

INNOVATIVE SMART AGRICULTURE SYSTEM FOR ORGANIC WITH MONITORING AND AUTOMATIC CONTROL SYSTEM USING INTERNET TECHNOLOGY

**Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering degree in
Electronics and Telecommunication Engineering**

By

**MADAKA RAMADEVI (REG NO: 37250012)
VAKACHARLA SRAVYA (REG NO: 37250022)**



DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

SCHOOL OF ELECTRICAL AND ELECTRONICS

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

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JEEPPIAR NAGAR, RAJIV GANDHI SALAI, CHENNAI – 6

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DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of MADAKA RAMADEVI (37250012) and VAKACHARLA SRAVYA (37250022) who carried out the project entitled **“Innovative Smart Agriculture System For Organic with Monitoring and Automatic Control System Using Internet Technology”** under our supervision from November 2020 to April 2021.

Internal Guide

Dr. REKHA CHAKRAVARTHI M.E., Ph.D.

Head of the Department

Dr. V. VIJAYA BASKAR M.E., Ph.D.

Submitted for Viva voce Examination A held on 19/04/2021

Internal Examiner

External Examiner

DECLARATION

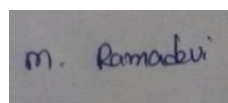
We **MADAKA RAMADEVI (Reg.No:37250012)** and **VAKACHARKLA SRAVYA (Reg.No:37250022)** hereby declare that the Project Report entitled “INNOVATIVE SMART AGRICULTURE SYSTEM FOR ORGANIC FARMING WITH MONITORING AND AUTOMATED CONTROL SYSTEM USING INTERNET TECHNOLOGY” done by us under the guidance of guide **Dr. REKHA CHAKRAVARHI M.E., Ph.D.**, Dept of ETCE at Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Electronics and Telecommunication Engineering.

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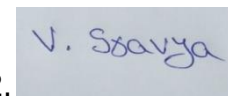
SIGNATURE OF THE CANDIDATE

PLACE: CHENNAI

1.

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2.

Handwritten signature of V. Sravya in blue ink on a grey background.

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ABSTRACT

Most of farmers uses the massive parts of farming land and it's terribly tough to achieve and track every corner or portion and it's additionally terribly tough to provides the water for large lands. generally there can be a chance of uneven water sprinkles. And this result could ends up in get money losses of agriculture. during this style of things the sensible Irrigation System victimisation lot technology that is useful to urge a far better results of farming. The term irrigation is refers to the unreal application of water that provides it to land or soil and it may also be used for the cultivation of agricultural crops throughout the span of lean precipitation and for to maintaining landscapes. This automatic irrigation system will the work quite expeditiously while not requiring workforce. In these current situation no matter appliances we have a tendency to square measure victimisation for each irrigation system like drip, mechanical device and surface it becomes gets a lot of sensible and automatic with the assistance of electronic appliances and detectors like laptop, timers, sensors and different mechanical.

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LIST OF ABBREVIATIONS

ABBREVIATIONS		EXPANSION
LCD	-	Liquid Crystal Display
IDE	-	Integrated Development Environment
PIR	-	Passive Infrared Sensor
ADC	-	Analog to Digital Converter
SPI	-	Serial Peripheral Interface
GSM	-	Global System Module
IOT	-	Internet Technology
CRT	-	Cathode Ray Tube
UART	-	Universal Asynchronous Rx/Tx
I2C	-	Inter - Integrated Circuit
SPI	-	Serial Peripheral Interface

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CHAPTER 1

INTRODUCTION

1.1 About Internet Technology

Internet of Things is an latest and automated technology. It represents a general concepts for the network devices and for the ability to sense and collects the data from it across the world, and it share the data that whatever it maybe collected to across the internet where it utilizes for the interesting purposes. Internet of Things is very quickly becoming an reality and as like automated. As we can see the proof of it around us. Our devices were becoming smarter each day from smart phones to smart home automation and also smart devices. Everything is now getting connected to Internet via through wireless. The Internet of Things that describes the physical objects were connected to each other through internet and it can also be called as like smart or automation. It does not require any human support once it connected as wireless for sending information via wirelessly. The thing or object that can be assigned an IP address and it provides that to transfer data over a network.

A Thing, in the Internet of Things, can be a person/device with a heart monitor implant, a farm animal with a biochip transponder, an automobile to alert the driver when tire pressure is low it sense via sensors were built-in sensors are designed in it -- and any other man made things that are assigned with an IP address were ability to transfer the data over the network. These type of devices collects the useful data by using various technologies and simultaneously flow the data between the other devices. In this present world there were many examples include smart micro ovens, washing machines/dryers and other smart systems that requires WI-FI for remote monitoring.

IOT is an architecture that were specialized with hardware boards and software systems etc. Protocols which creates together of devices a seamless environment and which allows the smart device to be connected to internet then the sensory data can be transferred and controlled by triggered over the internet. And also other devices could also be connected to internet using WI-FI, Ethernet and so on.

1.2 EARLIER IRRIGATION SYSTEM:

Water is the most important requirement for the agriculture. The requirement is done from the seed germination to the proper growth of the crop, water is needed in all stages. But the usage of water is not always simple. In such cases, irrigation methods come to our work. water is acts as shield against the extremity of nature like frost or hot currents. The irrigation depends on the soil type and the frequency of irrigation depends on the season during summer soil is divide of moisture it requires more water depends upon the type crop and soil. we need to irrigate the entire fields continously during the summer months. During the moonson there is a little requirement of water due to season.

In ancient times the water lift from water bodies and carry to the fields. In traditional method the humans require scattles to lift the water from the water bodies and cultivate the crops. The pulley system is done by the rope to pulley with a bucket to carry the water to different places in the field. The second type of irrigation system is an chain pump, this type of system the bucket is tight to a wheel and these wheel is pulled by a chain. This wheel is placed above an water body. The wheel when it turns to water body the bucket will collects the water from it when it comes out of the top the bucket pours the water to out the water is passed to fields. There are many types of irrigation like dhekli and rahat systems that were used till now to overcome this kind of irrigation we introduced our project.

Main Disadvantages of traditional irrigation system:

- Large human labour required
- Uneven distribution and wastage of water
- Less efficient
- Wastage of time.



Fig 1.1 Traditional Methods Of Irrigation.

(Courtesy:www.google.com)

1.3 IRRIGATION SYSTEM FOR PADDY:

Irrigation is the one of the most important stage in paddy crop. In this field it requires more water rather than other crops. There are three types of irrigation methods is used for paddy crop namely surface, sprinkler and drip/micro. In this crop 1500-2500 mm water is required and more pesticides also required. The main drawback of this field is to continuously monitor the entire field otherwise the crop will gets spoil. Care should be taken and not to allow development of cracks. Field to field irrigation should be avoided for this type of fields.

To avoid these kind of problems we have introduced our system to get better result to this type of fields. By using this system man/ labour much not required and it consumes or saves more time, water and money. Our system is continuously monitors the soil content of the field and supplies the how much water is required for the particular crop.



Fig:1.2 Cracks of Paddy crop

(courtesy:www.google.com)



Fig:1.3 Irrigation system of Paddy crop

(courtesy:www.google.com)

1.4 EMBEDDED SYSTEMS:

In these current scenario, the world becoming more and more digital and using latest technologies as like connected and automated. Embedded system is one of the latest technology. It is one that has computer hardware with software embedded in it. This is designed to perform a particular task/function. But the task has to be done in a given time and it is an arrangement in which all its units, assembled work together according to set of rules. When the system performs the operations at high speed, then it is used for real-time applications.

The characteristics of the Embedded Systems are:

- Single-Functioned
- Tightly Forced
- Reactive and Real time
- Microprocessors primarily based
- Memory
- HW-SW systems
- Accuracy, dependableness and flexibility.

Advantages:

- Easily Customizable
- Low power consumption
- Low cost
- Enhanced performance

Disadvantages:

- High development effort
- Larger time to promote

1.4.1 Arduino Board:

The Arduino board is Associate in Nursing open supply each hardware and computer code electronic microcontroller board. The arduino board was factory-made by the Arduino. The board having fourteen digital i/o pins during which the half dozen pins may be used as PWM output pins, half dozen analog inputs, a sixteen megahertz quartz crystal, a USB association and a push. The board contains everything required to support the microcontroller and merely connect the board to a computer with a USB cable or power it with a AC-to-DC adapter or to induce started. The information storage or memory is employed in arduino as Flash and EEPROM. The microcontroller boards may be programmed by using the C and C++ programming languages and additionally a typical API is employed that is additionally referred to as “Arduino Language”. Differing kinds of arduino boards area unit listed below.

- Arduino UNO
- Ardino Nano
- Arduino Micro
- Arduino Due
- Arduino Bluetooth
- Lilypad Arduino board
- Arduino Diecimila
- Arduino Leonardo
- Arduino Zero Etc,.



Fig:1.4 Types of Arduino Boards.

(courtesy:www.google.com)

1.4.1.2 SPECIFICATIONS:

- Microcontroller ATmega328P
- Operating Voltage 5V
- Input Voltage (recommended) 7-12V
- Input Voltage (limit) 6-20V
- Digital I/O Pins 14 (of that half dozen pins give PWM output)
- PWM Digital I/O Pins 6
- Analog Input Pins 6
- DC Current per I/O Pin 20 Ma
- DC Current for 3.3V Pin 50 Ma
- Flash Memory 32 KB(ATmega328P)

- SRAM 2 KB (ATmega328P)
- EEPROM 1 KB (ATmega328P)
- Clock Speed 16 MHz
- Length 68.6 mm

1.4.2 SOFTWARE USED:

1.4.2.1 Arduino IDE:

The arduino IDE (integrated development environment) is AN cross platform application that's written within the functions from C, C++ and JAVA. The Arduino IDE is AN spinoff of Processing IDE. The arduino IDE is employed for simple to jot down and transfer programs in arduino boards by mistreatment an cable that was connected between board and IDE. The software system of arduino computer code is Windows, Macos and Linux. The IDE provides a computer code library from the wiring comes and to supply a typical input and output procedures.

- *setup()*: is to perform that runs once at the beginning of a program which will initialize the settings.
- *loop()*: is to perform that is named repeatedly till the board powers off.

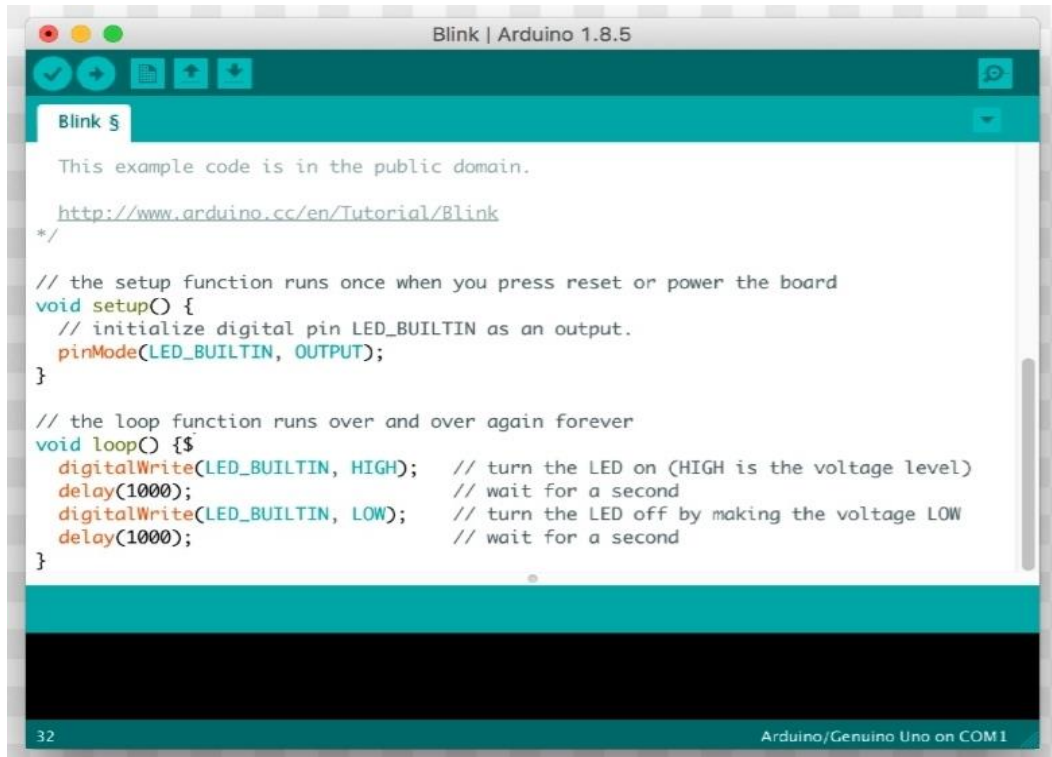


Fig 1.5 Arduino IDE

(courtesy:www.google.com)

ADVANTAGES:

- Huge documentation and support
- Larger library collection
- Open source
- Highly portable
- Low power consumption
- Highly customizable.

APPLICATIONS:

- Home Automations
- ISP Programming
- Entry level circuit designing

1.5 HARDWARE COMPONENTS USED AND SPECIFICATION:

In our project we have used some of hardware components to control the irrigation system. Such as:

1. Transformer- rectifier and voltage regulator
2. 16*2 LCD module
3. Soil moisture Sensor
4. Temperature sensor
5. Humidity Sensor
6. WIFI module
7. Relay
8. PIR sensor
9. Buzzer
10. GSM modem
11. Pump

1.5.1 TRANSFORMER:

A **electrical device** is form of device that's accustomed transfers the electricity between 2 or additional circuits through the magnetic attraction induction. The Electromagnetic induction produces an associate electrical phenomenon across a conductor that's exposed to time variable the magnetic fields. Commonly, the transformers were accustomed increase or decrease the voltage from by AC in voltage applications.

The current is variable within the electrical device primary that makes associate dynamical within the magnetic flux and within the core and a varies the magnetic flux is

developed on the transformer's secondary coil. This variable magnetic flux at the secondary coil induces associated electrical phenomenon (EMF) or voltage within the secondary coil due to magnetic attraction induction.

An electrical device takes associated electricity at a better voltage associated it runs through the various coil winds around an iron core within it. A single-phase Transformer which is type of electrical device that may be operate either of high or low the voltage that is applied to the first coil. As a result of once the present is alternating, the magnetism within the core will be alternate. Additionally round the core there's associated output wire with fewer coils. Then it ends up to magnetism dynamically back and forth makes a current within the wire. Having fewer coils suggest that less voltage. Once it's accustomed decrease the voltage on the secondary coil with relation to the first of the electrical device then it's known as a **Step-down Transformer**. Additionally once a electrical device is employed to "increase" the voltage on its secondary coil with relation to the first, then it is called a **Step-up Transformer**.



Fig 1.6: Step down Transformer.

(courtesy:www.google.com)

1.5.1.1 Types of transformer:

There were many sorts of assorted electrical appliances needed to accumulate electrical device types. whereas they share all the essential characteristics of electrical device principles, however they're customise in structure or electrical properties for sure

installation needs and/or circuit conditions.

Autotransformer: The winding a part of the electrical device is common to each primary and secondary circuits.

Capacitor voltage transformer: electrical device is employed within which the capacitor divider is employed to cut back high voltage before application to the first coil.

Distribution transformer, power transformer: The transformer is employed to distribute energy from transmission lines and networks for native consumption and power transformers being employed to transfer the electrical energy between the generator and distribution primary circuits.

Phase angle control electrical device: The transformer used for to manage the flow of real power on three-phase electricity transmission networks.

Scott-T transformer: This sort of electrical device will be used for section transformation from three-phase to two-phase and contrariwise.

1.5.1.2 Applications

Transformers square measure wont to increase the voltage before sending the current over an extended distances through the wires. Wires have resistance that loses energy through joule heating at a rate of sq. of this. By remodeling the facility to the next voltage transformers allows the transmission of power and distribution. Nigh a little fraction of the world's wattage has competent a series of transformers by the time once it reaches the buyer.

Transformers square measure used for low power appliances. The electrical device is additionally electrically isolates the tip user from contact with the availability voltage.

Signal and audio transformers square measure wont to couple stages of amplifiers and to match the devices like microphones and record players to the input of amplifiers. Audio transformers square measure allowed the phonephone circuits to hold on a two-way voice communication over one try of wires. A balun electrical device is employed to converts an indication that's documented to the bottom to an indication that has balanced voltages to ground, like between external cables and internal circuits.

1.5.2 LCD 2X16 Module

It stands for liquid Crystal Display-LCDs screen is AN electronic show module and it employed in a good vary of applications. It's AN terribly basic module and is extremely unremarkably employed in varied devices and circuits. These variety of modules ar most popular over seven sections and different multi segment LEDs. The explanations being LCDs ar economical, light -weight, simply programmable and it don't have any limitation of displaying special & even custom characters, animations so on.

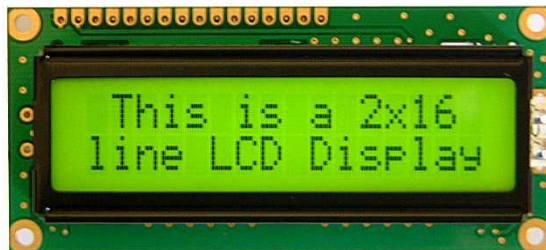


Fig 1.7 : 2*16 LCD Display

(courtesy:www.google.com)

A **sixteenx2** digital display means that have pair of lines and it will display 16 characters per line. During this liquid crystal display every character will displayed in 5x7 pixel matrix. This liquid crystal display has 2 registers namely as Command and information/data.

The command register stores the command directions that given to the liquid crystal display. The instruction given to the liquid crystal display and it results to do a present task like initializing it, clearing its screen settings and therefore the pointer position, dominant show etc. The info register is employed to store the info that is displayed on the liquid crystal display. The info is within the format of computer code value of the character to be displayed on the liquid crystal display.

1.5.2.1 Pin Description:

Pin No	Function	Name
1	Ground (0V)	Ground
2	Supply voltage; 5V (4.7V – 5.3V)	V _{CC}
3	Contrast adjustment; through a variable resistor	V _{EE}
4	Selects command register when low; and data register when high	Register Select
5	Low to write to the register; High to read from the register	Read/write
6	Sends data to data pins when a high to low pulse is given	Enable
7	8-bit data pins	DB0
8		DB1
9		DB2
10		DB3
11		DB4
12		DB5
13		DB6
14		DB7
15	Backlight V _{CC} (5V)	Led+
16	Backlight Ground (0V)	Led-

- VEE pin is employed for adjusting the distinction of the digital display display and by varied the voltage at the pin the distinction will be adjusted.
- The RS pin at high logic will choose the data register and once the RS at Low logic at the need choose the command register.
- R/W pin is employed for to pick the read and write modes.
- E pin is for facultative the module. A high to low transition at this pin can permits the module.
- DB0 to DB7 are the info pins. The info that has should be displayed and also the command directions/instructions were placed on these pins.

1.5.2.2 16×2 LCD Module Commands.

The 16*2 alphanumeric display module features a variety of command directions and every command can work the module to try and do a selected task. The most and unremarkably commonly used commands and their functions are listed below within the following table.

Command	Function
0F	LCD ON, Cursor ON, pointer blinking ON
01	Clear screen
02	Return home
04	Decrement pointer
06	Increment pointer
0E	Display ON ,Cursor blinking OFF
80	Force pointer to the start of first line
C0	Force pointer to the start of ordinal line
38	Use a pair of lines and 5×7 matrix
83	Cursor line one position three
3C	Activate second line
08	Display OFF, Cursor OFF
C1	Jump to second line, position1
0C	Display ON, Cursor OFF
C1	Jump to second line, position1
C2	Jump to second line, position2

1.5.3 Soil moisture sensor:

The **wet device** is employed to live the wet of the soil like whether or not the soil is in wet or dry condition. once the soil has less water or in dry condition, the module output

is high level, else the output is at a bottom level. This device reminds the user to water their plants and additionally continuously monitors the wet content of soil. It's been principally employed in agriculture, land irrigation, and biology farming.

1.5.3.1 Specification

- Working Voltage:**5V**
- Working Current:**<20mA**
- Interface kind :**Analog**
- Working Temperature:**10°C~30°C**

1.5.3.2 Working:

The wet devices uses the voltage or energy to live the material permittivity of the encircling medium. In soil, it checks the material permittivity could be a operate of the water content and also the device creates a voltage proportional to the material permittivity, and so the water content of the soil is additionally measured or checked. The device averages the water content over the whole length of the device and to the sector. There's some cm zone's of influence with relevance the flat surface of the device, however it's less or no sensitivity at the intense edges. The Soil wet device is employed to live the loss of wet or content of the soil over time because of evaporation and plant uptake, assess optimum soil wet contents for varied species of plants, monitors the soil wet content to manage irrigation in greenhouses and enhance bottle biology experiments.

1.5.4 TEMPERATURE & HUMIDITY SENSOR – DHT11

A Digital temperature associate in nursing humidness device is an composite variety of device that contains a digital signal output of the temperature and humidness. Application of an ardent digital modules operate and it's a set of technology and therefore the temperature and humidness sensing technology, the device is employed to sense or discover the weather and to confirm that the merchandise has high dependability and additionally a glorious long stability. The device includes a resistive sense of wet parts associate in nursingd an NTC temperature measuring device, and

connected with a high performance 8bit microcontroller.

1.5.4.1 Applications

HVAC, dehumidifier, testing examination instrumentation, commodity, automotive, weather stations, home appliances, humidness regulator, medical and alternative humidity measuring and management.

1.5.4.2 Features

Low cost, future stability, ratio and temperature measuring, excellent quality, quick response, robust anti interference ability, long distance signal transmission, digital signal output, and Precise activity.

1.5.4.3 Technical Details

- Low cost
- 3 to 5V power and I/O
- 2.5mA easy lay current use throughout conversion (while requesting data)
- Good for 20-80% humidness readings with five-hitter accuracy
- Good for 0-50°C temperature readings $\pm 2^\circ\text{C}$ accuracy
- Equal to one hertz rate (once each second)
- Body size fifteen.5mm x 12mm x 5.5mm
- 4 pins with zero.1" spacing

Humidity is that the presence of water in air. The number of vapor in air will have an effect human comfort moreover as several producing processes in industries as a result of once increasing the number of vapor it spoil the objects and lots of in this space. Humidness measuring in industries is essential as a result of this might have an effect on the business price of the merchandise and takes additional injury of the merchandise and causes the health and safety of the personnel. Hence, humidness sensing is extremely vital to sense the humidness condition, particularly within the management of

systems for industrial processes and human comfort.

1.5.5 GSM MODEM 800 and WI-FI module

GSM stands for Global/world System for Mobile Communications. It's accustomed describe the protocols for second generation (2G) digital cellular networks utilized by mobile phones. A electronic equipment could be a device that is employed to modulates and demodulates the signals and that is needed to fulfill the communication needs. It's accustomed to modulates associate analog signal to write digital info, associated additionally accustomed demodulates an digital info to rewrite the transmitted info. The electronic equipment that we tend to ar exploitation is SIMCOM SIM800.

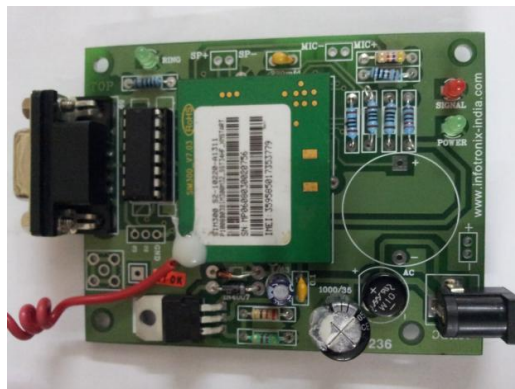


Fig 1.8: GSM Modem800 Device.

(courtesy:www.google.com)

It is associate Tri-band GSM/GPRS electronic equipment because it are often find and operate at 3 frequencies. There ar default operative frequencies ar EGSM 900MHz and DCS 1800MHz. Sim800 could be a wide utilized in several comes and therefore several variants of development boards for this are developed. These development boards ar equipped with varied options to create it simple to speak with the SIM800 module. They're many varieties of GSM modem's, some boards offer solely TTL interface whereas some boards embrace associate RS232 interface and a few others embrace associate USB interface.

Sim800 GSM are often accustomed send and receive SMS connecting it to a computer once a SIM is inserted. The GSM electronic equipment is to send or receive SMS by exploitation AT commands from the computer through a com port. These commands are known as **AT commands**. Through AT commands the GSM Module will perform many actions like causing and receiving SMS, MMS, etc. Sim800 has an RS232 interface and this may be accustomed communicate with the computer. Sim800 sometimes operates at a baudrate of 9600, with one stop bits, No parity, No Hardware management and eight knowledge bits. The below listed as a number of the AT Commands necessary for causing and receiving SMS.

1.5.5.1 AT Commands to Send/Receive SMS

AT+CMGF=1 =>Make SIM800 to text mode
AT+CMGR=1 =>To browse the primary message
AT+CMGS="mobile number" =>To send SMS
AT+CMGD=1 =>To delete first message
AT+CMGD=1,4 =>To delete all messages

1.5.5.2 Application of GSM Modem 800

- Simple SMS primarily based communication

Turn on/off masses victimization straightforward SMS commands, that the dominant device could be a French telephone. You'll be able to use any mobile or cellular device to regulate the device. A unwelcome person alarm/fire alarm that informs regarding the panic scenario to the house owner on his/her mobile via SMS.

- Call primarily based communication

A good unwelcome person alarm/fire alarm that calls the police or firehouse and plays a pre recorded audio message to tell regarding emergency.

- Internet primarily Based Communication (GPRS)

User will management the tip application victimization any PC/Tablet/Mobile with net association. Example: The junction rectifier Message Displays put it on highways/expressways controlled from a central room to tell users or traffic conditions ahead. A mechanism controlled over net. That means the mechanism are often accessed from any device having net anyplace within the world.

1.5.5.3 WIFI MODULE:

Arduino Uno WiFi could be a WiFi module that's integrated with Arduino Uno. The ESP8266WiFi Module could be a self-contained SoC integrated with the TCP/IP protocol stack that may provide access to your WiFi network and that is employed to transfer the info to the server. One helpful feature of Uno WiFi is support for OTA (over-the-air) programming, either for the transfer of Arduino sketches or WI-FI code.

The Arduino Uno WiFi is programmed by victimization the Arduino Software Integrated Development Environment/surroundings (IDE), our IDE is common to all or any our boards and running each on-line and offline. For a lot of info on a wat to start with the Arduino code is declared.

1.5.6 BUZZER

A **buzzer** or **pager** is associate audio device which takes the input signals from the opposite devices or objects, which can be mechanical, mechanical device, or electricity. Typical uses of buzzers and beepers embody, timers and confirmation of user input like a depression or keystroke.

1.5.6.1 Types of buzzers:

- **Electromechanical**

Earlier devices were created supported associate mechanical device system that's a twin of associate bell while not the metal gong. Similarly, a relay is connected to interrupt its own causative current as a results of it ends up in rang the excitement.

typically these units were born to a wall or ceiling to use it as a sounding board. The word of the "buzzer" that comes from the rasping noise that's created by mechanical device buzzers.

- **Mechanical**

A joy buzzer is associate one amongst the instance of a strightly mechanical buzzer. It need drivers.

Piezoelectric:



Fig 1.9 Piezoelectric disk beeper

(courtesy:www.google.com)

A electricity part is associate variety of buzzer which will be driven by associate periodic the electronic circuit or alternative audio signal supply wherever driven with a electricity amplifier. Buzzer sounds area unit ordinarily accustomed indicate that a button has been ironed area unit click, a hoop or a beep.

1.5.6.2 Modern applications

While technological advancements have caused buzzers to be impractical and undesirable, wherever there area unit still instances during which the buzzers additionally the similar circuits is also used. Present day applications include:

- Novelty uses
- Educational functions
- Annunciator panels

- Electronic metronomes
- Game show lock-out device
- Microwave ovens alternative house appliances
- Sporting events like basketball games
- Electrical alarms
- Joy buzzer- a mechanical buzzer used for pranks

1.5.7 Passive Infrared Sensor (PIR):

A **passive infrared sensor** and it's conjointly largely referred to as **PIR device** is an electronic device that measures infrared (IR) lightweight that diverging from objects in its field of read. They're most frequently utilized in PIR-based motion detectors and automation device.



Fig 2.0 Passive Infrared Sensor
(courtesy:www.google.com)

1.5.7.1 Operating Principle

All objects with a temperature on top of temperature that emits heat within the kind of radiation. typically this type of radiation is not visible to the human's eye as a result of it radiates at infrared wavelengths, however it are often detected by electronic devices designed for such a purpose.

The term passive during this case refers to the actual fact that PIR devices doesn't generate or radiate any energy for detection functions. They work entirely by sleuthing infrared emission emitted by or mirrored from the objects. they are doing not find or live "heat".

The device can take the infrared emission from the objects by their sensing material placed within it, referred to as the 'sensor face'. At the core of a PIR device could be a solid state device or set of sensors, made of pyro electrical materials which can generate energy once exposed to heat. Typically, this type of sensors area unit or so with size of 1/4 in. sq. (40 mm²), and take the shape of a skinny film. Materials that were normally utilized in PIR sensors embody atomic number 31 chemical compound (GaN), atomic number 55 nitrate (CsNO₃), polyvinyl fluorides, derivatives of phenyl alkali, and metal phthalo cyanine. The device is usually factory-made as a part of associate microcircuit.

1.5.7.2 Operation:

An separate PIR device which will detects the amendment within the quantity of infrared emission have an effect on upon it, that is usually varies reckoning on the temperature and surface characteristics of the objects ahead of the device. once associate object, like a person's or any feature, passes ahead of the background, like a wall or the other object, the temperature at that time within the sensor's field of read can rise from temperature to body temperature, and when a while then it back once more. The device can converts the ensuring quantity of amendment within the incoming infrared emission into a amendment within the output voltage, and this begins the detection. Objects of getting similar temperature however take issue in their surface characteristics which will even have a distinct infrared pattern, and therefore moving them with regard to the background could trigger the detector as well.

PIR sensors could are available in several configurations for a good vary of applications. An good vary of concerning 10 meters it's nothing however thirty feet, and a field of read but one hundred eighty degrees. Models that have wider fields of read, as well as 360 degrees and plenty of, area unit offered might usually designed to mount on a ceiling. As a result of some larger PIR sensors area unit created with one phase mirrors which mirrors will sense changes within the infrared energy taken from objects over associate thirty meters or 100 feet removed from the PIR. There are some PIR sensors that may designed by the reversible orientation mirrors which quite sensors which can permit either broad coverage or terribly slender "curtain" coverage, or with

severally selectable segments to "shape" the coverage of it.

1.5.7.3 Differential detection

As the combine of sensing element parts that will wired to associate opposite inputs to create associate differential electronic equipment. In such a way, the PIR measurements cancel with one another so the common temperature is their within the field of read is far from the electrical signal; a rise of the IR energy across the complete sensing element is cancel with itself and can not trigger the device any. this may enable the device to prevent the false indications or results that will cause the event that exposed to being flashes of the sunshine or associate field kind illumination. At an equivalent time, this differential arrangement or sensors might results in minimizes the common-mode interference which can permitting the device to resist triggering thanks to close electrical fields or changes in it. However, a differential combine of sensors can not be live the temperature or infrared light during this configuration, and so this may solely helpful for motion detection

1.5.7.4 Security applications:

When we used this type of sensing element as a part of the safety system, the natural philosophy within the PIR sensing element that generally will management atiny low relay. This relay can completes the circuit across a combine of electrical contacts that will connected for detection input zone of the thief alarm control board or another management panels. The system is typically designed specified if no motion is being detected, the relay contact is additionally mechanically closed as a 'normally closed' relay. If motion is detected by the sensing element, the relay can opens, and it triggering the alarm. makers advocate for careful placement of their product to forestall associatey detection which will not caused by an persona non grata. Some kind of sensors also are usually designed to ignore the domestic pets, like dogs or cats, by setting or maintainig a better sensitivity threshold, or by making certain that the ground of the space remains out of focus or temperature can high. Since the PIR sensors having associate vary of up to ten meters that's nothing however a thirty feet, one detector placed close to the doorway of the rooms is often all that's necessary for rooms having associate single entrance. PIR-based security systems also are applicable in outside security and motion-sensitive lighting; one advantage is their low power consume, that permits them

to be solar-powered.

1.5.8 AC Pump

A pump may be a device that moves fluids like liquids or gases, by mechanical action. The pumps that may be divided into 3 major teams in keeping with the operate or methodology wherever they accustomed move the fluid particularly as: direct carry, displacement, and gravity pumps.

Pumps operate by some mechanism like rotary and continuous, and consumes larger energy to perform mechanical work by moving the fluid to desired field or issue. Pumps will operate through several energy sources, like as well as manual operation, electricity, engines, or wind generation, are available several sizes, from microscopic to be used in medical applications to giant industrial pump.



Fig 2.1 Electronic Ac pump.

(courtesy:www.google.com)

Mechanical pumps serve in an exceedingly wide selection of applications like pumping water from wells, lake filtering as several etc., and within the automobile business for water-cooling and fuel injection system, within the energy business for pumping oil and gas or, for in operation cooling towers. within the medical business, pumps square measure used for organic chemistry processes during which they develop and producing drugs, and as artificial replacements for body components, especially the unreal heart and penial prosthetic device.

1.5.8.1 Specification

- Size: 31.5x25.8x24.6cm
- PCS/20'GP: 25650
- PCS/40'GP: 51300
- Hmax: 1.9m (6.23Ft)
- Flow rate: 1500L/H (396.3G/H)
- Watt: 30W
- Voltage: 110/220/240V
- Frequency: 50/60 cycles/second

Usage for a pump pressure management:

1. Fountain
2. Aquarium
3. Garden/Farm irrigation
4. Fish tank little fish pool
5. All alternative water options because of the advanced technology employed in our pump

1.5.9 NODE MCU:

NodeMCU is associate open supply computer code developed for ESP8266 wireless fidelity chip. it's associate low price open supply IOT platform during which we have a tendency to receive or transfer the info. By exploring practicality with ESP8266 chip, NodeMCU firmfare that comes from the NodeMCU board or kit. Since it's open supply platform, their hardware style is open and simple to implement.

The memory for NodeMCU is 128KB and therefore the storage capability is 4Mbytes. The firmfare uses associate LUA scripting language. during which the firmfare relies on the eLua comes and it engineered on Espressif.



Fig 2.3 NodeMCU WIFI Chip.

(courtesy:www.google.com)

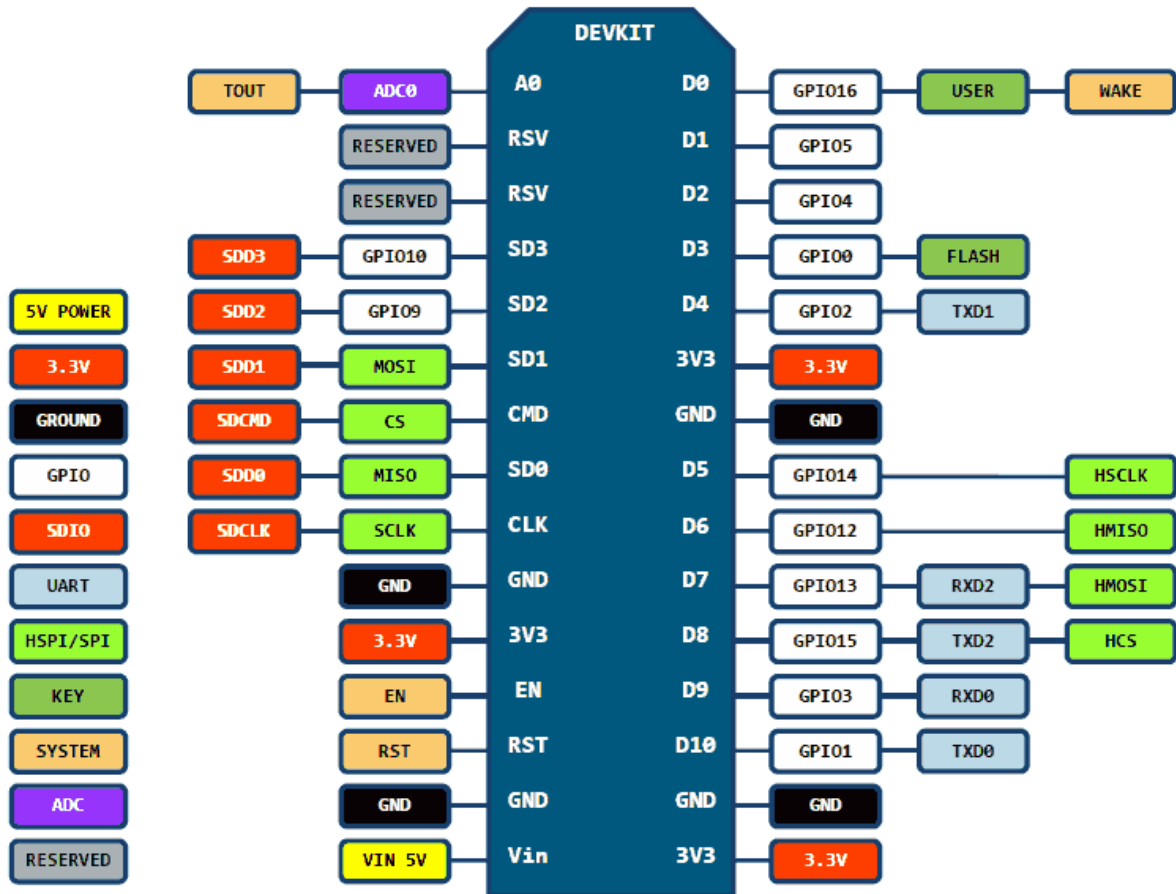
There is Version2 accessible for NodeMCU Dev Kit that's NodeMCU Development Board v1.0, that is typically comes in black coloured PCB.

1.5.9.2 Development Board:

NodeMCU Development Kit/Board incorporates ESP8266 wireless fidelity chip. ESP8266 chip has GPIO pins and serial communication protocol, etc. options on that that were wont to communicate or transfer the info to external devices. The options of ESP8266 square measure engineered on NodeMCU Development board.

NodeMCU (LUA primarily based firmware) with Development board/kit that incorporates ESP8266 chip combines NodeMCU Development board that build it complete device in IoT applications.

PIN DEFINITION



D0(GPIO16) can only be used as gpio read/write, no interrupt supported, no pwm/i2c/ow supported.

Fig 2.3 NodeMCU pin description

(courtesy:www.google.com)

1.5.9.3 NodeMCU Dev Kit v1.0 pin descriptions

- **GPIO (General Purpose Input Output) Pins:**

NodeMCU has many general purpose input and output pins on its board as shown in higher than pinout diagram. we are able to build it the pins as digital high/low and management things like crystal rectifier or activate it. Also, we are able to generate the PWM signal on these GPIO pins.

- **ADC (Analog to Digital Converter) channel (A0):**

NodeMCU has one ADC channel/pin on its board.

- **SPI (Serial Peripheral Interface) Pins:**

NodeMCU primarily based ESP8266 has Hardware SPI (HSPI) with four pins offered for the SPI communication. The SPI pins conjointly referred to as for Quad-SPI communication.

- **I2C (Inter-Integrated Circuit) Pins:**

NodeMCU has I2C practicality that were support on its GPIO pins. thanks to internal practicality on ESP-12E we tend to cannot use all its GPIO pins for I2C practicality. So, do tests before exploitation any GPIO pin for I2C applications.

- **UART (Universal Asynchronous Receiver Transmitter) Pins:**

NodeMCU primarily based ESP8266 has 2 UART interfaces, they're UART0 and UART1. Since UART0 have associate degree RXD0 & TXD0 is employed to transfer firmware/codes to board, we tend to cannot use them in applications while/when uploading firmware/codes.

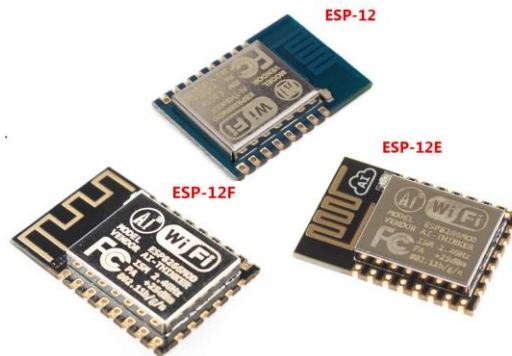


Fig 2.4 Types of NodeMCU chips.

(courtesy:www.google.com)

1.6 SOFTWARE REQUIREMENTS:

1.6.1 Blynk Server and IoT Platform

Blynk server may be a Platform with iOS and humanoid apps to regulate or displays the information is performed within the system of Arduino, Raspberry Pi, and therefore the like several different boards over the web.

It's a digital dashboard wherever you'll be able to build a graphic interface of your project by merely dragging and dropping widgets and displaying knowledge of our project.

It's very straightforward to line everything up and you will begin alternating or repair in but five minutes.

Blynk isn't bind to some specific board or defend. Instead, it's supporting hardware of your alternative. whether or not your Arduino or, Raspberry Pi is coupled to the web over a Wi-Fi association the present knowledge can show on the server, LAN or this new ESP8266 chip, Blynk server can get you on-line and prepared for the web Things.

Create a Blynk Project :

Click on the "Create New Project" within the blynk app to make. provides it any name. Blynk works with the an enormous variety of hardware models and association varieties. choose the Hardware sort that you gonna work on that and provides the personal identification number that was employed in your arduino. After this, choose association sort. during this project we've got choose wireless local area network property and hotspot property.

Widgets To The Project

Then it'll be given with a blank new project. To open the gizmo box, click on the project window to open that. As we tend to area unit choosing a button to regulate diode connected with NodeMCU.

1. Click on the Button.
2. provides a name to Button say diode.

3. beneath OUTPUT tab- Click the pin and choose the pin to that diode is connected to NodeMCU, here it's digital pin two, thus choose digital and beneath pin D2. and click on continue.

Under MODE tab choose whether or not you wish this button as "push button" or "Switch". You have with success created a user interface for Arduino.

Stand Alone Programming Code:

Before uploading the information, make certain that to stick your authorization token into the auth [] variable wherever you bought from the blynk app. conjointly make certain to load your wireless local area network network settings into the employment this Blynk.begin(auth, "ssid", "pass") perform.

```
define BLYNK_PRINT Serial

#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>

// You should get Auth Token in the Blynk App.
// Go to the Project Settings (nut icon).
char auth[] = "YourAuthToken";

// Your WiFi credentials.
// Set password to "" for open networks.
char ssid[] = "YourNetworkName";
char pass[] = "YourPassword";

void setup()
{
  // Debug console
  Serial.begin(9600);

  Blynk.begin(auth, ssid, pass);
}

void loop()
{
  Blynk.run();
}
```

Execution

After that the app has prepared and knowledge has uploaded, open the serial monitor within the app, setting the baud to 9600 that is nothing however speed of the information per second. look ahead to the "Ready" message.

Then click the "Run" button is their within the prime right corner of the Blynk app. Press

the button and watch the semiconductor diode. Then add a lot of widgets to the project we tend to use square wave measure exploitation in your project. they must instantly work on the ESP8266 and hotspot property while not uploading any new computer code.

CHAPTER 2

LITERATURE SURVEY

In [1], Sonali D.Gainwar and Dinesh V.Rojatkar planned associate soil parameters monitoring with associate automatic irrigation system that consists of solely a wetness detector, to examine the content/moisture of the soil by victimisation wetness detector and it'll send the signals to arduino and to pump to show on/off mechanically.

In [2], Vandana Dubey, Nilesh Dubey and Shailesh singh Chouhan planned a wireless detector primarily based remote irrigation management and conjointly used DTMF code. The system it provides signals to manage the flow of water for sectorised and mechanical device or drip section irrigation and it will works in 2 modes which might be designated by a farmer from his transportable once coming into an accurate parole. The mode choose facility is employed as a result of there area unit several crops within the completely different sectors of a kind field therefore, the water demand is additionally vary. The mode and system perform might increase by ever-changing the embedded program.

In [3], N Seenu, manju mohan, Jeevanath V S planned associate golem primarily based intelligent irrigation system that is employed to permit irrigation to require place from far off and wherever the manual review isn't required. the quantity of soil wetness, humidness and temperature area unit indicated through appropriate sensors. The system is told however the information transferring is happen in between the arduino associated an application. It conjointly explains however the conditions are designated by the user.

In [4], R.Nandhini, S.Poovizhi, Priyanka Jose, R.Ranjitha planned associate arduino primarily based good irrigation system victimisation iot the system within which soil parameters like soil wetness, pH, humidness area unit measured for the watching wetness of the soil. The unwelcome person noticeion detector is employed to detect whether or not the birds area unit repelled from getting into the sector or not. The

present field information standing are send to the user mobile by victimisation the GSM module.

In [5], M. A. Abdurrahman, etc. al. projected a efficient product for farming wherever water is scarce. The system created up with inexpensive sensors and easy electronic equipment to mechanically controls the flow of water. The humidness and temperature level also are perceived and displays in alphanumeric display. this method provides water for plants per the soil wetness level and crop water demand.

In [6], P. A. Bhosale and V. V. Dixit have projected associate degree autochthonal low value time depended microcontroller primarily based irrigation computer hardware that consists of assorted sensors for police investigation wetness, temperature and wind. this method derives applicable actuators (relay, coil valves, motor) reckoning on these values. The captured knowledge ar sent to the user in variety of SMS through a GSM module and hold on in a very memory card.

In [7], J. Balendonck, et. al. conferred a deficit irrigation management system consists of a network of in-field irrigation controllers and soil sensors. Irrigation controllers ar connected to the farmer's mobiles/computers through a wireless link. The system may be used once there's a restricted installation and poor water quality. they need used a call network (DSS) that helps the farmers to optimize irrigation and fertiliser management on the premise of chosen crop, water handiness and crop development. The DSS might run either on native laptop or remote server and user will visit DSS if required for dynamic the irrigation ways.

In [8], F. TONGUE was projected sensible agriculture supported IoT and cloud computing. Agriculture data cloud is built with totally different resources and to realize the dynamic distribution of a resource and cargo leveling. great deal of knowledge obtained through RFID, wireless communication ar handled in agriculture data cloud.

In [9], Ji-Chun Zhao et al. studied the management network and IoT technology for agricultural production. The author projected a far off watching system supported web and wireless communication. associate degree data management system is additionally designed to store the information. The collected knowledge may be used for agricultural analysis facilities.

Unlike the work conferred in [5, 6], therefore our projected model during this project not solely give value -effective sensible farming that change the farming operations however conjointly it recorded the agricultural field temperature, humidness and wetness values to the cloud server through communication technology for any analysis. Further, in [8] the implementation was missing, however this paper includes the implementation details of our projected system.

CHAPTER 3

AIM AND SCOPE

The main aim of this project is intended to develop AN automatic irrigation system by which switches the pump motor on/off on sensing the wetness content of the soil mistreatment IOT technology, and conjointly this project aim's at saving time for formers and avoiding issues like constant vigilance so as to cultivate crops and it conjointly helps in protective water by mechanically providing water to the fields depending on the water needs.

3.2 Scope of this project:

- Efficient installation with the optimum condition will increase the productivity of crops.
- It is intended to provide water for plants often.
- To save water and cut back human intervention in the agriculture field.
- We will manage this automatic irrigation system, that is switching ON/OFF from anyplace during this world, and here we tend ar employing a LAN module and blynk server so we are able to transfer each info and standing of this project on blynk server through the net.
- Providing security to the land by mistreatment PIR device it'll notice the motion of any, by detecting radiations from the body then it provides a command to the buzzer through the microcontroller it makes a sound in fields so any harmful of insects or any animals, birds and even humans conjointly can flee from the sphere by buzzer and furthermore any reasonable of body that consists of radiation in it.

3.3 Objective:

- The main objective of this project is to develop sensible irrigation mistreatment IOT being controlled by any android OS sensible phones or computers.
- By touching the required location on the UI the loads may be turned ON/OFF remotely through this technology.

- We set this project to avoid wasting farmer's life as a result of generally they place a lot of or less water within the crops and therefore the outcomes don't come back lead. This might result in a loss ultimately suicide by farmers.

We can add a camera to capture the expansion of the land and sensors to notice the motion of animals within the field and we are mistreatment blynk server, that is AN app application by mistreatment this you'll be able to offer commands to the microcontroller by mistreatment your mobile phones or any other application. Then the microcontroller can switch the pump ON/OFF by your commands. The most objective of this project is you'll be able to manage this whole system from anyplace within the world.

CHAPTER 4

METHODOLOGY

4.1 EXSTING SYSTEM:

Agriculture is that the backbone of Indian economy. during this today's world, as we will see a rapid climb within the population, and conjointly agriculture becomes additional necessary to satisfy the wants of the humanity. However, agriculture needs irrigation and with per annum we've additional water consumption than precipitation, it becomes essential for manual management within which they the land at the regular interval. By victimization manual methodology, there's irregular management pump that results in water loss and crop harm. Efficient water with optimum condition will increase the productivity of crop.

4.1.1 WHAT THEY HAVE FOLLOWED IN EXSTING SYSTEMS:

In earlier system they need done by victimization Bluetooth. The drawbacks of this method is we tend to cannot management the irrigation system of motor pump that is switch on/off the motor pump for a protracted distances. we will solely management this method by a brief distance type the sector, we tend to can't management the system by a protracted distance and it's not applicable for big portion of crops and furthermore they didn't offer security for the land to safeguard the land from animals and birds that is harmful for the land to induce higher results of crops.

4.2 PROPOSED SYSTEM:

This project includes the these main things:

Hardware Requirements

- Arduino UNO
- Temperature and Humidity Sensor
- PIR Sensor
- Buzzer Module
- Soil Moisture Sensor
- AC Pump
- 12V Relay
- 12V Transformer
- Wi-Fi Module
- Voltage Regulators
- Filter Capacitors
- LCD 2x16 Module
- Other Misc components

Software Requirements

Arduino IDE – Compiler

Language – Embedded C

IoT Server - Blynk

Block diagram:

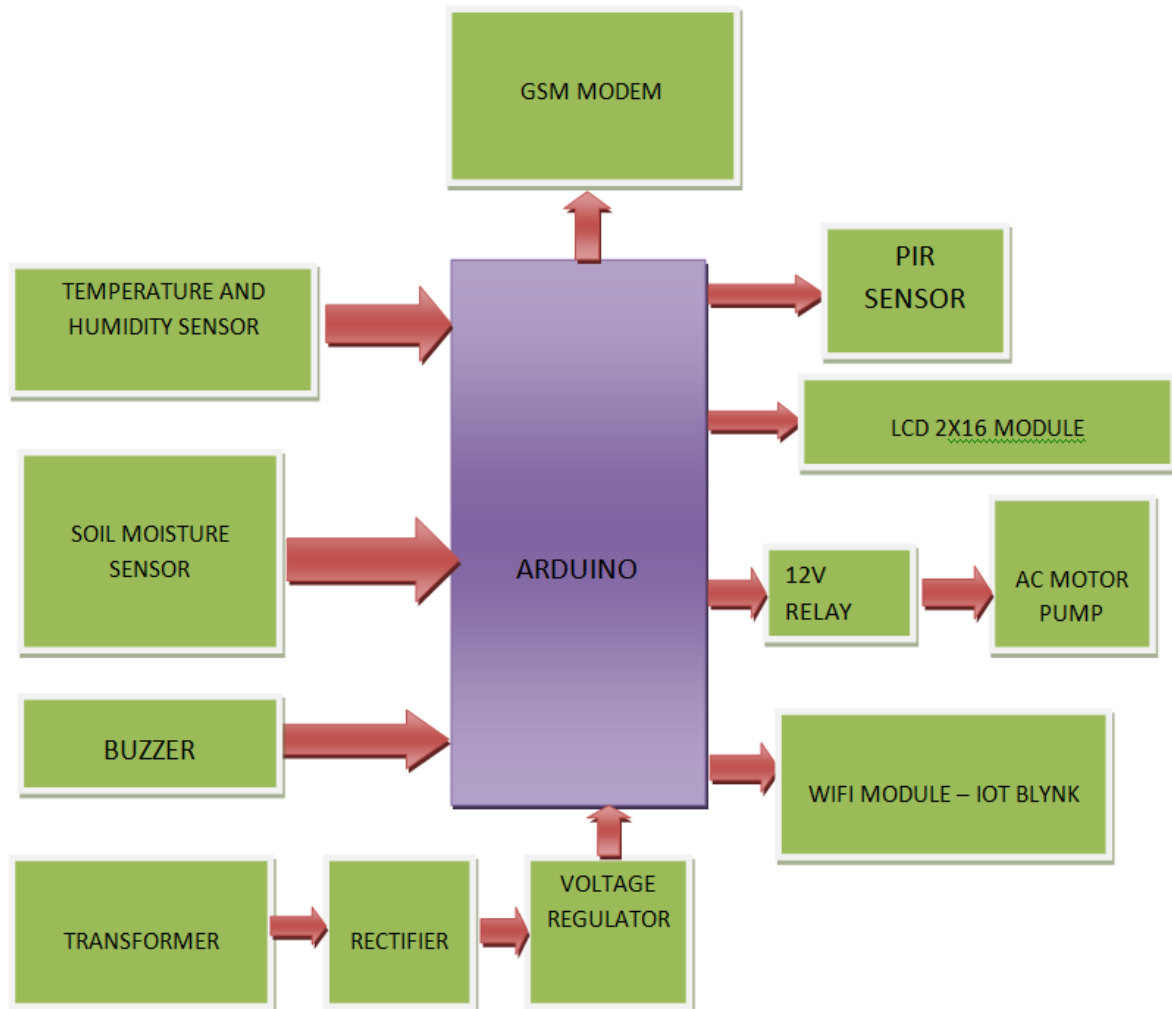


Fig 2.5 Block diagram for proposed system.

CIRCUIT DIAGRAM:

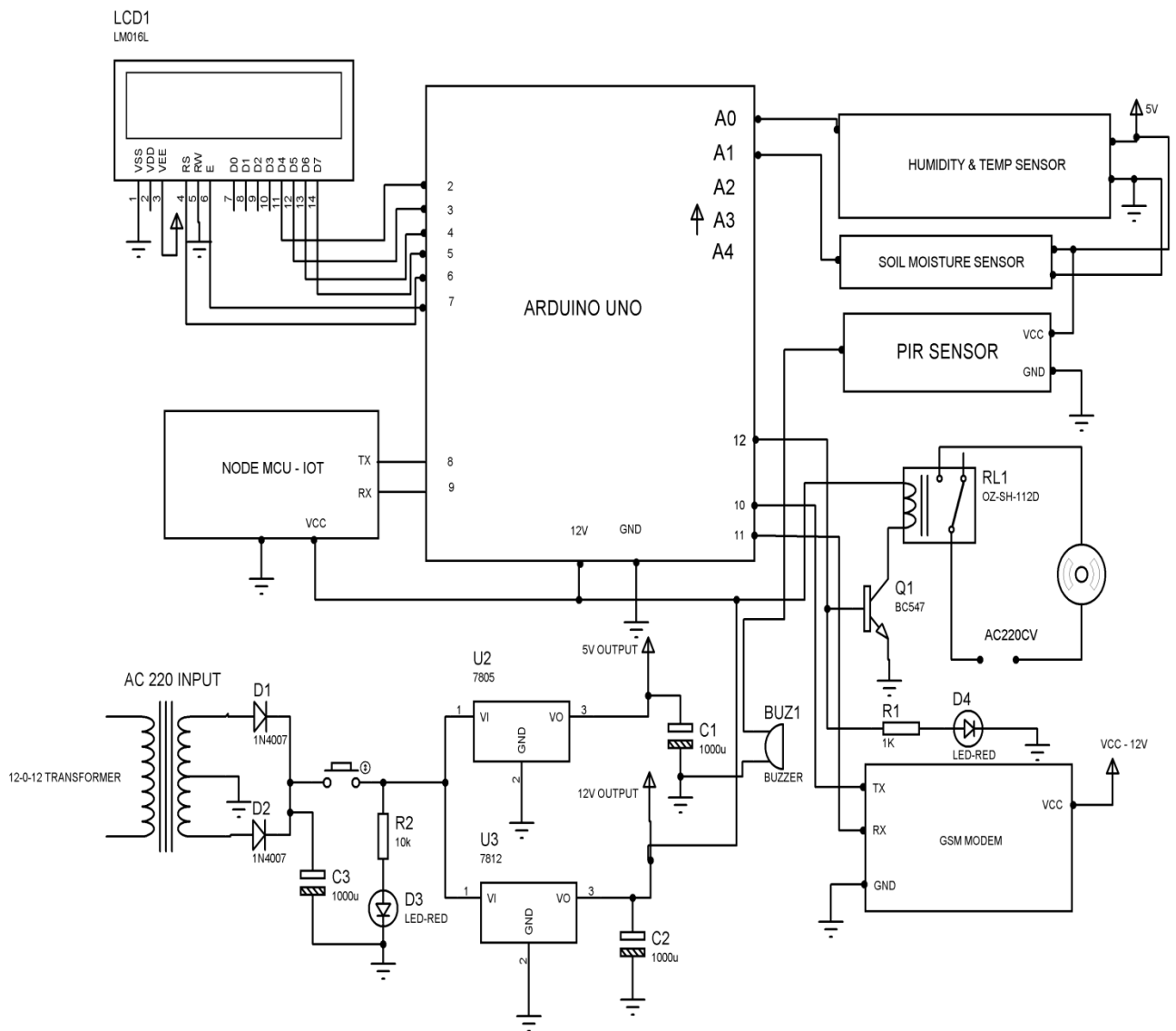


FIG 2.6 Circuit diagram for proposed system.

Arduino of microcontroller is the main part in hardware.

Arduino Microcontroller:

All the components of this project which are transformer voltage, 16*2 LCD board, soil moisture, temperature and humidity sensor, NODEMCU, GSM modem, WIFI module, relay pump, PIR sensor (and everything whatever the components we are using in this project) are connected to the arduino of microcontroller.

1. We have to make all the connections of other components to microcontroller.
2. Arduino of microcontroller is the main heart of this project every component of this project is activated through the microcontroller and microcontroller is a in-built function of Arduino.
3. After completing all the connections to the microcontroller and we will get the status of the soil moisture, temperature and humidity values through the microcontroller and all these values are displayed in LCD.

4.2.1 Working process:

In this projected system, AN innovative automatic advanced irrigation system will the work quite expeditiously and with a positive impact on the place wherever it's put in. Once it's placed within the agricultural field, the distribution of water to crops and nurseries becomes simple and it doesn't need any man power to perform the operations for good. typically the automated irrigation system can even be performed by victimisation mechanical appliances to induce a much better results like clay pots or bottle irrigation system. And this sort of irrigation system is incredibly arduous to implement as a result of the price was too high and sophisticated in their style.

The main aim of this project is meant to develop AN sensible innovative automatic irrigation system that is employed to modify the pump motor ON/OFF on by sensing the wetness content of the soil by victimisation the wetness sensing element. within the agriculture field, usage of correct technique of irrigation is incredibly necessary. The advantage of victimisation this sort of technique is to cut back human support and still guarantee correct irrigation.

The project uses AN Arduino eight bit Microcontroller board that is programmed to receive the signaling of the varied the wetness content of the soil victimisation sensing element were that is placed within the soil of following sensing arrangement. this can be achieved by victimization. AN ADC (Analog to Digital Converter) it's AN comparator that acts as interface between the sensing arrangement and also the microcontroller.

Once the arduino microcontroller receives the signal it drives the relay to work the pump. AN LCD display is additionally interfaced with the microcontroller to display standing of the soil content and pump. The sensing arrangement done by victimisation 2 stiff aluminous rods were inserted within the field. The connections from the aluminous rods ar interfaced to the management unit of the arduino. A temperature and wetness sensing element is additionally interfaced with this method. These sensors ar accustomed monitor this temperature and wetness of field and show it in alphanumeric display Module. GSM electronic equipment is interfaced with to send SMS at the time of Pump On and Pump off Condition.

This system is additionally interfaced with IoT Technology victimisation Blynk and Wi-Fi Module. sensing element knowledge like Soil wetness, Humidity, Temperature and Pump standing ar uploaded on Blynk Cloud server. User will read this knowledge from anyplace within the world. victimisation IoT Technology user can even switch Pump On and Pump removed from web.

This system is additionally interfaced with motion sensing technology victimisation PIR sensing element. victimisation this sensing element it senses if any animals enter in farm space and produces High frequency buzzer sound to threaten birds and animals. this method helps farmer to get rid of any animal to enter in farm space.

To Power this whole System we've 12V electrical device based mostly Power offer. diode based mostly full wave rectifier circuit is employed rectify 12V AC voltage to 12V Dc Voltage. transformer 7805 and 7812 ar accustomed turn out constant 5V and 12V DC Output. These Voltages ar utilized by Arduino Uno, Wi-Fi Module, Relay, Sensors and different elements. Minor Circuit. Filter Capacitors ar accustomed made Constant and filtered DC Voltage.

CHAPTER 5

PROJECT CODE

```
#include <ESP8266WiFi.h>
#include <ESP8266HTTPClient.h>

int a,b,c,d,e;
char f; String data;
HTTPClient http;

void setup()
{

  WiFi.disconnect();
  delay(2000);

  WiFi.begin("iot","12345678");
  while ((!(WiFi.status() == WL_CONNECTED)))
  {
    delay(300);
  }

  Serial.begin(115200);
  Serial.println("Node MCU");
}

void loop()
{
  while (Serial.available())
  {
    delay(10);
    f = Serial.read();
```

```

if (f == '@')
{
  a = data.toInt();
  data="";
}
else if (f == '*')
{
  b = data.toInt();
  data="";
}
else if(f=='#')
{
  c = data.toInt();
  break;
}
else if(f=='-')
{
  d = data.toInt();
  break;
}
else
{
  data +=f;
}
}

if (data.length() > 0)
{
  Serial.println(a); // TEMP
  Serial.println(b); // HUMIDITY
  Serial.println(c); // MOISTURE

```

```

    Serial.println(d); // PUMP STATUS
    Serial.println("");
    upload();
    data="";
}
}

void upload()
{
String
link="http://blynkcloud.com/eHk0yzLUx2jw2fEzCbT7huh_Jx0bAa/update/V8?value=";
// TEMPT
    link=String(link+a);
    http.begin(link);
    http.GET();
    http.end();
    delay(100);

    link="http://blynk-cloud.com/eHk0yzLUx2jw2fE-zCbT7huh_J-
x0bAa/update/V9?value="; // HUMIDITY
    link=String(link+b);
    http.begin(link);
    http.GET();
    http.end();
    delay(100);

    link="http://blynk-cloud.com/eHk0yzLUx2jw2fE-zCbT7huh_J-
x0bAa/update/V10?value="; // MOISTURE
    link=String(link+c);
    http.begin(link);
    http.GET();

```

```

http.end();
delay(100);

link="http://blynk-cloud.com/eHk0yzLUx2jw2fE-zCbT7huh_J-
x0bAa/update/V11?value=";// PUMP STATUS
link=String(link+d);
http.begin(link);
http.GET();
http.end();
delay(100);
}

```

OUTPUT:



Fig 2.7 Output image of entire system

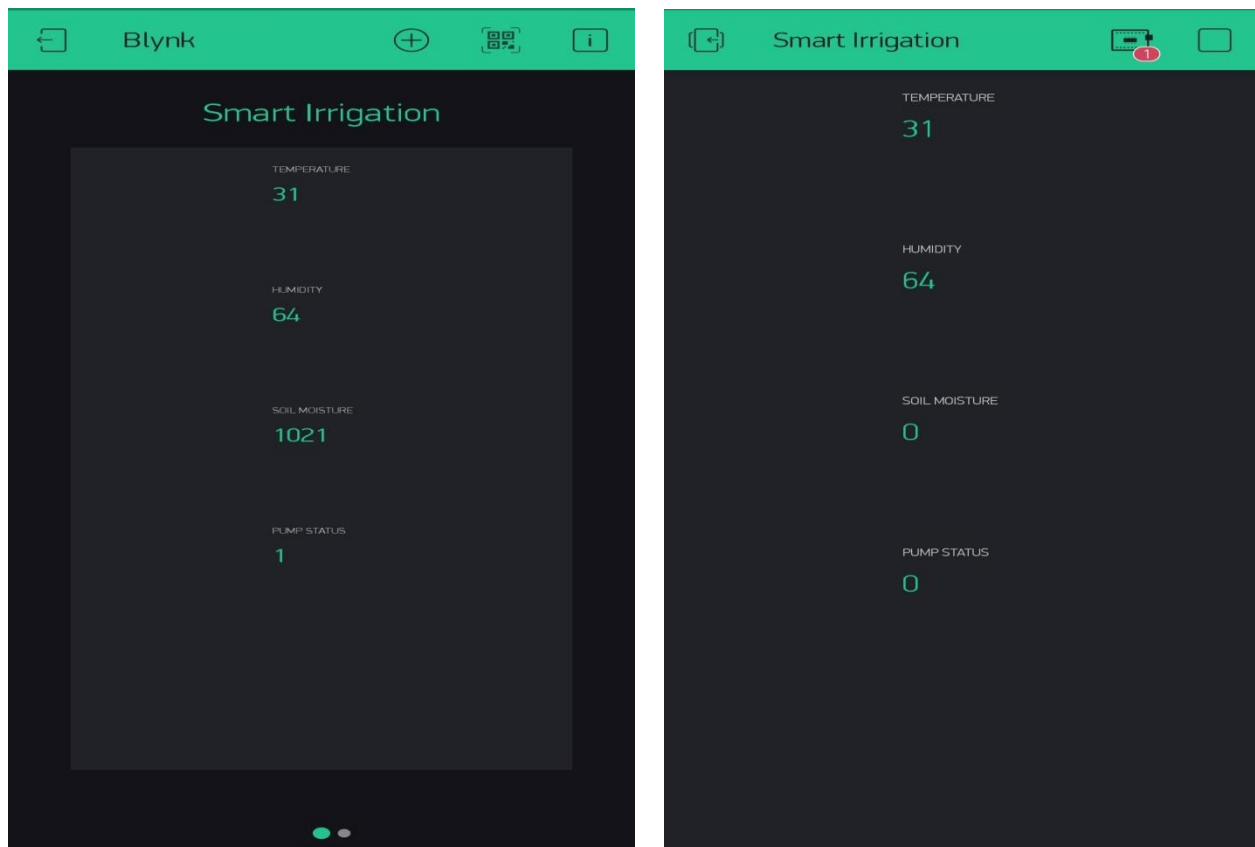


Fig 2.8 Image of output values of system in blynk server

CHAPTER 6

RESULTS AND DISCUSSION

The main heart of this project is Arduino UNO which has an in-built function of the microcontroller each and every component of this project can be controlled by a microcontroller. The 220V Ac input is given to the transformer of the system by stepping down it, a 220V ac supply will be converted into 12V Ac supply and alternate by using



Fig 2.9 Image of entire system

a rectifiers we are converting 12V ac to 12V dc and 5V dc according to the system convenient. This 12V dc is used To run the entire project and here we are using a moisture sensor this can be used to detect the moisture level of the soil by giving a voltage value and this can be displayed on LCD and there we can see the values whatever we got from the sensor and these values can be compared with previously defined programming values (this programming already uploaded in a microcontroller) if the soil is in dry condition and soil condition of values can be send to the microcontroller and their condition will be true then microcontroller sends the signal to relay and through the relay, the pump will get on automatically. when the pump will get in on condition ,the message will send to the user by GSM module and the user can able to operate this pumping status automatically anywhere in the world by IOT, and all

these values displayed on the blynk server. If soil condition is a wet condition the microcontroller will not send any signal relay then the pump remains in the off condition and these values will also be send to the user by using IOT technology so that user can see and operate this technology anywhere in the world and it will monitor the fields continuously and supplies the water to the field and output values of temperature and humidity will be send to blynk server. If soil condition is dry/wet the conditional value will be displayed on the server.

The output values of temperature and humidity will be sent blynk server. If soil condition is dry/wet the conditional value will be displayed on the server and it will show the status of the pump.

CHAPTER 7

CONCLUSION

The proposed system checks whether the pump is in on/off condition and also identifies the weather condition in green house and plant nurseries, and protects the fields from the birds or animals by sensing the buzzer. In this the system is done in the following manner:

- Checks the moisture of the soil content
- Later, it turns on/off the pump and the values will be displayed on the LCD.
- Continuously monitors the temperature and humidity
- The monitored data will be received through blynk server
- Identify the Motion of other Beings and alert's the user
- Send or Receive the data/ SMS from/to user through GSM

In this manner we tend to ar victimisation the system that ready to management the agriculture observance in fields wherever the men unable to supply security. Such a system we tend to ar developing within the field wherever the crops ar pricey ar monitored and every one the climate ar well maintained necessary. during this form of space we tend to ar provided such reasonably system.

This effective and reliable system helps in agriculture observance. except the most objective, the system that we tend to designed which can conjointly helps in reducing the world warming to an excellent extent. The natural habit of plants is prevented indirectly. The plants also can be protected against any reasonably hearth by victimisation this technique. This successively helps in reducing crop destruction. Thereby, the ecological balance is maintained.

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