi-touch gestures by touching the screen with a special stylus and/or one or more fingers.

APPLICATIONS:

The techniques employed in touch panel based appliance control for home automation include those in building automation as well as the control of domestic activities, such as home entertainment systems, houseplant and yard watering, pet feeding, changing the ambiance "scenes,,,,for different events(such as dinners or parties),and the use of domestic robots.

CONCLUSION AND FUTURE SCOPE:

This paper proposes design and implementation of a smart appliance control system operated by touch panel using ARM7. This system can be applied in many areas such as elderly protecting systems. As a future work, we consider expansion of the system using various sensors and actuators with GSM. This system integrates electrical devices in a house with each other. The techniques employed in home automation include those in building automation as well as the control of domestic activities, such as home entertainment systems, houseplant and yard watering, pet feeding, changing the ambiance "scenes,,,,for different events(such as dinners or parties),and the use of domestic robots. Devices may be connected through a computer network to allow control by a personal computer, and may allow remote access from the computer.

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