

Home Automation using IOT



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Introduction

In our daily life, we use much equipment. Those are very important to us. Sometimes for our carelessness, we forget to control them. For this reason, we need to control our light, fan, AC and other electronic devices. If we forget to off your electronic device, it can help you to control those devices and electronic thing. Besides, They have one security system which helps you, if anyone tries to steal your system. They have a notification system if you want to notify your friend using this device it helps you to notify him. They have a web-based user interface and you can access your system using your mobile or computer or any electronic system which have internet.

Scope

People who are always in a hurry, forget to control their components. Or people who stay in a joint family, often it is not possible to control their room. So, in this box, they can simply control their room and If any of his family forget to off their electronic components. It helps him to control those devices from outside from.

Methodology

The equipment used in this project are

1. PC with Arduino Software
2. Arduino Uno
3. Sonar sensor
4. NodeMCU (Esp8266)
5. Buzzer
6. Breadboard
7. Switch

1. PC with Arduino Software

A PC has been used as a power source and an Arduino software is used for the coding section.

2. Arduino Uno

Arduino is an open source computer hardware and software company, project, and user community that designs and manufactures single-board microcontrollers and microcontroller

kits for building digital devices and interactive objects that can sense and control objects in the physical and digital world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL),^[1] permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form, or as do-it-yourself (DIY) kits.

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards or Breadboards (*shields*) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler toolchains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project.

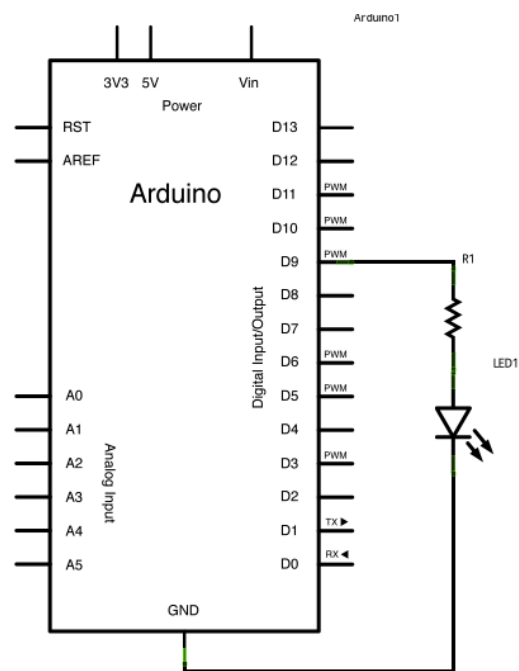


Fig 1: Arduino Block Diagram

3.Sonar Sensor

Sonar's most popular and primary use is to be able to "see" underwater. Sonar uses the propagation of sound to detect objects. Since sound waves travel farther in water

than they do in air, sonar is preferred over other types of sensors like radar for this reason. Even though it's preferred for underwater sensing, sonar can still be used in air; however, there exists the small chance of interference, which we might see when measuring distance.

There are two types of sonar: passive sonar and active sonar. Active sonar has an emitter and a detector: depending on the time that the signal takes to come back to the sonar, it can detect the range or distance of an object and its orientation. It also detects the strength of a signal to determine how much time it took to be picked up by the receiver. Passive sonars are used to pick up signals from vessels and other marine life like whales and submarines. Passive sonars don't have emitters; they just receive sound waves coming towards them.

4. NodeMCU (Esp8266)

We will connect the Esp8266 to the Wi-Fi router using SSID and password of our Home network Wifi, where the esp8266 connects to our wifi and creates a webserver, which can be accessed by looking through the serial Monitor of the Arduino window or you can also log into your Wifi router and check for the list of clients connected to your Wi-Fi router.

5. Buzzer

This is used for creating alarm

6. Breadboard

All components are implemented in this board

Working Principle

First of all, we make a user interface which controls the other device. we give input using this UI.

Home Automation

Select Device

Light ☐

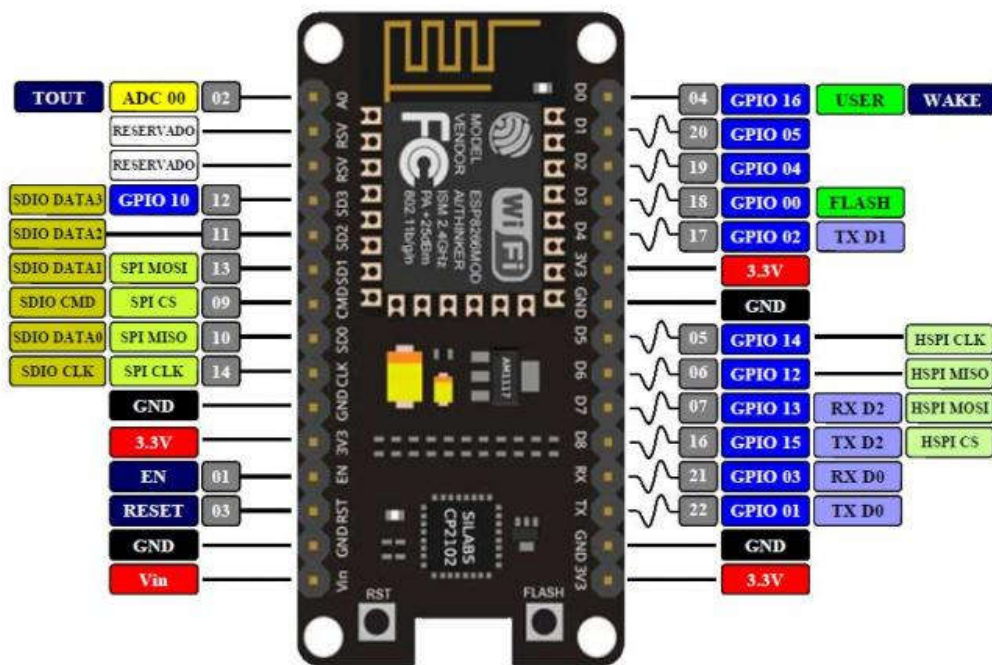
Fan ☐

AC ☐

Notification ☐

Project Submission of 3rd year 1st Term

We use nodeMCU as a wifi module.



we use pythonanywhere as a server. we sent our data in pythonanywhere which receive those data and process them and give output according to user interface input.

Dashboard

Welcome back, [shakib034](#)

CPU Usage: 0% used - 0.00s of 100s. Resets in 8 hours, 49 minutes [More Info](#)

[Upgrade Account](#)

File storage: 0% full - 164.0 KB of your 512.0 MB quota

Recent Consoles

+ 5 -

You have no recent consoles.

New console:

\$ Bash

>>> Python

[More...](#)

Recent Files

+ 5 -

/home/shakib034/mysite/static/w3.css

/home/shakib034/mysite/flask_app.py

/home/shakib034/mysite/templates/home.html

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circuit diagram:

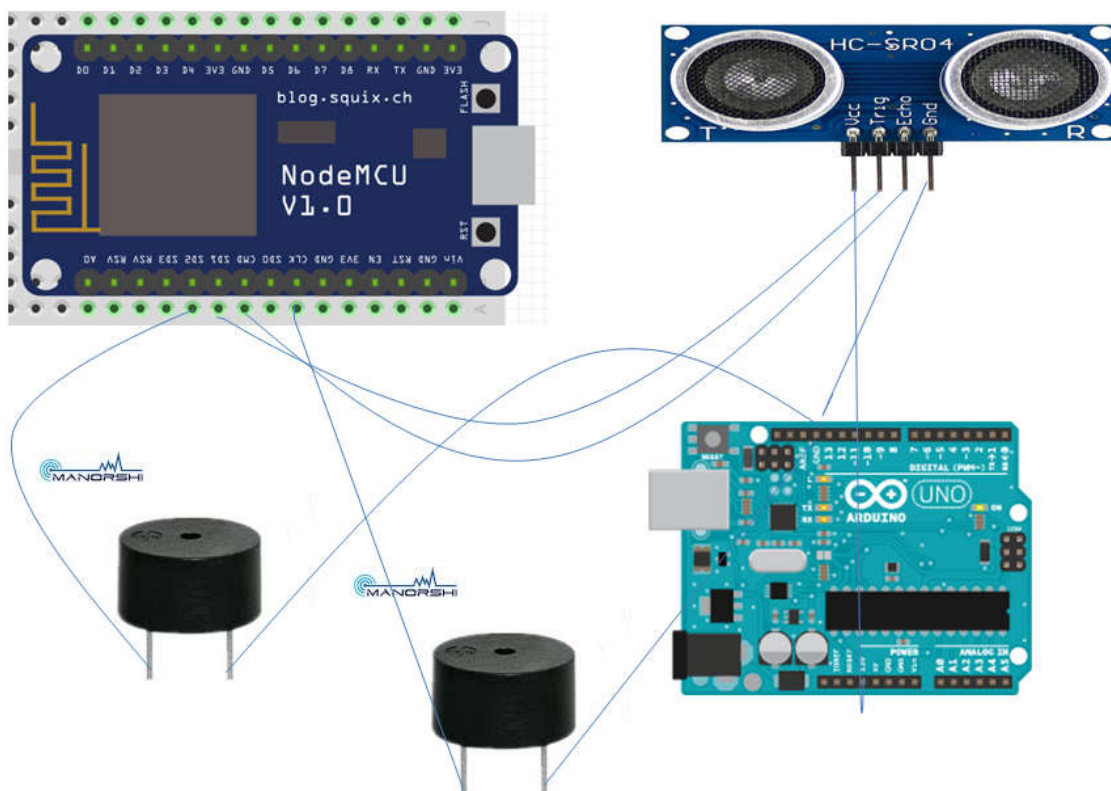


Fig 1: Total System Configuration



Fig 2 : Outer Look

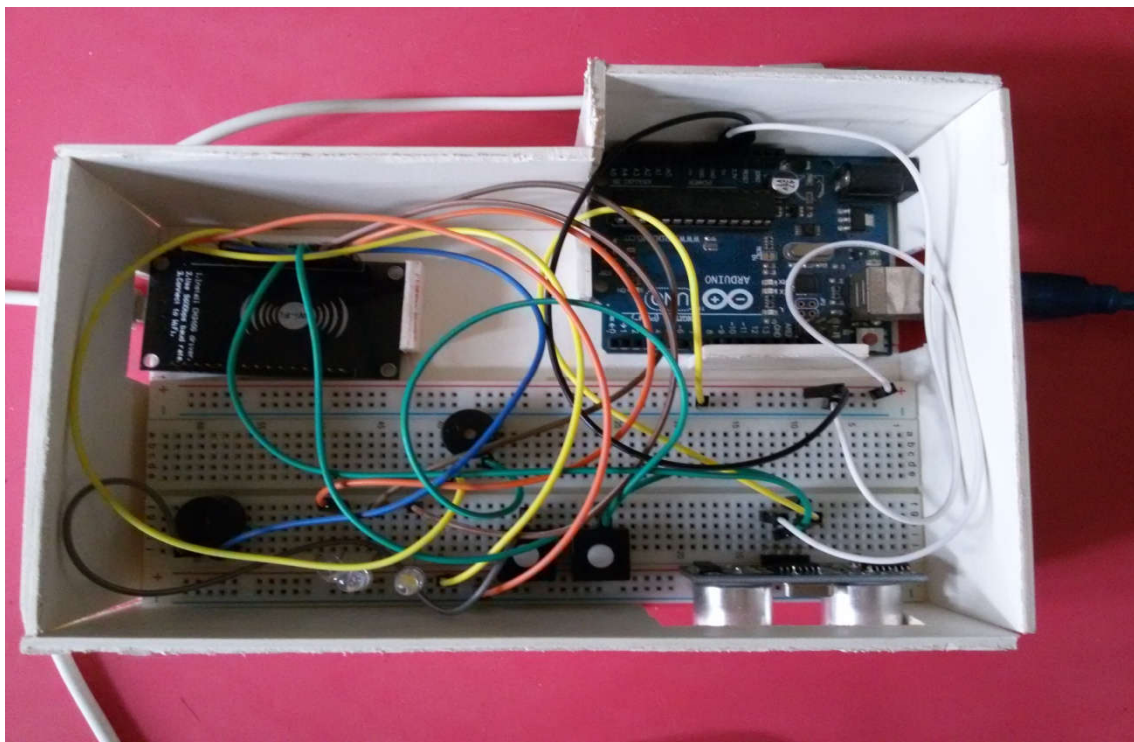


Fig 3: Inner Look

Future Work

This project will be updated so that anyone can add any device using the relay. Do not need any extra circuit for this system to add any device.

Conclusion

The use of this box will provide the user more flexibility to control their components and safety. Further updated versions will be more helpful.

References

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