

Arduino-based Seminar Hall Automation

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Abstract

Appliances in the house may be managed remotely or automatically thanks to home automation. Early home automation involved labor-saving devices like air conditioners, washing machines, and lighting control systems. The home automation market is expanding quickly every day, yet some equipment work independently and cannot connect. There are many uses for automation, both in industry and at home. In this instance, the seminar hall is one of those uses.

Keywords: - Load, PIR sensor, Arduino Uno, Relay Module, etc.

INTRODUCTION

In this project, we're employing wireless IR and sensor-based communication to operate seminar hall equipment. In this project, the entire workflow is managed by an Arduino board. Using an IR remote control and sensors to operate appliances, we communicate certain orders to the controlling system. Arduino delivers signals to relays, which are in charge of turning the appliances on and off, through a relay driver after receiving them from the IR remote and sensors. The idea of "automation of the lecture hall by utilising

Arduino" will now be discussed. Automation has to do with the electronic and automated control of home equipment. In this project, we used an Arduino and an IR remote control to operate four electrical appliances. More consumers will be eager to purchase automation if the cost is reduced or its usefulness is raised. Therefore, it follows that technology and manufacturing capacity should both advance steadily. It will then eventually gain the same level of popularity as smartphones.

LITERATURE REVIEW

Mobile technology may now be included into home automation systems because to the fast improving mobile communication technology and falling costs. A mobile phone with Android capabilities, an online application, and a home server make up a mobile and internet-based home automation system. The Arduino controls the home appliances by receiving instructions from the server computer, which runs in accordance with the instructions obtained from the mobile application. [1] The design and prototype execution of a new home automation system using WiFi technology as the network architecture linking its components are shown in this project. The suggested system has two basic parts. The first is the server (web server), which displays the system's brain and regulates, supervises, and keeps an eye on users' houses.

Users and system administrator can locally (LAN) or remotely (internet) manages and control system code. The second part is the hardware interface module, which provides an appropriate interface to the sensors and actuators of the home automation system. Unlike most of the available home automation systems on the market, the proposed system is scalable,

meaning that one server can manage many hardware interface modules 5 as long as they exist within WiFi network coverage. [2]

a method where Bluetooth and an Arduino are used to control electrical devices like fans and lights from an acceptable distance. The Arduino has a Bluetooth module attached, which connects the phone to the board. The fan and the light are controlled by the Arduino controller depending on the information given by the smartphone to the Arduino through the Bluetooth interface module. [3]

PROPOSED SYSTEM

In this case, the controller for all the actions is an Arduino Mega. Here, many sensors are employed. All loads will immediately turn on whenever a motion or impediment is detected by the PIR sensor. If a student is present, the load will immediately turn off. The AC temperature is managed using a temperature sensor. The fan needs to be shut off before turning on the air conditioner. On the LCD, all information will be visible. similar to load status Here, the load may be manually controlled using an IR remote.

SYSTEM ARCHITECTURE OVERVIEW

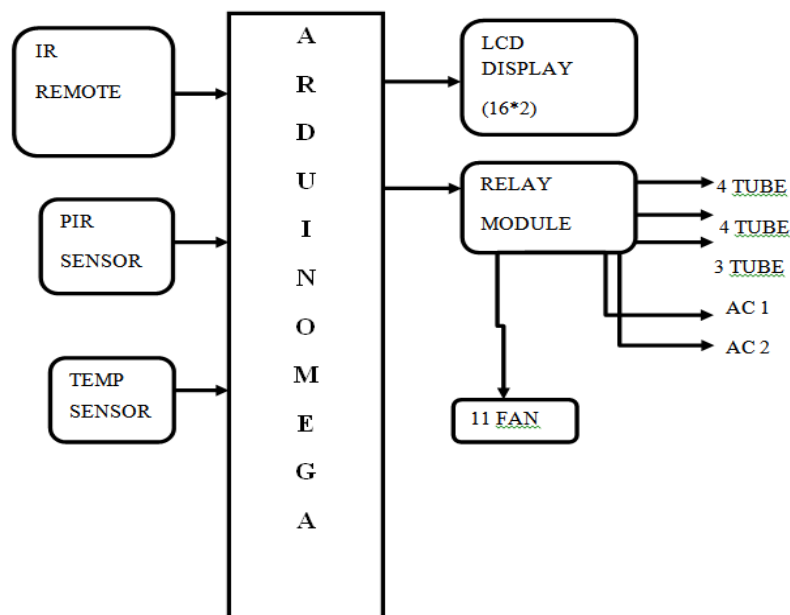


Fig.1 Block Diagram

CIRCUIT DIAGRAM

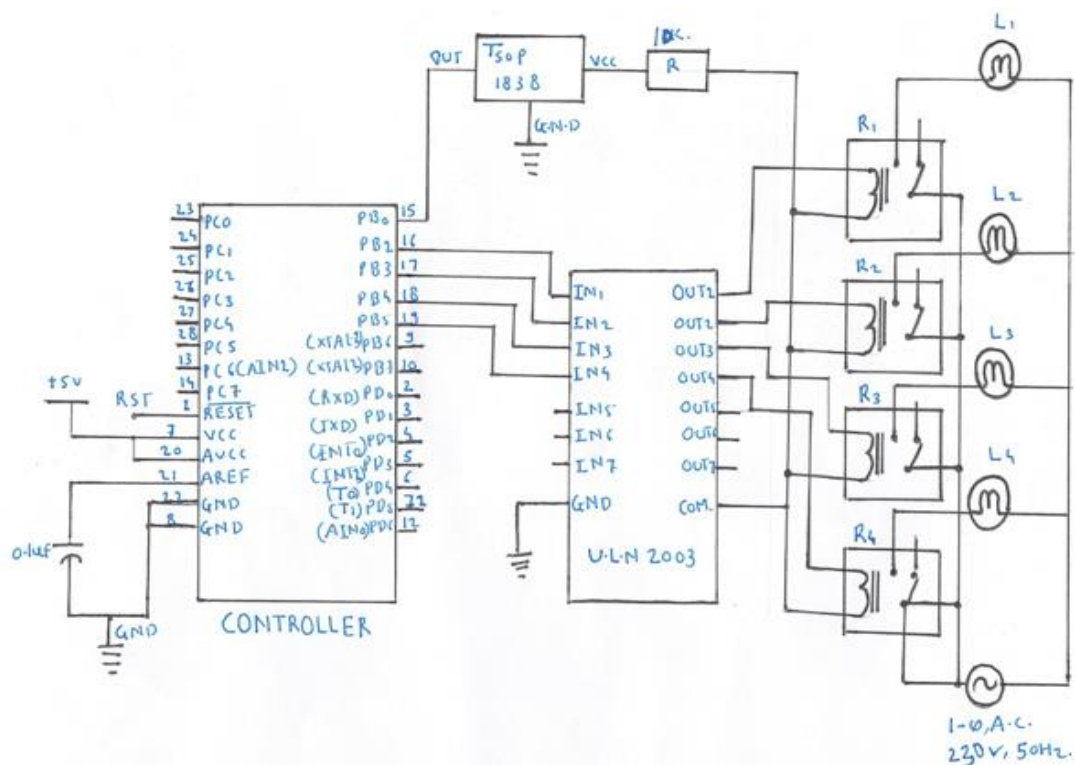


Fig.2 Circuit Diagram

RESULT

Control is divided in two parts.

1. IR remote control.
2. Sensor control.

1. IR Remote control-

- SW1 pressed = Tube On.
- SW1' Pressed = Tube Off.
- SW2 Pressed = Fan On.
- SW2' Pressed = Fan Off.
- SW3 Pressed = Tube and Fan Both On.
- SW3' Pressed = Tube and Fan Both Off.

2. Sensor Control

When any movement is detected by sensor tube and fan both will turn on otherwise both remain off.

CONCLUSION AND FUTURE SCOPE

CONCLUSION

Even if the sector of home automation is not new anymore, it is still expanding in underdeveloped nations. Numerous electronics companies enter the home automation sector because of the enormous potential market. Even Apple, Siemens, and Sony are vying for market share in home automation. The scale for the home automation market hasn't yet developed, though. The market has both excellent and awful mixed items. Additionally, there are no common industry standards. The difficulty with home automation.

More individuals will be willing to purchase home automation if the cost is lowered or its usefulness is raised. Therefore, it follows that technology and manufacturing capacity should both advance steadily. It will then eventually gain the same level of popularity as smartphones. Finally, we would like to state that home automation is like the sun rising. It will one day be like the sun, offering people a more respectable, joyful, and effective existence.

FUTURE SCOPE

The Raspberry Pi demonstrates to be a wise, affordable, and effective platform for implementing home automation in our rapidly evolving period when everything is based on computing and information technology, either directly or indirectly. This offers a straightforward usage for Raspberry Pi home automation that is simple to set up and effective. The offered code is general and adaptable in a user-friendly way and is easy extensible for any foreseeable applications, such as power control, surveillance, etc. Additionally, this strategy has a number of advantages over other home automation strategies. For instance, DTMF home automation suffers greatly from the call tariff, but this is not the case with the suggested approach. Additionally, because it just uses the

already-existing web server offered by Gmail, the design of the web server and the space necessary are avoided in web server-based home automation.

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