"HOME AUTOMATION BY USING AT89S52 MICROCONTROLLER"

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Abstract - *Automatic control of Room's Light and Fan Using Microcontroller AT89S52 use to NODE MCU is a reliable circuit that takes over the task of controlling the room fan and room lights as well as counting number of persons / visitors in the room very accurately. When somebody enters into the room then the counter is incremented by one and the light in the room will be switched ON and when any one leaves the room then the counter is decremented by one. The speed control of fan will depend on Fan speed regulator, microcontroller controls fan speed regulator through relay. It contains temperature sensor that can sense the temperature & gives the control commands for microcontroller. Then microcontroller increases as well as decreases the speed of the fan. The total number of persons inside the room is also displayed on the liquid crystal display. The microcontroller does the above job. The main objective of control is to get the desired output and in energy conservation*

*Key Words***:** *Microcontroller (AT89S52), NODE MCU, Proximity Module Sensor, LM35 Temperature Sensor*

1. INTRODUCTION

Microcontrollers play a very vital role in the development and implementation of automation technology. Automation is the process of controlling system and information to decrease the need of human participation. Home automation represents the idea of controlling of home appliances in an integrated system. It may include the Control of lighting, heating, ventilation, air-conditioning, security, and other appliances. Several sensors i.e. detector for temperature, smoke, fire, gas, PIR, light etc. are used for smart home. These sensors use the input signal to control home appliances. But implementation of a unified connectivity between devices and the main controller in cost effective way is very decisive this works includes the control of switching of lights and fan according to the attendance of person, speed control of DC motor(fan) according to the variation of
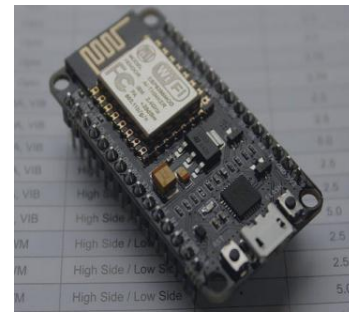
temperature Thus the speed of dc motor is controlled through duty/PWM signal. In this paper, we present a flexible and reliable control scheme for controlling the dc motor and light control. Results obtained are found in good agreement with the available in data acquainted. Finally the most important section is the conclusion which concludes the purpose of this paper.

1.1 What is IOT

The Internet of Things (IOT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. The definition of the Internet of Things has evolved due to the convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), and others all contribute to enabling the Internet of Things. In the consumer market, IOT technology is most synonymous with products pertaining to the concept of the "smart home", covering devices and appliances (such as lighting fixtures, thermostats, home security systems and cameras, and other home appliances) that support one or more common ecosystems, and can be controlled via devices associated with that ecosystem, such as smart phones and smart speakers. Defining the Internet of things as "simply the point in time when more 'things or objects' were connected to the Internet than people", Cisco Systems estimated that the IoT was "born" between 2008 and 2009, with the things/people ratio growing from 0.08 in 2003 to 1.84 in 2010.

2. DESCRIPTION OF THE SYSTEM AND HARDWARE MODEL:

A block diagram is a diagram of a system in which the principal parts or functions are represented by blocks connected by lines that show the relationships of the blocks. They are heavily used in engineering in hardware design, electronic design, software design, and process flow diagrams a diagram showing in schematic form the general arrangement of the parts or components of a complex system or process, such as an industrial apparatus or an electronic circuit.

Fig-1-Block diagram of IOT based home automation

2.1 Hardware Components

2.1.1 NODE MCU

Node MCU is an open source IOT platform. It includes firmware which runs on the ESP8266 Wi-Fi SOC from Espressif Systems, and hardware which is based on the ESP-12 module. The term "Node MCU" by default refers to the firmware rather than the development kits. The firmware uses the Lau scripting language. It is based on the Lau project, and built on the Espressif Non-OS SDK for ESP8266.

2.1.2 Relay

The Single Pole Double Throw SPDT relay is quite useful in certain applications because of its internal configuration. It has one common terminal and 2 contacts in 2 different configurations: one can be Normally Closed and the other one is opened or it can be Normally Open and the other one closed. So basically you can see the SPDT relay as a way of switching between 2 circuits: when there is no voltage applied to the coil one circuit "receives" current, the other one doesn't and when the coil gets energized the opposite is happening.
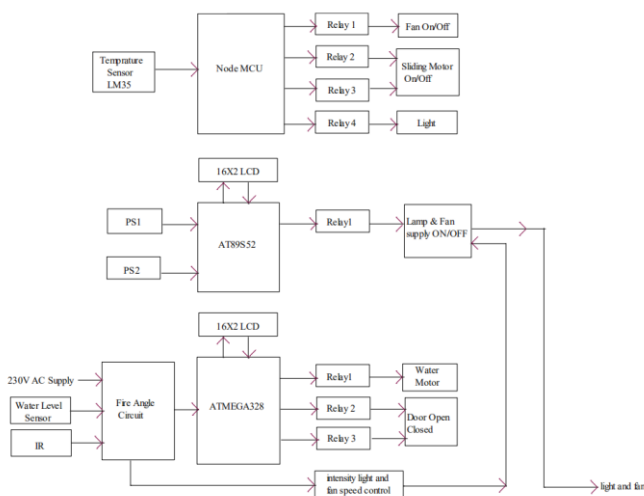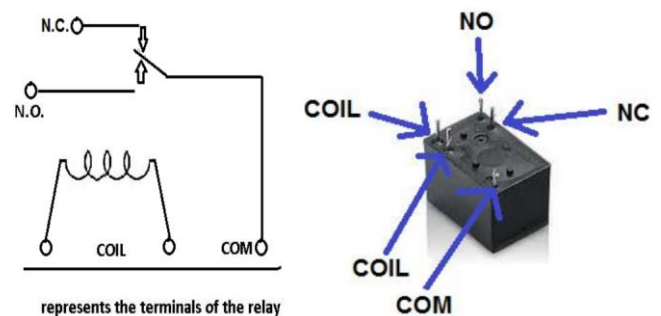

2.1.3 Proximity Sensor

A very cheap, easy to assemble, easy to use Infrared sensor with a long detection distance and has less interference by visible light. The implementations of modulated IR signal immune the sensor to the interferences caused by the normal light of a light bulb or the sun light. This sensor has a screwdriver adjustment to

set the appropriate detected distance to make it useful in many applications, and then gives a digital output when it senses something within that


2.1.4 Microcontroller AT89S52

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the Indus-try-standard

80C51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications. The AT89S52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two

data pointers, three 16-bit timer/counters, a six-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. In addition, the AT89S52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The Power-down mode saves the RAM con-tents but freezes the oscillator, disabling all other chip functions until the next interrupt or hardware reset.
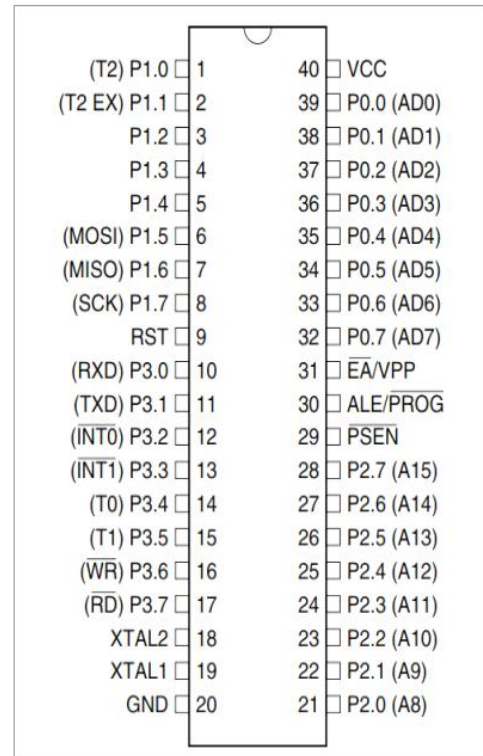

2.1.5 LCD Display

Liquid crystal display (LCD) which has been used is 2x16 LCD. I.e. two lines each with 16 characters. The LCD has been used in 8bit mode i.e. 8 data lines are required. Other than 8 data line one RS, one RW & one enable line is also required. The RS line is used to select whether the data or instruction is being transferred between the controller and the LCD. The RW line is used to indicate if data is read from the LCD or written into the LCD. The RW pin is pulled low when data is being sent to the LCD. The enable pin is basically a latch pin which tells the LCD that the data is available on the data lines. The resister R7 is used to set the intensity of the BACKLIGHT.
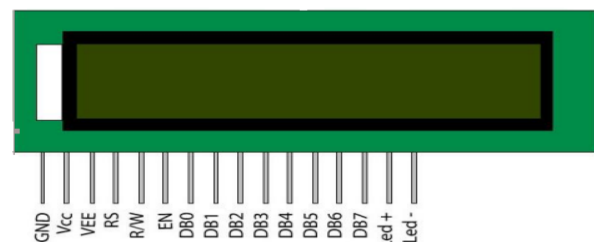
2.1.6 Dimmer Module

The board can be used in application where dimming of 110-220V AC power is required like dimming og bulb or fan. The input can be simple 4 bit high/low signal form microcontroller working at 3V or 5V which is isolated with the use of opto-couples. Total of 16 levels of power control can be set from totally of (0%) to full on (100%) as per input control levels.
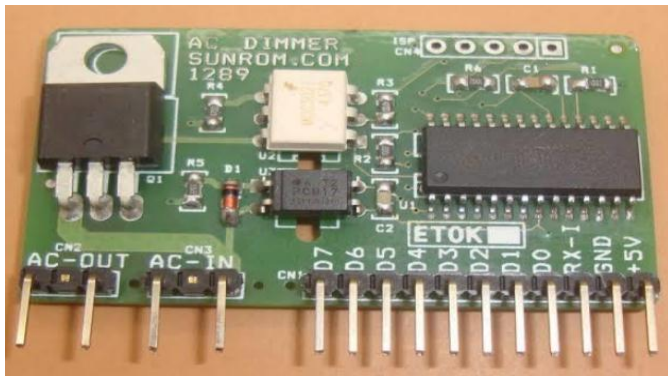
3. SOFTWARE USED: BLYNK SOFTWARE

Blynk is new platform that allows you to quickly build interfaces for controlling and monitoring your hardware projects from your IOS and Android device. After downloading the blynk app, you can create a project dashboard and arrange buttons, sliders ,graph, and other widgets onto the screen .using the widgets ,you can turn pins on and off or display data from sensors. Blynk is a Android apps to control Arduino, Raspberry Pi and the likes over the Internet. It's a digital dashboard where you can build a graphic interface for your project by simply dragging and dropping widgets.

4. Hardware Prototype Model

5. CONCLUSIONS

Today in this century home and offices are equipped with various machineries. Besides, people have various devices for surfing in web. That's why we have introduced a system that can be accessed from all sorts of devices and database can be updated from anywhere. If particular device works on, the other means of devices will be easily operated. The database is developed such a way that can be accessed from any sort of device that supports internet.

In this regard motion and vibration sensor is brought here because of its high quality sensing. The system is very easy to install. For this, just need HD spy camera connection for recording and for motion detection a motion sensor and vibration sensor, the ultrasonic range detector is to detect the distance of the object, temperature and humidity sensors to maintain the room temperature. Water level sensor to filling the overhead tank. These are controlled by arduino controller. Home Automation is definitely a resource which is capable of make a home setting automated. People can be in command of their electrical devices via these Home Automation devices and set up the controlling actions in the workstation. We think this device have high potential for marketing in the future.

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