International Journal Of Advanced Research In Engineering Technology & Sciences
ISSN: 2394-2819
Email: editor@ijarets.org April- 2015 Volume 2, Issue-4 www.ijarets.org

Home Automation Bidirectional Visitor Counter

Krishan Murari Jangir, Harshvardhan Singh Khangarot
B.Tech Students
Department of ECE
SRM University NCR Campus
Modinagar

Nidhi singh
Assistant Professor
Department of ECE
SRM University NCR Campus
Modinagar

ABSTRACT:-
In this work, we developing a prototype of smart room for energy saving. The prototype uses PIC16F874A, IR sensors, 16X2 LCD (Liquid Crystal Display) with various sensors such as a temperature sensor, infrared sensor to control the lights, air conditions, as well as the fans appropriately etc. It detects the number of people entering in a room, adjusts a proper temperature for the air condition, turns on the fan if needed, and turns on and off the light appropriately. Similar to the heater and other electrical appliances.. The simple measurement shows that using the sample prototype we can save the electricity cost for every test case. The main aim of this project is to design and employ of power saving in general public places like auditoriums, shopping malls, homes, offices and theatres.

Keywords-components: PIC16F874A Microcontroller, IR (infrared) sensors, LCD display, temperature sensor LM35, Motor driving module, LED, Transformer.

INTRODUCTION

"BIDIRECTIONAL VISITOR COUNTER" is an embedded paper. Embedded is the combination of both hardware and software. Hardware in this field is electronics hardware whereas the software is the programming of the microcontroller. Microcontroller is the decision making device, it works on two logic 0 and 1. Microcontroller is similar to the microprocessor but the basic difference between two is the inbuilt memory in the controller which make it a cheap IC costs about Rs 50 whereas the cost of the processor is about Rs.400. This heart of this project is PIC microcontroller and the controller available in the market has to be used so we have used PIC16F877A, 40 pin controller. Since automation is the need of our, technology is enhancing and hence we have designed a system for home automation. This system shows the advancement in technology as well as it also saves the energy.

Overview

I. The first step in any embedded paper is to design the proper hardware. So firstly we have designed the +5v regulated dc supply for the microcontroller as controller gets on +5 v supply after that necessary connections of the microcontroller as connecting the crystal oscillator for clock and reset section for resetting the controller every time power gets on. Then after we have 32 I/O pins from which we can configure any pin as output or input. We are using the four infrared leds for sensing the persons as our aim of the project is to close all the appliances of the room like light or fan when nobody is in the room. So for this we have used two driver circuitry These driver circuits are used for amplification. As soon as any person crosses the infrared light then a beam is cut and low comes at the microcontroller pin and this low is sensed by the microcontroller through programming. We are using four infrared sensors two for incoming way and another two for outgoing way then only we can increment or decrement the counter in the software and when the counter value is one or greater than 1 then relay will remain on and appliance attached with will get on and when the counter value becomes zero then the appliance attached with it will become off as relay will get off. Here we are using relay as relay

works as an electrical switch. Then comes the display section we are displaying the value of counter on the LCD display which has been interfaced with the microcontroller through the port P0 with the help of currant limiting resistors. We are using four transistors also one for each LCD in order to select the particular LCD for displaying the data.

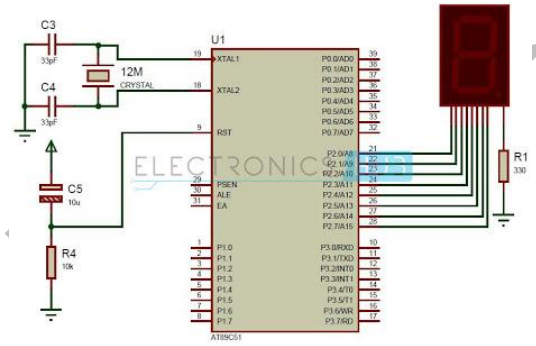
CIRCUIT DESCRIPTION

1. RLMT Connector: It is a connector used to connect the step down transformer to the bridge rectifier.

2. Bridge Rectifier: It is a full wave rectifier used to convert ac into dc, 9-15v ac made by transformer is converted into dc with the help of rectifier.

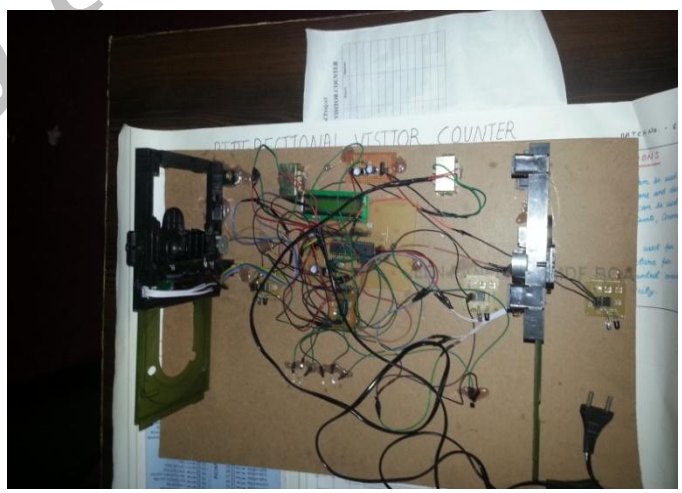
3. Capacitor: It is an electrolytic capacitor of rating 1000M/35V used to remove the ripples. Capacitor is the component used to pass the ac and block the dc. It is again an electrolytic capacitor 10M/65v used for filtering to give pure dc. It is an ceramic capacitor used to remove the spikes generated when frequency is high(spikes).

4. Regulator: LM7805 is used to give a fixed 5v regulated supply, is 5v



SOFTWARE DESIGNED

As the PIC microcontroller is used as the central processing unit of the system, we can write the program for the IC in embedded C programming language. The various software tools for development are the following:



1. Mplab IDE v8.36
2. Proteus simulation software

The software is developed in modules and integrated for over all implementation of the system. The various software modules developed are the following.

CONCLUSION & FUTURE SCOPE

A home automation system based on IR sensor which uses PIC microcontroller as CPU was explained in this paper. The system is focused on at elderly people and differently abled people. The prototype developed can control electrical devices in a home or office. The system implements voice recognition unit using HM 2007. The system implements the wireless network using their efficiency and low power consumption. The security system will be useful in case of the fire accidents at the home.

Future work will entail:

1. This project can be used for security purpose as it helps us in knowing the exact no of person residing in the particular premises , and it will help us in case of calamity and provide us the detail of number of person trapped in that premises .
2. This project will helps us in reducing the manual power need for any organization as it is provided with atomized system for controlling gates.

REFRENCES

1. Christopher hallinan, Embedded Linux Primier, A Practical Real World approach second edition, Posts & Telecom Press,2008.8:5~9.
2. Zigbee Alliance, "vision for the home: wireless home automation," Zigbee Whitepaper, Nov. 2006.
3. Y. Usha Devi, " Wireless Home Automation System Using PIC ", International Journal of Scientific & Engineering Research Volume 3, Issue 8, August-2012.
4. D. Brunelli, M. Maggiorotti, L. Benini, and F. L. Bellifemine, "Analysis of Audio Streaming Capapbility of Networks," in EWSN 2008, 2008, LNCS 4913, pp. 189-204.
5. Boylstead Robert & Nasceslsky Louis " Electronic Devices & Circuit Theory" Prentice Hall of India Private Ltd., New Delhi edition 2013
6. R.SARAVANAN , A.VIJAYARAJ, " HOME AUTOMATION USING MICROCONTROLLER", IRACST - INTERNATIONAL JOURNAL OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY & SECURITY (IJCSITS), VOL. 1, NO. 2,2011