MICROCONTROLLER BASED DIGITAL SHOPPING MALL

This project report submitted in partial fulfillment of the requirements
For the Award of Degree of
Bachelor of Science in Electrical and Electronic Engineering

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Certification

This is to Certify that this Project entitled "**Microcontroller Based Digital Shopping mall**" Is done by the following student under my direct supervision and this work has been carried by the laboratories of the department of electrical and electronic engineering under the faculty of engineering of daffodil international university in just a few fulfillment of this requirements for any degree of bachelor involving science in electrical together with electronic engineering. The presentation of this work occurred onDecember2019.

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Dedicated to

Our Parents

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LIST OF ABBREVIATIONS

KHZ	Kilo Harz
MHZ	Mega Harz
KB	Kilo Byte
Ns	Secondary Winding
Np	Primary Winding
Is	Secondary Current
Ip	Primary Current
CT	Current Transformer
IC	Integrated Circuit
SW	South West
KPH	Kilometer per Hour
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
GUI	Graphical User Interface
KV	Kilo Volt
AC	Alternating Current
IC	Integrated Circuit
LED	Light Emitting Diode
LCD	Liquid Crystal Display
TR	Turn Ratio
USB	Universal serial bus
PF	Pico Farad
KWH	Kilo Watt Hour
nf	NANO Farad
IR	Infrared Ray
µF	Micro Farad

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ABSTRACT

You start with a review while in the understand regarding interaction techniques and even slideshow of your primary theory, the book slowly but surely takes up regarding NodeMCU mobile technologies web link in this for example code, modulation this also issue just like leading-edge correspondence method. This kind of assignment is concentrated on the building of your multilevel depending and additionally watching product if lenders fit in while in the local mall. A temperatures sensor forced to determine concerning 25°C at all times regular warmth just by weather soothing models just like applying lover or perhaps air cooling unit. A terminate sensor picks up any existence in smoke cigars or simply quite a temperature that happens to be an offer which includes a flame. Your illumination is taken care of by way of power-saving option, through which people today owned by all the passageways while in the local retailer regarding finding any IR sensor. This specific lamination greatly dazzling & lumen strengthen & without consumers this particular lumen moreover cuts down. The following job is exclusively managed with the NodeMCU micro-controller   product.

CHAPTER 1

INTRODUCTION

1.1 Introduction

In our education predicament, electrical engineering students tend to be showing much interest to try major as well as mini electrical power projects choosing advanced manipulate technologies. Although, it is actually advisable via many experts to get started on doing projects, with the basic tier using elementary controllers such as micro-controllers. And so, here we have now discussed innovative and common electrical initiatives for micro-controller founded digital transporting malls that include use towards wireless technologies this regulate and operate on the exit-entry checking and inspecting system of men and women, Fire determine and regulate unit techniques, Always ordinary temperature create the main system in local mall, For gentle lumen, this kind of brightness operate to the power saving entirely mall runway which is one of the customers. It truly is the most creativeness technology that arises in this specific project. These projects may be complex as well as demand great and minimal investments. The significant areas which handle projects involving electrical design include energy control network unit, verbal exchanges in around the world systems, Wi-Fi system tools handling as well as maintenance, manufacturing control along with senses. Thus, this post gives common electrical projects towards distinctive areas that are already mentioned. Projects for starters will definitely helpful when doing your practical rendering.

1.2 Background

Background Study at using this project of Wi-Fi communication types are in ways that electromagnetic waves are used in the transmission of data, this is done over some areas of the path used for communication or the whole system used for connecting. In addition to conversation tools, some systems utilized for purposes of monitoring will be categorized as wireless. Then again, such a system isn't going to be the basis of this particular paper, as it seeks to clarify the small business network types of Wi-Fi connection. The pioneering Wi-Fi options transmitters were put into utilization in the early periods from the 20th century via a

Morse code. Then, when modulation used in any medium. The increased and successful entry to the spectrum has revived the use of Wi-Fi connections, and it has been facilitated by this introduction of data-based styles of communication, as well as a result of aspects as the pc use. Technologies family with standards, which are popular for local area media of devices and Access to the internet. Wi-Fi Certified to items that complete interoperability accreditation testing. As of 2010, the Wi-Fi Alliance consisted of greater than 375 companies from across the world. Wi-Fi-integrated circuit chips delivered approximately. Wi-Fi Alliance solutions, which are popular for local area media of devices and Access to the internet. Wi-Fi is a trademark of this non-profit Wi-Fi Alliance, which restricts the use of the term Wi-Fi Trained to products that whole interoperability certification testing. Since 2011, the Wi-Fi Alliance consisted of greater than 375 companies from across the world.

1.3 Problem Statement

Modern society is interlinked through a network of not only people but their respective electronic devices as well. The devices permeate peoples' lives so thoroughly that it is rare to see someone without an electronic device, be it a watch, cell phone & computer. These project devices have to even touch the surface of what is possible. Recent research has delved into so-called "smart" devices. These smart devices are ordinary, with sensors possibilities of what is capable. However, there are just as many types of sensors as there are in project devices. To communicate with each of these sensors through custom hardware is a modern and tedious process. Hence, there is used for a system that counting peoples, temperature controlling, fire alarm & light lumen maintenance in the mall. Flawlessly connect different sensors for different work and make sense of this data at Wi-Fi technology. We have developed an open-source microcontroller on which users can connect a wide variety of sensors to their Smartphone's and computer. Our design creates a cheap is called nodeMCU and an easy interface in which every consumer can connect the sensors in their belongs in the complex while monitoring that data control unit. This project uses a microcontroller with the included Android app that will give control unit the tools they need to bridge the data collected in a shopping mall by electronics with the real process and it is must be real and possible use from micro-controller based Wi-Fi technology.

1.4 Aim of This Project

Desire is our overall intention for our project. It is why we are doing the data and signals where you aspire to be by the conclusion. The objectives are the specific steps designed to take to arrive there. This project offers people counting in stores, temperature system gadgets, fire alarm solutions, light power-saving method this project most interested are convinced it also different device need to control by the internet including Wi-Fi technology. This product monitoring is all around you by this plugged into this coding application by functional utilizing apps. They also goal of the project While preparing the project the applicant has taken notice of the specific educational needs with the students. The groundwork had been mainly feedback within the students of Global Development Studies. The research is finished with experts' experience inside the university and especially with the nature of all the project research through face international competitiveness.

1.5 Objectives

The objective of this project is to design a microcontroller-based system that can:

- Acquire data about multiple customers counting system, temperature control unit, light control unit, fire alarm unit and it all-controlling about Wi-Fi system in that conditions using sensors interfaced on a nodeMCU.

- Converting analog data to digital data with an ADC (Analog-to-Digital Converter) power unit. Before being fed to the nodeMCU, display data on an LCD screen after processing on the Internet using technology.

1.6 Methodology

A lot of higher degree customers currently have nearly four devices use typically. We nearly four counted the sheer numbers of different IOT systems being employed by monitoring inside shopping local retailers and came across that much more than four numerous systems are banking on Wi-Fi while their only technique to connect. Wi-Fi this uses throughout (nodeMCU), counting of men and women, the temperature within all section fire security alarm, light control one it is definitely all going to our Wi-Fi interact. We are nevertheless in earlier phases belonging to the IOT market. Wi-Fi Data transfer speeds Wi-Fi can be fast, pretty much as rapid as sent connections. A mission properly fashioned system has plenty of speed to address anything your mobile and even computer device can do. Assuming the idea keeps up together with the changes around Wi-Fi technological innovation, Wi-Fi rates

increase to every day. Thirds mission Expectations are over ever working with that wide range of pressure to them to offer you secure Wi-Fi supervising and command. We want to buy to "just get the job done." But not only do they want it to function, but they want it to function well. The retail complex is the remaining rated micro-controller determined by its Wi-Fi general performance well. Customers monitoring in the expects Wi-Fi through the mall regulate unit. This undertaking four-unit will be running operation tests for a business mobile phone network and submitting results web-based. Secure Wi-Fi is a Utility. If how we focused entirely on a cordless device and also our functions is cloud-based possesses secure Wi-Fi has changed into a utility

1.7 Scope and Limitations of the Study

Normally, the scope in the microcontroller is something which includes an important processor, recollection. They are only everywhere; you can say it as being a processor. Different apps have kinds of a processor and that is nothing and yet microcontroller. In our desktop computer, we need one CPU. Which will be the main unit of this overall strategy, which designs these types of processors? You'll find microcontrollers differentiated by simply 4 tiny bit, 8 bit, 16 bit, 32 bit, 64 bit, etc. Microcontrollers are actually programmed in a manner that performs our tasks simply. It's programmed to function as in each situation of this Wi-Fi interact appropriately. This limitation in the network technological innovations are either might be based on infrastructure. The posting system networking is interconnected through any sort of specific structure or just about any central unit operating correctly as this router.

1.8 Project Outline

Chapter 1: Introduction

Chapter 2: Overview of the project

Chapter 3: Theoretical Model

Chapter 4: Hardware component

Chapter 5: Result and Discussion

Chapter 6: Conclusion

1.9 Summary of the Chapter

This kind of project is usually monitoring system provides at several system conditions to remain accurately predicted permitting for suitable planning with events or possibly activities which depend on WI-FI as being a major element is influenced a scope connected with man's workout plans including the fact that. This article may just be too technical for many of us readers to comprehend. Please help it to help make it logical to non-experts, without the need for removing this technical fact. Wi-Fi microcontrollers make it easy for Wi-Fi on the web connectivity for devices for them to send & acquire data in addition to accept orders. As like, Wi-Fi microcontrollers work extremely well for taking otherwise normal devices inside the realm on the Internet from things.

CHAPTER 2

OVERVIEW OF THE PROJECT

2.1 Introduction

The following project can be a micro-controller primarily based on the digital retail complex which is that inside four-part in technology. Wi-Fi's wavebands have got relatively substantial absorption and even work ideal for line-of-sight make use of. Many prevalent obstructions around mall facet appliances and many others. May help reduce range, but and also this helps lower interference involving different CPA networks in populated environments. A get point (or hotspot) generally has a selection of the across the world & indoors even though modern obtain points claim up to range outside. Hotspot coverage is often as small for a single place with partitions that inhibit radio mounds, or while large as many squares a long way using a lot of overlapping entry points together with roaming accepted between individuals. Over occasion, the tempo and spectra-Fi's wavebands get relatively higher absorption and also permitted amongst them. As time passes the rate and spectral capability of Wi-Fi get increased.

2.2 NodeMCU

The specific NodeMCU "Node Micro-Controller Unit" which happens to be available source software applications and factors development environment that is certainly built around such an inexpensive System-on-a-Chip.

NodeMCU is definitely an open-source IOT application, whose firmware functions on strategy based Wi-Fi technology around the ESP8266 SDK. Its equipment is founded on the ESP-12 component. It may perhaps be controlled with the local Wi-Fi area or via the internet. The part has GPIO pins which may be programmed.

2.3 Sensors

A sensor may be a device, element, machine, or subsystem as their purpose could be to detect functions or alterations in it has the environment along with sending the results to alternative

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electronics, frequently a laptop processor. A sensor is used through other technology. This sensor is required in every single day objects like that project checking level coming from the exit as well as entry model, Temperature component, Thermal component, and Lamination power cutting down unit. Utilizing advances during micro machines and easy-to-use microcontroller tools, the purposes of detectors have enhanced beyond the larger fields regarding temperature, demands or circulate measurement to help you sensors.

2.3.1 IR Sensors

An infrared sensor is surely an electronic unit that sends out to impress some issues with the atmosphere. An IR sensor could measure the heat of the object and also detects your motion. Most of these sensors evaluate only infrared light, rather when compared with emitting it that may be called a new passive IR sensor. IR Detectors work simply by using a specific lighting sensor for you to detect a new select lighting wavelength inside Infra-Red (IR) variety. By utilizing an LED that will produce light with the same wavelength while what your sensor is looking to get, you can glance at the intensity in the received lighting. This extra-long-range sharpened distance sensor bounces IR off of objects to discover how distant they are generally. It dividends an analog voltage that they can use to figure out how close your nearest subject is. Incorporates 6" prolonged 6-JST program wire. These detectors are beneficial to detection involving 100cm-500cm (1-5 feet / 3-15 feet).

Figure 2.1: IR Sensors

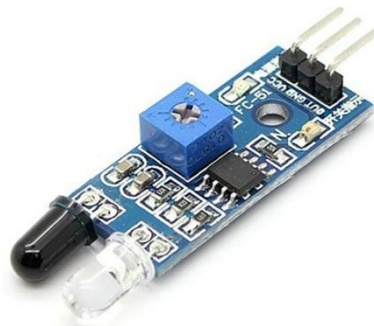## 2.3.2 Temperature Sensor

This unique project's frequently measured real parameter is usually temperature regardless if in process retail complex applications for settings. Exact measurements are a critical element of success. Exact measurements are expected for quite a few applications. Reviews of vapor or electric powered components, physical research, and additionally geological experiments

of devices. There are varieties of sensors made use of in the shoe store today this includes resistance high temperature thermocouples, thermostats, infrared detectors, and semiconductor receptors. Each consultant has a unique operating parameter. These sensors come into play different options, but currently have one prevalent thing: most women measure heat range by sensing a new experience in that Wi-Fi strategy characteristic.

Figure 2.2: Temperature Sensor

2.3.3 Thermal Sensor

This approach project must flame detector is mostly a sensor created to detect and answer customer the presence on the flame or perhaps fire, enabling flame prognosis. Responses with a detected flame be contingent on the unit installation but can incorporate sounding any alarm, deactivating-activating any fire reductions system. When found in applications in ways that furnaces, their role is always to confirm which the furnace is certainly working suitably; in most of these cases, they will take not any direct measures beyond informing the user or manipulate system. A relationship detector can regularly respond faster and even more accurately rather than a smoke or possibly heat detector as a result of mechanisms that uses to detect typically the flame.

Figure 2.3: Thermal Sensor

2.3.4 Light Power Saving (IR long range Sensor)

This approach project has got to used LED lights can also work with IR sensors along with the right adjustments. A several lighting technology today use IR sensors linked with LEDs. As outlined by this understand, motion sensor fuses use with regards to a watt of one's on standby function (23 periods a day) and additionally 5 w on busy mode (about a while a day). This trims a little bit off the entire savings. Occupancy devices increase lighting fixtures energy final savings by flipping off or possibly turning off the lamps when locations are unoccupied. Although a lot of the sensors applied in amenities are hard-wired, wireless detectors that take advantage of radio pitch to speak with lighting fixtures are a viable possibility.

Figure 2.4: IR long range Sensor

2.4 IR Specifications

The specifications of there are as follows:

· Operating voltage: 3. 5V: 5V

· Operating Today's: 0. 3 (measuring) sixty days μA

· Results: serial statistics

· High temperature range: 0°: 50° F

· our humidity range: 20: 90%

· Answer: 16-bit

· Accurate: ±1% and additionally ±1°C

Table: 2.1

2.5 Temperature Sensor Specifications

Typically the specifications for the temperature sensor really are:

· Programmable internet temperature sensor

· Applies unique 1-wire strategy

· Working with voltage: 3V: 5V

· 36 Temperature vary: -55°C to make sure you +125°C

· Accurate: ±0. 5°C

· Results resolution: 9-bit to make sure you 12-bit

· completely unique 64-bit protecting

· Renovation Time: 750ms located at 12-bit

Table: 2.2

2.6 Wireless Technology Specifications

The particular specifications with the wireless engineering are:

· Frequency group: 2. some GHz ISM group

· Modulation: Gaussian designed BFSK

· Range: 10-100m

· Physical level: FHSS

· Data fee: 1 Mbps/723 kbps

· Coverage: Omni-directional. Non distinct sight transmitting

· Channels: 79/23 programs

· Hopping fee: 1600 hops/sec with 1 hop/packet

· Channel size: 625 microseconds extended

· Data package: Up to be able to 2, 745 bits in total

· Reliable and also secure: Excellent, Link level authentication and also encryption

· Power 0. 1W

Table: 2.3

2.7 Summary of the Chapter

This kind of chapter must be all sensors able to be used technology which used for checking of consumer exit-entry, temperatures unit, fire alarm and in addition area of the light power-saving function. This technology include the overseeing nodeMCU can be a microcontroller table based. It includes everything necessary to support the particular microcontroller.

CHAPTER 3

THEORETICAL MODEL

3.1 Introduction

At present the mass media transmission advances be a little more extensive and much more new shows exist to increase human lifespan. This project use a major an important part of device nodeMCU.

3.2 Defining of nodeMCU

NodeMCU is usually an open-source IOT principle. It comes with firmware that works on the ESP8266Wi-Fi So c through Espressos Models, and computer hardware which will be based upon the ESP-12 component. The name "NodeMCU" automatically refers towards the firmware as opposed to the development packages. The firmware applies the Lau scripting expressions. It will be based upon this task and built relating to the Espresso Non-OS SDK. It uses great deal of open source in that usable involving projects.
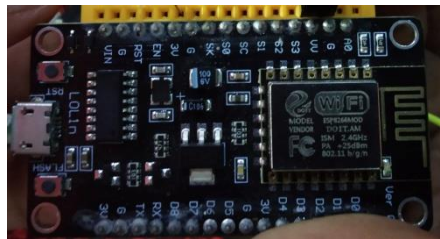
Figure 3.1: nodeMCU

3.2.1 NodeMCU Architecture

NodeMCU is undoubtedly an open-source Lau based mostly firmware for any ESP8266 Wi-Fi SOC out of Espressos plus uses a strong on-module flash-based SPIFFS data system. NodeMCU is having 4MBytes with ROM (flash) plus UNO is probably 32 KB, NodeMCU might store extra code as compared to UNO. NodeMCU carries a micro UNIVERSAL SERIAL BUS port plus UNO carries a USB style B connection, a target USB cable set up available compare and contrasts to UNIVERSAL SERIAL BUS type H. NodeMCU improvement board is smaller in proportion compared so that you can Adriano UNO.
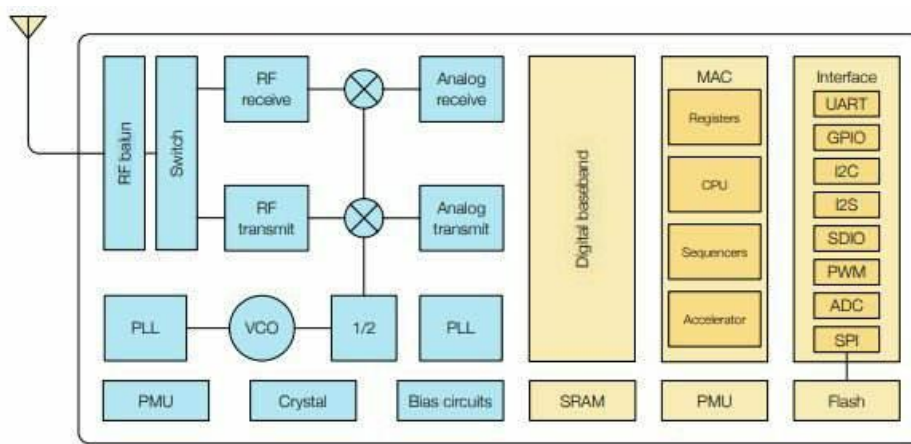
Figure 3.2: nodeMCU Architecture

3.2.2 NodeMCU Pin Diagram

NodeMCU seems to have using Hooks from operating to get in touch by any controlling along with monitoring strategy. There are actually four electric power pins, one particular VIN flag & two to three 3. 3V hooks. The VIN pin enables you to directly provide. NodeMCU includes a micro USB port together with UNO incorporates USB category B connection, the target USB cable is not hard available in contrast to NodeMCU expansion board is usually smaller in space compared to help you Adriano UNO.
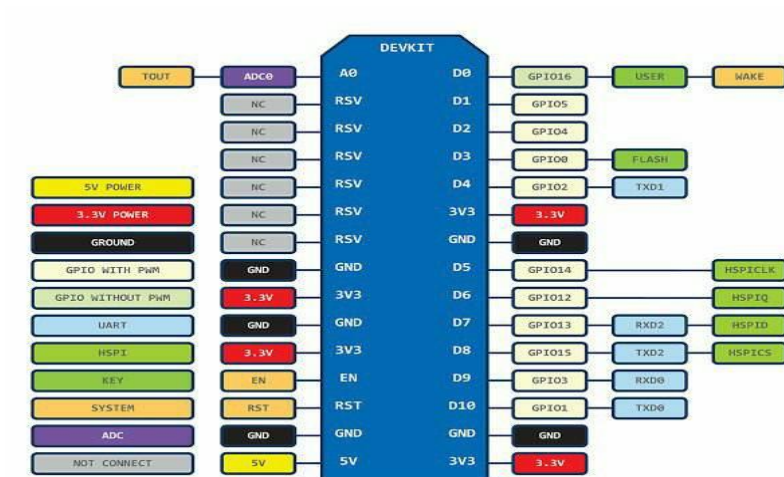
Figure 3.3: nodeMCU Pin diagram

3.2.3 Program of a nodeMCU

Though writing GPIO signal on NodeMCU, people can't handle them by using actual GPIO Green Numbers. You will discover different I/O Directory numbers designated to every single GPIO Pin and that is used meant for GPIO Green addressing.
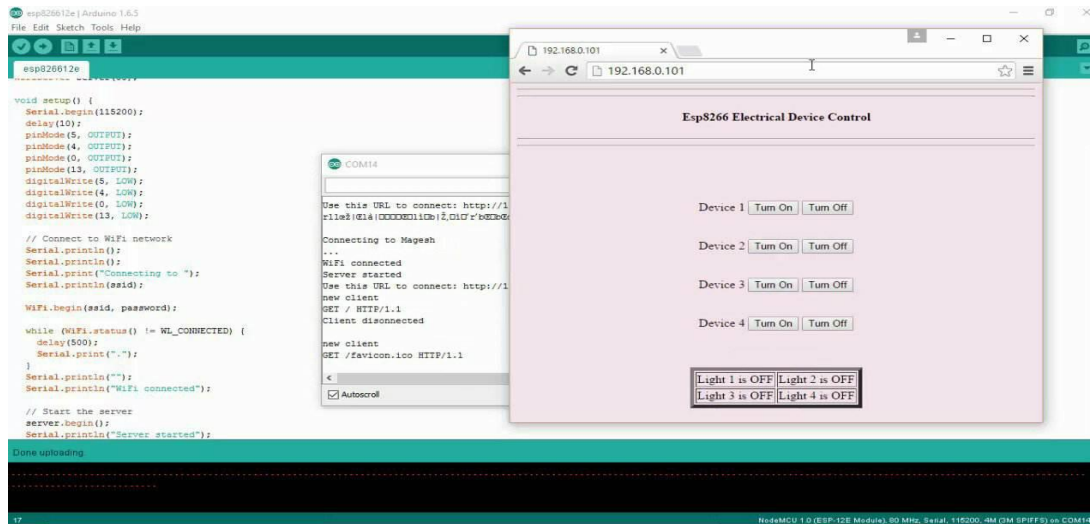
Table: 3.1

Refer following table to check I/O Index of NodeMCU GPIO Pins –

GPIO Pin I/O Index Number

GPIO Pin	I/O Index	GPIO Pin	I/O Index
GPIO0	3	GPIO15	8
GPIO1	10	GPIO16	0
GPIO2	4		
GPIO3	9		
GPIO4	2		
GPIO5	1		
GPIO6	N/A		
GPIO7	N/A		
GPIO8	N/A		
GPIO9	11		
GPIO10	12		
GPIO11	N/A		
GPIO12	6		
GPIO13	7		
GPIO14	5		

3.2.4 Technical Specification of nodeMCU Microcontroller

NodeMCU	MICROCONTROLLER
Developer	ESP8266 Receptive source Network
Type	Single-board microcontroller
Doing work system	XTOS
CPU	ESP8266
Memory	128kBytes
Storage	4MBytes
Ability by	USB
Ability Voltage	3v, 5v (used utilizing 3. 3v Regulator which unfortunately inbuilt on using Green VIN)
Code	Arduino Cpp
IDE Used	Arduino IDE
GPIO	10

Table No 3.2: Technical Specification

3.4 Technical Specification of General

TOTAL	
Input Voltage	3. 5: 5V
Computerized I/O Hooks	Computerized I/O Hooks 30 (that 6 RSV provide PWM yield)
PWM Output	6
PCB Size	2. 5 $\times$ 2$\times$1. 5 sort. Legs
Weight	5 Kg

Table No 3.3: Technical Specification (General)

3.5 Power

The capability pins are the following:

· **VIN:** The details voltage towards the nodeMCU board whether it is utilizing some other power foundation (instead from 3. 7 -- 5 volts with the USB connections or some other directed energy source)

· **5V:** The directed power used to overpower the microcontroller and various segments about the board.
· **GND:** Flooring pins.

3.6 Memory

The particular Atmega328 provides 32 KB associated with glimmer memory space for storing code.

3.7 Inputs and Outputs

· **Serial:** Departure and Entry-level (Used for you to Exit not to mention Entry communicate) which usually serial files. These hooks are linked with the complimenting pins from the ATmega8U2 USB-to-TTL Serial nick.

· **PWM:** 3, 5, 6, 9, 10, plus 11. Provide 8-bit PWM output together with the analog Publish () characteristic.

· **SPI:** 10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK) All these pins assist SPI connecting, which, although furnished by the base hardware, is never currently within the LUA speech. 13 there's a simple built-in LED attached to digital personal identification number 13. Should the pin is Quality value, the BROUGHT is for, when your pin might be LOW, and it is really off.

Reset to zero: Bring this particular line VERY LOW to recast the microcontroller. Typically familiar with add an important reset key to protects that obstruct the for the board.

3.8 Summary of the Chapter

This nodeMCU contains several features for communicating which has a computer, yet another microcontroller. Your (5V) serial verbal exchanges, which can be found on digital camera micro-controller structured and explain by Wi-Fi engineering.

CHAPTER 4

HARDWARE DEVELOPMENT

4.1 Introduction

This kind of chapter aims to clarify to the actual reader, the components made use of in the construction on the system as well as the integration from the hardware ingredients. It explains the interfacing of these sensors within the microcontroller around the Wi-Fi program by nodeMCU and also the connection from the LCD.

4.2 Components

NodeMCU

· IR sensor

· Resistor

· Thermal sensor

· Temperature sensor

· LCD (DISPLAY)

· IR Transmitter together with Receiver

· LED

· USB Connection

· Buzzer

· Relay

· Transistor

· DC Electric

· AC/DC Converter

· Switch

· SOME CABLING

· Cooling fan

4.3 Micro USB
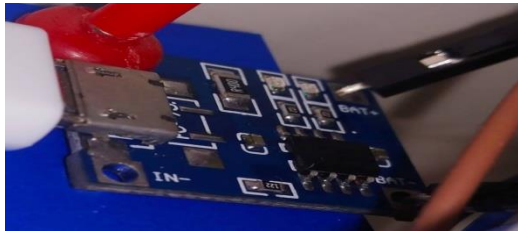
Figure No 4.1: micro USB

4.3.1 Specification:

Product or service name:	Lithium Battery pack charging Deck
Input voltage:	3. 7 -- 5V
Greatest charging up-to-date:	1000 mum
Charge cut-off voltage:	several. 7 / +/ -- 1%
Battery pack overcharges safeguard voltage:	only two. 5V
Battery over-current safeguard current:	only two Amp
Insight interface:	small USB
Sizing:	27mm times 17mm.

Table: 4.1

How to Use:

1. Info port along with miniaturized machine 5pin UNIVERSAL SERIAL BUS female, can straightforwardly make use of versatile charger to get contribution towards the lithium power, and still secure the information voltage cabling weld knees and lower back.
2. User interface the electric battery to B ve+ B ve-, embed mobile phone charger into the USB Woman then purple light is definitely charging and also green is packed with charged.

4.4 Center Taped Transformer

· AC-DC converters are generally electrical circuits that will transform alternating electric current (AC) insight into one current (DC) productivity.

· They have widely used in electrical power electronic applications the place that the powerful insight a 50 Hz as well as 60 Hz sine-wave HVAC voltage that will need power conversion for the DC productivity.

· AC power successful at substantial voltages which enable it to be "stepped up" throughout voltage by the transformer with less effort than on one current.

· An inverter raises the DC voltage after which it changes the idea to alternating electric current before transmitting it out and about to power a tool.

· A rectifier is surely an electrical unit that converts alternating electric current (AC), which in turn periodically reverses route, to one on one current (DC), which flows in barely one route. The process is termed rectification mainly because it "straightens" your direction in the current.

4.4.1 Specifications

· Step-down Center tapped Transformer
· Input Voltage: 220V AIR CONDITIONING at 50Hz
· Output Voltage: 3. 7 -- 5 Sixth is v per nodeMCU
· Output Present: 1-2A
· Vertical attach type, Low price and little package

Table: 4.2

Figure No 4.2: Center tapped Transformer   Figure No 4.3: AC/DC Converter

4.5 Resistor

The resistor is definitely an electrical component that busting points or even controls the actual progression associated with electrical flow within an electronic signal. Resistors may likewise end up being 4. 7k employed to give a specific voltage to some functioning device such.
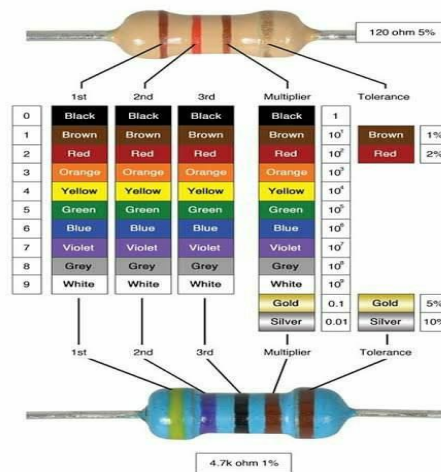

Figure No 4.4: Resistor 4.7k

4.6 AC/DC Converter

AC-DC converters usually are electrical circuits of which transform alternating electric current (AC) suggestions into strong current (DC) production. They utilized in electric power electronic applications the spot that the power suggestions a 50 Hz or maybe 60 Hz sine-wave AIR CONDITIONING UNIT voltage pots power conversion for just a DC production. AC power is successful at excessive voltages which enables it to be "stepped up" with voltage by way of transformer more readily than strong current can certainly. An inverter improves the DC voltage then changes the item to alternating electric current before giving it available to power a computer device. A rectifier is usually an electrical product that converts alternating electric current (AC), which often periodically reverses way, to strong current (DC), which flows in just one way. The process is referred to as rectification given it "straightens" this direction on the current.

4.6.1 AC/DC Converter Specification

Model ATX-30W 59 Plus

Dc Voltage	+5v +4. 7v +4. 5v +3. 75v -5v +3. 7v
Minimum amount Current	0. 5A 0, 5A 0. 5A 0. 5A 0. 1A 0. 1A
Maximum Current	2A 1. 8A 1A 0. 5A 2A
Performing Current	1. 6A 1. 8A 1. 8A 2A 0. 5A 2A
Output Power	30W, 30W, 16W
Performing Power	50W
Ripple	150mv 50mv 100mv 10mv 50mv 60mv
Voltage Precision	±5% ±5% ±5% ±5% ±10% ±5%
Hold time	16 ms
Voltage range	180v-240v AIR CONDITIONING UNIT
Frequency range	47-63Hz
Input Power factor	PF=>0. Ninety six full fill

Efficiency (load)	100%, 80%, 50%, 82%, 20%, 10%
AIR CONDITIONING UNIT	Current 100% inserts 5A, 230VAC
Upturn Current	100% insert 100A/230V
Performing Power	120% -- 150%
Over Load Protection function:	need re-start strength machine
Limited Circuit Protection function:	need re-start strength machine
Above voltage	+3. 5V/1~4. 5V, +5V/3. 8, +2. 8V/5V
Safeguard model require re-start electricity	
Over-temperature	0=+26°C
Doing the job humidity	5. 90%RH
Storage devises temperature humidity	-20+85°C
Cord configurations Following Customer demand	

Table: 4.3

4.7 Capacitor

The actual capacitor is often a component has the means (100uf) or maybe "capacity" for you to store energy also known as an energy charge to become a potential improvement (Static Voltage) around its number plates, much as being a small regular battery.

Figure 4.5: Capacitor

4.8 Relay Constructions

Relay possesses a coil, to always be specific transitioning coil which unfortunately switches somewhere between contacts about relays. It has some than a few contacts; we could consider

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informing with a couple of contacts that one isn't (Normally open) even though the other is certainly NC (Normally Closed). And then a contact deemed COM (Common). Normally Receptive means whenever a no voltage present inside the coil in relay your contact will work as an opened switch relating to COM. Similarly regularly closed means it's going to act simply because short using COM while there is not any voltage present along with at the coil in Relay. Relays are a credit application of electromagnets every control rule of an adequate amount of amplitude/voltage is used on the coils of informing it goes between contact lenses. Normally clear (NO) turns into a close, shorted with the help of COM at the same time Normally Closed down (NC)'s correlation is ruined.
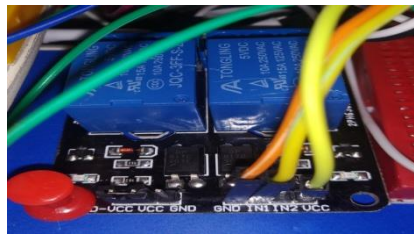

Figure 4.6: Relay Device

Relay provides a coil through N wide variety of turns; this coil comes with operating voltage specified by manufactures. Well-known Voltages will be 5V, 9V, 12V. As soon as the specified voltage is put on to the coils, the over unity magnetic field is without a doubt induced during this coil. This over unity magnetic field sucks in the COM contact within the relay. Coming up with a connection somewhere between NO & COM. Numerous Turns depends on the magnet field strength essential to move COM make contact with. It maintains the COM communication till this coil is usually energized. Once there isn't voltage present along at the coil, a good spring attracts back COM to help you NC call.

4.9 Air Cooling Unit

Every one of the electricity that's driving that fan turns towards heat. So an important fan will not cool the area at simply by blowing environment around, the fan helps it be easier for that air that will evaporate sweat through your skin, which can be how a person eliminate physical structure heat. The harder evaporation, the colder electric motor could be the electric machine inside the ceiling freak-out that converts electricity into technical energy. The limit fan capacitor torques in the electric motor unit, allowing it to begin and operated. As these coils tend to be spinning, the particular fan conveys this content spinning motion, transferring it for the fan mower blades

Figure 4.7: Air cooling unit

4.9.1 Air Cooling Specification

· Rated Voltage	5VDC
· Operational Voltage	3. 5 -- 4. 7VDC
· Input Current	1 -- 2Amp
· Input Power	1. 8W
· RPM	3000±10%
· Model Speed	Handle Type
· Signal Output Frequency Create	±80%
· Maximum Oxygen Flow	0. 43Qubic/min (meter)
· Maximum Oxygen Pressure	2. 31 mm
· Acoustical Noise	28/12HBA.

Table: 4.4

4.10 IR Proximity Sensors

The infrared concept addresses a number of wireless job applications. The major areas really are sensing and even remote handles. In your electromagnetic selection, the infrared fraction is torn into about three regions: near-infrared community, mid-infrared community, and far-infrared community.
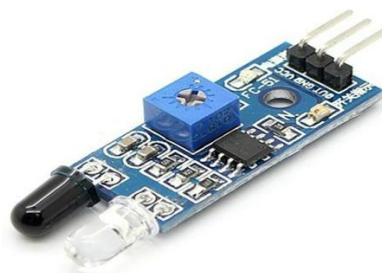

Figure 4.8: IR Proximity Sensors

The particular wavelengths the hands down regions and additionally their functions are found below:

·Near-infrared part - 1, 000 nm to make sure you 1400 nm: IR detectors, fiber optic

·Mid-infrared part - 1400 nm that will 3000 nm: Heat realizing
·Significantly infrared section - 3000 nm to at least one mm: Thermal image resolution
The frequency collection of infrared is more than microwave and even lesser in comparison with visible lighting. For optical realizing and optical correspondence, photo optics technologies are accustomed in your near-infrared region when the light is definitely less complicated than RF once implemented in the form of source belonging to the signal. Optical Wi-Fi communication is accomplished with IR knowledge transmission meant for short-range apps. An infrared sensor produces and/or registers infrared light to awareness its setting. The functioning of whatever Infrared sensor is without a doubt governed by just three regulations: Planck's Light Law, Stephen: Boltzmann legislation and Wien's Displacement Regulations. Planck's laws states which will "every entity emits radiation during a temperature not add up to 00K". Stephen: Boltzmann's legislation states which usually "at every wavelengths, the sum energy emitted by way of a black person is proportional to fourth power belonging to the absolute temperature".

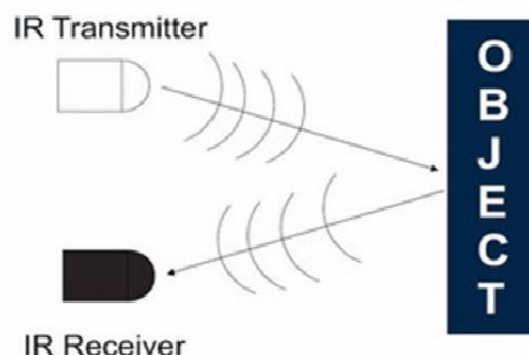## 4.10.1 IR Transmitter & IR Receiver (Exit/Entry)

Figure 4.9: IR transmitter & receiver

IR Transmitter (Exit)

Infrared Transmitter is a light-emitting diode (LED) which often emits infrared radiations. Thus, they usually are called IR LEDs. Even if an IR LED may resemble a typical LED, rays emitted because of it is invisible towards human eyes. The envision of Infrared BROUGHT is exhibited below.

IR Receiver (Entry)

Infrared recipients are usually likewise referred to as infrared sensors while they recognize rays from a great IR transmitter. IR lovers come from photodiodes and also phototransistors. Infrared Photodiodes are usually unique in terms of ordinary photodiodes while they distinguish merely infrared rays. The image of your traditional IR recipient or even a photodiode will be demonstrated the following.

4.11 Buzzer

The particular signal is ordinarily linked to a changing circuit to be able to kill ON or turn the bell on the necessary time and demand interim. A simple 9V battery could also be used, but it is recommended to employ a regulated +3.5V or +4. 7V DC offer. The buzzer is normally of a switching circuit to start or turn OFF the buzzer on the required time and demand interval.

Figure 4.10: Buzzer 5v DC
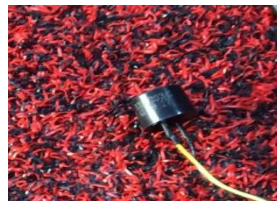
4.12 LCD Display

LCD (Liquid Crystal Display) screen is an electronic showcase module and finds a comprehensive scope of utilizations. A 16x2 LCD could be a very basic module and is quite widely used in various instruments and circuits. A 16x2 LCD means it might display 16 characters per line and you will find 2 such lines.

Figure 4.11: LCD Display

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4.12.1 Pin Description

T	1 Ground (0V) Ground	2 Supply voltage; 5V (3. 7V -- 4. 7V) Vcc
3 Contrast realignment; through the variable resistor VEE	4 Selects order register whenever low, as well as data sign-up when great Register Select Register Opt for	5 Low to create to a register; High to see from a register read/write
6 Sends records to details pins whenever a high so that you can low heartbeat is specified Enable	7 8-bit information pins DB0	8 DB1
9 DB2	10 DB3	11 DB4
12 DB5	13 DB6	14 DB7
15 Backlight VCC (5V) Led+	16 Backlight Floor (0V) Led-	
PIN No Function Name	1 Ground (0V) Ground	2 Supply voltage; 5V (3. 7V -- 4. 7V) Vcc
3 Contrast realignment; through the variable resistor VEE	4 Selects order register whenever low, as well as data sign-up when great Register Select Register Opt for 7 8-bit information pins DB0 10 DB3 13 DB6	5 Low to create to a register; High to see from a register read/write Read / write

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6 Sends records to details pins whenever a high so that you can low heartbeat is specified Enable	16 Backlight Floor (0V) Led- 1 Ground (0V) Ground 4 Selects order register whenever low, as well as data sign-up when great Register Select Register Opt for 7 8-bit information pins DB0	8 DB1
9 DB2		11 DB4
12 DB5		14 DB7
15 Backlight VCC (5V) Led+		
PIN No Function Name		2 Supply voltage; 5V (3. 7V -- 4. 7V) Vcc
3 Contrast realignment; through the variable resistor VEE		5 Low to create to a register; High to see from a register read/write
6 Sends records to details pins whenever a high so that you can low heartbeat is specified Enable		8 DB1
9 DB2	10 DB3	11 DB4
12 DB5	13 DB6	14 DB7

Table 4.5: LCD Pin Specifications

4.13 Transistor

A new bipolar transistor is often a semiconductor device common for amplification. You'll find two significant varieties of bipolar transistors, named PNP along with NPN. A PNP transistor carries a layer involving an N-type semiconductor involving two cellular levels of P-type products. An NPN transistor carries a layer involving a P-type product between a pair of layers involving an N-type product. In P-type products, electric expenses are offered fundamentally while electron falls short of called interruptions. In an N-type product, the fee bearers are generally electrons.
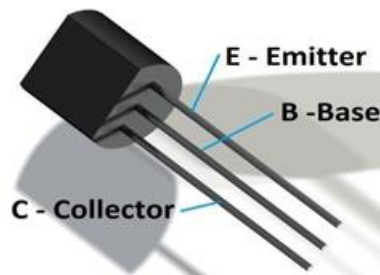

Figure 4.12: Transistor Pin diagram with Symbol

4.14 OP-Amp

Any voltage comparator can be an electronic routine that talks about two details voltages and informs you which with the two will be more popular. It's certainly not difficult to produce a voltage comparator from a procedure amp as the extremity with the operation amp's produce circuit is reliant upon the particular extremity regarding two variances between these.
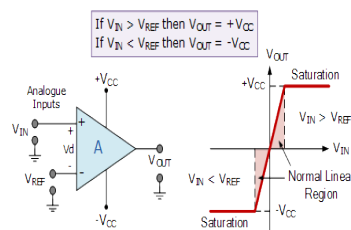

Figure 4.13: OP –Amp Comparator Mode Working

4.14.1 Application

Comparator Rounds Working plus Applications. More or less, in various gadgets, the comparator is normally utilized considering two voltages and flows which are usually given along at the two contributions of your comparator. That implies requires two knowledge voltages, appears to fall apart thinks approximately them and provides a differential.

4.15 Light (LED)

Lighting Emitting Diode can be abbreviated just as one LED. These are used in different places including street lighting effects; home BROUGHT ABOUT lighting, professional LED, and many others. The doing work mechanism involving LED equipment and lighting is to match the electrons inside the semiconductor. LED lights have an overabundance of lifespan when compared with other common lights.
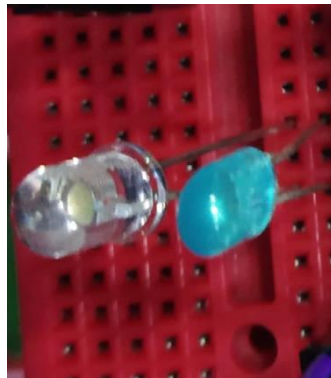
Figure 4.14: Light (LED)

4.15.1 Light Control Sensor

The particular IR sensor of our body to a power signal immediately. The photodiode acts as a possible IR sensor element that will detect IR inside a high level of sensitivity and quickly response scenarios. Light receptors measure luminance, which enables you to measure greater than the brightness of your light resource. The mild sensor will be passive gadgets that change this "light energy" whether or not visible or inside the infra-red elements of the array into a power signal end result.

14.16 Thermal/Fire Sensor

This kind of study aims to produce the components and algorithm which could work outrageous areas and also support any element of people's lifestyle. This system should look after your residence security-focus around the fire diagnosis. That makes use of several technologies, to process beneath the Wi-Fi, multi-sensor according to Cloud. To begin with, the sensor calibration to be able to impulse the info Related posts research-based natural environment fire diagnosis system. On this task, we've assembled any fire person utilizing nodeMCU which can be interfaced using a temperature sensor, any smoke sensor, plus a signal. The temperatures sensor detects the heat and light up sensor registers any light up produced as a result of consuming or perhaps a fire. Buzzer connected with nodeMCU offers us a great alert signal.

14.17 Block Diagram
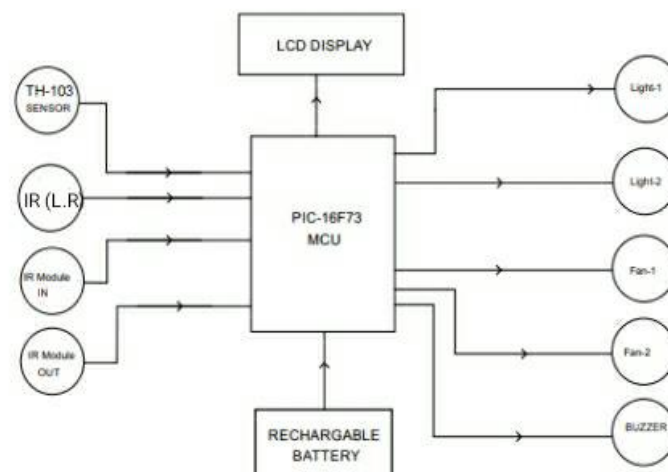
Figure 4.15: Basic Block Diagram

14.17 Circuit Diagram
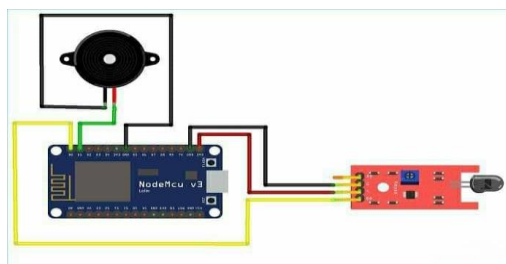
Figure 4.16: Fire Alarm Device   Figure   4.17: Exit/Entry Counting Level
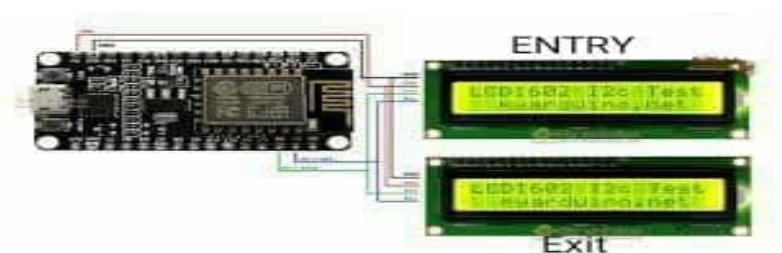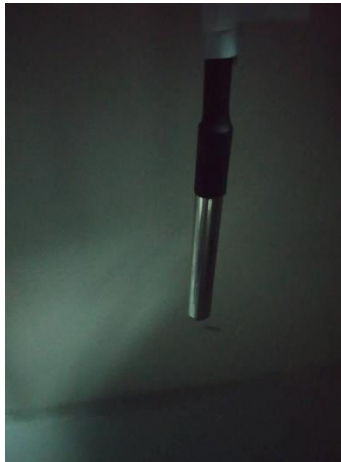
Figure 4.18: Temperature Sensing Device
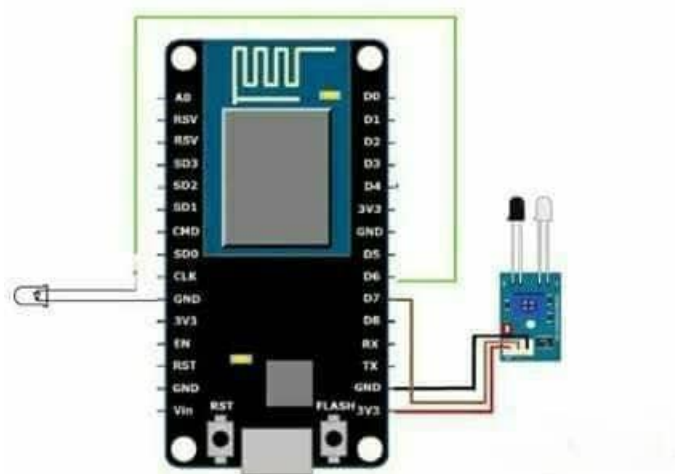
Figure 4.19: Light Power Sensing Device

4.18 Working Procedure

- **Exit/ Entry Counting Level** :

The standard idea should be to count people opting and out of your shopping mall and get away from using movement detectors for you to automate equipment and lighting. Eventually, we are planning to provide these sensors to everyone my outer and interior doors. I think I'm able to power your beams using a few Uno's during the entire mall. One

NodeMCU for every door since you can see, your motion sensor features three hooks: V+, Terrain, and 1 / 3 for results signal. 1st, plug your cables straight away to the pins of your respective NodeMCU, comply with the kitchen table and diagram down below: NodeMCU -> PIR Sensor -- NodeMCU -> BROUGHT ABOUT GND -> GND -- GND -> GND D6 -> OUT AND ABOUT - D4 -> VCC 3. 7V -> VCC. For the reason that the sensor is incredibly sensitive for you to move, I applied the jumper move behind it to line the most affordable sensibility. I also painted in the lens corners to pay attention to one distinct space as an alternative to Omni directional. The final results of this kind of few further minutes involving work were a genial, contained unit.

- **Fire Alarm System:**

Fire alarm systems are incredibly common currently and typically installed throughout Banks, outlets, offices, residences, etc. They find the fire and induce a high volume alarm to aware of everybody. But suppose nobody perhaps there is to pick up that alarm system, like in the evening time as well as when nobody is home. To inform your authority with regards to any flames incident today were building the IOT primarily based Fire Self-protection system that not simply triggers the alarm and also sends a contact alert for you to concern folks. Then distribute the rule in NodeMCU employing Arduino IDE. The relationship sensor can be connected in the D0 pin to present the digital camera input on the NodeMCU along with Buzzer can be connected in the D1 pin to acquire digital output through the NodeMCU. If your fire can be detected with the flame sensor and then it presents "0" along with NodeMCU turns for the buzzer along with sends your alert email on the person employing SMTP2GO routinely. As instructed earlier comprehensive code can be given towards the end of this specific tutorial. Here we're explaining your working involving code.

- **Temperature Control System:**

That will guide details learning to make simple a new heat selection control obtaining Ubidots. Aside from this, we'll present you with how to develop different characteristics that guide show after it's a good mode, moreover, to screen likewise their importance. We probably will use some form of pre-wired beyond the waterproof version for the Thermal sensor. It's handy if you require for you to gauge a thing miles out, or using wet ailments. The One Wire high-temperature range sensor owns different patterns; one counselor has some form of resistor integrated etc don't so make sure the variety you're making use of is correct

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when you begin with this specific project. While using control, we'll use some form of NodeMCU product or service.

Procedure:

1. Earliest, we should go with a version. But if the sensor contains the resistor designed, just join up it into the NodeMCU this way:

BLACK WIRE- GND

PINK WIRE- VIN

BLUE WIRE- D3

If you're not, you really have to power the knowledge pin with the resistance connected with 4. 7kΩ, and also VIN and additionally GND pins must be connected and therefore the ground to Arduino IDE, mouse click on Files in the Arduino IDE. You may well add a variety of URLs, arranging them by means of commas.

3. Receptive "Boards Manager" via Tools -> Enter menu together with installs that program.

4. Any library, One Twine and Dallas Environment Library through this code for the main system.

5. These days, click relating Sketch to Consist of Library to Put ZIP Catalogue.

6. Simply select the. ZIP data One Twine, and Dallas Temperature after which you can Choose & near the Arduino IDE along with open this again.

- **Light Power Saving :**

The software works which includes a light sensor that is responsible to get detecting the exact amount and resolution of lighting. If a sensor registers daylight, it can turn off the home light plus raises blinds; if a sensor detects that there's no lamination present, it can turn to the light plus lowers blinds. It's simple to generate, and more to the point helps help you save energy. Launch first, connects a NodeMCU so that you can its platform shield and after that connects components the following:

1. This is certainly important for the reason that our variable might be subscribed to the API Label but it allows communication amongst Ubidots as well as NodeMCU. After you've verified the feedback Source plus Variable music labels.

2. Simply find the ZIP file Go for your entire local library. If you actually can't bring the archives, try to it path.

3. Amenable "Boards Manager" out of Tools -> Plank menu plus install a stand condition. Don't forget to purchase your NodeMCU 1. 0 board with the menu just after installation.

4.19 Summary of the Chapter

Efficient using many different kinds of electronic devices just like nodeMCU Microcontroller having wireless concept, step-down transformer, resistor, capacitor, diode, distinction resistor, voltage regulator, dc solar battery, IR Transmitter, and even receiver a few LED together with cooling freak-out with many output presented the LCD Present.

CHAPTER 5

RESULT AND DISCUSSIONS

5.1 Result

We're also properly connection repeat this project and ultimately, we entrance using nodeMCU plus operate to the wireless connecting system this shows in any control units in the computer screen and who's as well that connected in the mobile applications. This job control includes four-part that are definitely exit& entrance people checking system, devices power-saving procedure, temperature by using cooling procedure & shoot alarm component system. This is certainly all show in the project deliver the results.

5.2 Advantage

i. The main intent behind this venture reduces electrical energy bill and also automatic mild power conserving mode, lover, air chilling for temperatures and hearth detect method.

ii. Low servicing cost in every electrical method.

iii. Help save Electricity vitality.

iv. Automobile connected coming from server practically fire program unit. This retail complex control product all functioning system furthermore show at all from which usually connected which is code line really easy management simply by that specialist.

5.3 Final Project Outlook

Figure 5.1: Final Project Outlook

5.4 Total Project Cost Quantity and Price

Component Name	Quantity	Cost
Buzzer	1	40
IR Receiver	1	80
NodeMCU	4	1600
LCD	2	300
OP AMP	1	200
IR Transmitter/Receiver	2	200
Capacitor	3	15

Resistor	20	10
Variable Resistor	5	50
Voltage Regulator	2	60
IR (long range)	1	300
Diode	2	20
Battery	4	400
Thermal Sensor	1	150
Switch	2	15
LED	30	80
Temperature Sensor	1	150
Varo board	5	200
Glue	20	200
PCB Board	1	1000
Project Cost	Total	5,070

Table: 5.1

5.5 Discussion

Our project aims to produce a controller centered model to be able to count how many people stepping into the retail complex. the lights the saving power good light depth and programmed sensing that light control with the mall complete again and start fan or perhaps air chilling automatically lively by temperatures unit since normal the location where the persons are usually belong in the shopping local mall. This complete process will be operated Wi-Fi system through the use of its nodeMCU and also sensors gadgets. The venture aims were to cut back the negative effects of the particular Wi-Fi system and discover a treatment for save strength. The venture shown inside figure include continues to be implemented and also works needlessly to say and will show to be very beneficial.

CHAPTER 6

CONCLUSIONS

6.1 Conclusion

On this project, we produce a general intent behind electronic routine design that will Show the particular automatic realizing light depth control and also fan or perhaps air chilling unit handle temperature it monitor display demonstrated the temperatures and consumer counter it could be also employed fire detector and also alarm routine This project could be the overview regarding smart Wi-Fi system engineering. The venture is efficiently developed and also met the particular stated targets.

6.2 Limitations of the Work

This working procedure in this project is usually many parts put in at home but I am facing many limitations for repeating this project. Like coding dilemma, program publishing, connecting to help PCB motherboard, shopping center designing verbal exchanges data swiftness is following as limitation of the work.

6.3 Future Scopes

* With this mall Illumination and heat with Bidirectional clients Counter may be used to automatically switch on the gentle and atmosphere cooling device the retail center.

* Whenever a person makes its way into the shopping mall that within body car checking concerning security as well as saving in most people within a mall.

*This mall can also be shown within the close signal camera concerning show in/out the actual mall concerning security program that additionally server linked in close to police channels

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- N. Devi plus a. Kumar, (fire product control and also design) Vol. a couple of, Issue11.
- Jesse N. (Internet Centered Security System), Vol. 28.

APPENDIX

CODE 1

```
#include <ESP8266WiFi.h>
 // esp8266 library
#include <FirebaseArduino.h>
// firebase library

#define FIREBASE_HOST "smart home-
cb711.firebaseio.com"          // the project
Name address from firebase id
#define FIREBASE_AUTH
"l9pjCQQEvJ66C41D0z87ivyhhODgmKS2UEbLqbUm"
// the secret key generated from firebase
#define WIFI_SSID "DCL" //
input your home or public Wi-Fi name
#define WIFI_PASSWORD "dcl@12345"
//password of Wi-Fi ssid
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C LCD (0x27, 16, 2);


int previous = LOW;
int reading;
long time1 = 0;
int Entry1=0;
long debounce = 200;
int count;
int pdata=0;
void setup () {
```

```
PinMode (D6, OUT PUT);
PinMode (D7, OUTPUT);
PinMode (D8, OUTPUT);
digital Write (D8, 0);


Serial. begin (9600);


lcd.init ();                    // initialize the lcd
// Print a message to the LCD.
lcd.backlight();
// Initiate a serial communication
lcd.setCursor(0, 0);
lcd.println("SMART MARKET");
lcd.setCursor (0, 1);
lcd.println (" -BY DIU- ");
lcd.clear ();


WiFi.begin (WIFI_SSID, WIFI_PASSWORD);
//try to connect with wi-fi
Serial. Print ("Connecting to ");
Serial. Print (WIFI_SSID);
While (Wi-Fi. status ()! = WL_CONNECTED) {
        lcd.setCursor (0, 0);
        lcd.println ("Connecting to. ");
        lcd.setCursor (0, 1);
lcd.println ("");


Serial. Print (".");
delay (500) ;}
Serial.println ();
Serial. Print ("Connected to ");
Serial.println (WIFI_SSID);
Serial. Print ("IP Address is: ");
```

```
Serial.println (Wi-Fi.localIP ());
//print local IP address
Firebase. Begin (FIREBASE_HOST, FIREBASE_AUTH);
 // connect to firebase
lcd.clear ();
lcd.setCursor (0, 0);
lcd.println ("Connected ");
While (pdata<1)
{
Pdata=Firebase.getInt ("Gate/EntryGate");

}
Serial.println (pdata);
Serial.println ("okk");
lcd.clear ();
lcd.setCursor (0, 0);
lcd.println ("Entry Level :");
lcd.setCursor (0, 1);
lcd.println ("Level: ");
}

 Void loop () {

Entry ();
int b=Firebase.getInt ("Gate/Exit Gate");
if ((Entry1-b) <10)
{
lcd.setCursor (12, 0);
lcd.println ((Entry1-b));
lcd.setCursor (13, 0);
lcd.println (" ");

}
```

```
else if((Entry1-b)<100)

{

lcd.setCursor (12, 0);

lcd.println ((Entry1-b));

lcd.setCursor (14, 0);

lcd.println (" ");


}

else if ((Entry1-b)<1000)

{

lcd.setCursor (12, 0);

lcd.println ((Entry1-b));

 lcd.setCursor (14, 0);

lcd.println (" ");


}

        else

{

lcd.setCursor (12, 0);

lcd.println ((Entry1-b));

}



}

Void Entry () {

{


reading = digital Read (D5);

if (reading == HIGH && previous == LOW &&

millis () - time1 > debounce) {

Serial.println (Entry1);

Entry1++;
```

```
pdata+=1;
Firebase.setInt ("Gate/EntryGate", pdata);
// if (pdata<10)
// {// lcd.setCursor (12, 0);
// lcd.println (pdata);
// lcd.setCursor (13, 0);
// lcd.println (" "); // //}
// else if (pdata<100)
// {
// lcd.setCursor (12, 0);
 // lcd.println (pdata);
// lcd.setCursor (14, 0);
// lcd.println (" "); // //}
// else if (pdata<1000)
// {// lcd.setCursor (12, 0);
 // lcd.println (pdata); /
/ lcd.setCursor (15, 0);
// lcd.println (" ");
//
//          }
//                 else
 //        {
//        lcd.setCursor (12, 0);
//        lcd.println (pdata);
//
// }


 If (Entry1<10)
{

lcd.setCursor (12, 1);
lcd.println (Entry1);
```

```
lcd.setCursor (13, 1);
 lcd.println ("    ");


}

else if (Entry1<100)
{

lcd.setCursor (12, 1);
lcd.println (Entry1);
lcd.setCursor (14, 1);
lcd.println (" ");

}
else if (Entry1<1000)
{
lcd.setCursor (12, 1);
lcd.println (Entry1);
lcd.setCursor (15, 1);
lcd.println (" ");

}

else
 {

lcd.setCursor (12, 1);
lcd.println (Entry1);

} time1 = millis ();
digital Write (D6, 1);
digital Write (D7, 0);
digital Write (D8, 0);
```

```
delay (100);

digital Write (D6, 0);

digital Write (D7, 1);

digital Write (D8, 1);

 delay (100);

}

}

 previous = reading;

}
```

Code 2

```
#include <ESP8266WiFi.h>

// esp8266 library

#include <FirebaseArduino.h>

// firebase library


 #define FIREBASE_HOST "smart home-

cb711.firebaseio.com" // the project

name address from firebase id

#define FIREBASE_AUTH

"l9pjCQQEvJ66C41D0z87ivyhhODgmKS2UEbLqbUm"

// the secret key generated from firebase

#define WIFI_SSID "DCL"

// input your home or public wi-fi name

#define WIFI_PASSWORD "dcl@12345"

//password of wi-fi ssid

#include <Wire.h>

#include <LiquidCrystal_I2C.h>


 LiquidCrystal_I2C lcd (0x27, 16, 2);


int previous = LOW;

int reading;
```

```
long time1 = 0;
int Exit1=0;
long debounce = 200;
int count;
int pdata=0;

void setup () {
PinMode (D6, OUTPUT);
PinMode (D7, OUTPUT);
PinMode (D8, OUTPUT);
digital Write (D8, 0);
 Serial. begin (9600);

 lcd.init ();                 // initialize the lcd
// Print a message to the LCD.
lcd.backlight ();
// Initiate a serial communication
lcd.setCursor(0,0);
lcd.println ("SMART MARKET");
lcd.setCursor (0, 1);
lcd.println (" -BY DIU- ");
lcd.clear ();
WiFi.begin (WIFI_SSID, WIFI_PASSWORD);
 //try to connect with wi-fi
Serial. Print ("Connecting to ");
Serial. Print (WIFI_SSID);
While (WiFi.status ()! = WL_CONNECTED) {
lcd.setCursor (0, 0);
lcd.println ("Connecting to. ");
lcd.setCursor (0, 1);
lcd.println ("...");
 lcd.setCursor (2, 1);
lcd.println ("              ");
```

```
Serial. Print (".");

delay (500);

}

Serial.println();

Serial. Print("Connected to ");

Serial.println(WIFI_SSID);

Serial. Print ("IP Address is: ");

Serial.println (Wi-Fi.localIP ());

 //print local IP address

Firebase. begin (FIREBASE_HOST, FIREBASE_AUTH);

// connect to firebase

lcd.clear ();

lcd.setCursor (0, 0);

lcd.println ("Connected");

// while (pdata<1)

//         {

//

 // pdata=Firebase.getInt ("Gate/Exit Gate");

//

//

// }

 // Serial.println (pdata);

Serial.println ("ok");

lcd.clear ();

lcd.setCursor (0, 0);

lcd.println ("Exit Level: "); l

lcd.setCursor (0, 1);

 lcd.println (" ");


 }


Void loop () {
```

```
Entry ();


}
void Entry () {
{

reading = digital Read (D5);
if (reading == HIGH && previous == LOW &&
millis () - time1 > debounce) {

        Serial.println (Exit1);
        Exit1++;

        Firebase.setInt ("Gate/ExitGate", Exit1);

if (Exit1<10)
 {
lcd.setCursor (12, 0);
lcd.println (Exit1);
lcd.setCursor (13, 0);
lcd.println (" ");

}
else if (Exit1<100)
{
lcd.setCursor (12, 0);
lcd.println (Exit1);
lcd.setCursor (14, 0);
lcd.println (" ");

}
```

```
else if (Exit1<1000)

{

 lcd.setCursor (12, 0);

lcd.println (Exit1);

 lcd.setCursor (15, 0);

lcd.println(" ");


 }


else


{


lcd.setCursor (12, 0);

 lcd.println (Exit1) ;}

 time1 = millis ();

digital Write (D6,1);

digital Write(D7,0);

digital Write(D8,0);

delay (100);

digital Write (D6, 0);

digital Write (D7, 1);

digital Write (D8, 1);

delay(100);

}

}

previous = reading;

}
```