

IOT Based Agriculture System Using Google Assistant

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ABSTRACT

India's populace is come to past 1.2 billion and the populace rate is expanding step by step then after 25-30 years there will be not kidding issue of nourishment, so the advancement of horticulture is necessary. Today, the ranchers are enduring from the absence of downpours and shortage of water. The primary target of this paper is to give a programmed water system framework consequently saving time, cash and energy of the agriculturist. The conventional homestead land irrigation methods require manual intercession. With the automated innovation of water system the human mediation can be minimized. At whatever point there is an adjustment in temperature and humidity of the surroundings these sensors detects the change in temperature and stickiness and gives an interfere with flag to the micro-controller.

Mechanization of homestead exercises can change rural space from being manual and static to keen and dynamic prompting higher generation with lesser human supervision. This paper proposes a computerized water system framework which screens and keeps up the coveted soil dampness content by means of programmed watering. Microcontroller NODEMCU (ESP8266-12E) is utilized to actualize the control unit. The setup utilizes soil dampness sensors which measure the correct dampness level in soil. This esteem empowers the framework to utilize fitting amount of water which maintains a strategic distance from over/under water system. IOT is utilized to keep the ranchers refreshed about the status of yield fields. Data from the sensors is routinely refreshed on a website page utilizing ADAFRUIT through which a rancher can check regardless of whether the water pump are ON/OFF at any given time.

Keywords:- IOT, Google, Agriculture

I. INTRODUCTION

India's real wellspring of wage is from agriculture division and 70% of ranchers and general individuals rely upon the agriculture. In India the vast majority of the irrigation frameworks are worked physically. These old fashioned methods are supplanted with semi-robotized and computerized procedures. The accessible conventional procedures resemble jettison irrigation, terraced irrigation, dribble irrigation, sprinkler framework. The worldwide irrigation situation is arranged by expanded interest for higher horticultural efficiency, poor execution and diminished accessibility of water for agriculture.

These issues can be suitably amended on the off chance that we utilize computerized framework for irrigation. In Irrigation Control System Using Android and Google Assistant for Efficient Use of Water and Power. Mechanized irrigation framework utilizes Google Assistant to turn engine ON and OFF.

II. OBJECTIVE OF THE PROJECT

As the world is drifting into present day advances and usage it is an important objective to incline up in agriculture also[2]. Numerous inquires about are working in the field of agriculture.

Most activities mean the utilization of remote sensor organize gather information from various sensors sent at different hubs and send it through the remote convention. The gathered information gives the data about the different ecological elements. Checking the natural components isn't the entire answer for increment the yield of products. There are number of different variables that decline the profitability to a more noteworthy degree.

Consequently computerization must be actualized in flooding fields to conquer these issues. Along these lines, to give answer for every single such issue, it is important to build up a coordinated framework which

will deal with watering the harvests. In any case, entire mechanization in irrigation isn't accomplished because of different issues.

In spite of the fact that it is executed in the examination level it isn't given to the agriculturists as an item to get profited from the assets. Thus this paper bargains about Automatic Irrigation System utilizing IoT.

III. LITERATURE SURVEY

In Google Assistant Based Automated Irrigation Control using IOT based Irrigation System[2]. Here its mentioned about using automatic microcontroller based rain gun irrigation system in which the irrigation will take place only when there will be intense requirement of water that save a large quantity of water. These system brings a change to management of field resources where they developed a software stack called Android is used for mobile devices that include an operating system, middleware and key applications. Mobile phones have almost become an integral part of us serving multiple needs of humans. These system covered lower range of agriculture land and not economically affordable. The System Supports excess Amount of water in the land and uses wifi to send message and an android app is been used they have used a methodology to overcome under irrigation, over irrigation that causes leaching and loss of nutrient content of soil they have also promised that Microcontroller used can increase System Life and lower the power Consumption. There system is just limited to the automation of irrigation system and lacks in extra ordinary features. Automatic Irrigation Control System for Efficient Use of Resources and Crop Planning by Using an Android States and features of their system.

- The system supports water management decision, used for monitoring the whole system with ESP8266-12E Wifi module
- The system continuously monitors the water level in the tank and provide accurate amount of water required to the plant or tree (crop).
- The system checks the temperature, and humidity of soil to retain the nutrient

composition of the soil managed for proper growth of plant.

- Low cost and effective with less power consumption using sensors for remote monitoring and controlling devices which are controlled via SMS using a GSM using android mobile.

In Irrigation Control System Using Android and GSM for Efficient Use of Water and Power. Automated irrigation system uses Google Assistant to turn motor ON and OFF. These Google Assistant may be easily automated by using voice controllers. Automating farm or nursery irrigation allows farmers to apply the right amount of water at the right time, regardless of the availability of labor to turn valves on and off. In addition, farmers using automation equipment are able to reduce runoff from over watering saturated soils, avoid irrigating at the wrong time of day, which will improve crop performance by ensuring adequate water and nutrients when needed. Those valves may be easily automated by using controllers.

IFTTT

If This Then That, also known as IFTTT, is a free web-based service to create chains of simple conditional statements, called applets.

An applet is triggered by changes that occur within other web services such as Gmail, Facebook, Telegram, Instagram, or Pinterest.

For example, an applet may send an e-mail message if the user tweets using a hashtag, or copy a photo on Facebook to a user's archive if someone tags a user in a photo.

In addition to the web-based application, the service runs on iOS and Android. In February 2015, IFTTT renamed their original application to *IF*, and released a new suite of apps called *Do* which lets users create shortcut applications and actions. As of 2015, IFTTT users created about 20 million recipes each day. All of the functionalities of the *Do* suite of apps have since been integrated into a redesigned

IFTTT app.

IFTTT is both a website and a mobile app that launched in 2010 and has the slogan "Put the Internet to work for you". The idea is that you use IFTTT to automate everything from your favorite apps and websites to app-enabled accessories and smart devices.

If you own the Philips Hue smart lighting system, for instance, you could use IFTTT to automatically turn on a light every time you're tagged in a Facebook photo. In another example, you could use IFTTT to automatically email readers when they comment on your WordPress blog. There are numerous combinations (also called "recipes") on IFTTT that can make your life easier.

IFTTT currently supports more than 110 services (also called "channels") including Android devices and Apple iOS apps like Reminders and Photos, as well as websites like Facebook, Instagram, Flickr, Tumblr, Google Calendar, Google Drive, Etsy, Feedly, Foursquare, LinkedIn, SoundCloud, WordPress, YouTube, and more.

Adafruit IO

You are connecting to Adafruit IO's MQTT server(a.k.a broker) - you could use another broker and as long as it fits the MQTT 3 or 3.1.1 specs, it ought to work. You are connecting via the Internet-WiFi, Ethernet, and cellular are king here. Other transports would need a gateway You are using an Arduino or compatible - Our code is fairly portable, but in order to keep the examples concrete, we'll be focusing on the Arduino library You have already signed up for Adafruit IO and logged in Honestly, if this is your first time using MQTT, the above is a pretty safe way to get started!

IV. EXISTING SYSTEM

The current technique and one of the most seasoned routes in agriculture is the manual strategy for checking the parameters. In this strategy the ranchers they themselves confirm every one of the parameters and figure the readings. It centres on creating gadgets and instruments to oversee, show and alarm the clients utilizing the benefits of a remote sensor arrange system. It goes for influencing agriculture to

been utilizing computerization and IoT technologies. The

distributed computing gadgets that can make an entire processing framework from sensors to devices that watch information from agrarian field pictures and from human on-screen characters on the ground and precisely encourage the information into the archives alongside the area as GPS coordinates. This thought proposes a novel approach for savvy cultivating by connecting a brilliant detecting framework and shrewd irrigator framework through remote correspondence technology. It proposes a minimal effort and productive remote sensor organize procedure to get the dirt dampness and temperature from different area of homestead and according to the need of harvest controller to take the choice whether the irrigation is empowered or not. It proposes a thought regarding how robotized irrigation framework was created to advance water use for farming yields. What's more, a door unit handles sensor information. The climatic conditions are observed and controlled online by utilizing Ethernet IEEE 802.3. The incomplete root zone drying procedure can be actualized to a most extreme extent. It is intended for IoT based checking framework to break down yield condition and the technique to enhance the effectiveness of basic leadership by examining harvest statistics. In this paper picture preparing is utilized as an instrument to screen the infections on organic products amid cultivating, appropriate from ranch to gathering. The varieties are found in shading, surface and morphology. In this paper, nursery is a working in which plants are developed in shut condition. It is utilized to keep up the ideal states of the earth, nursery administration and information obtaining.

V. PROPOSED SYSTEM

The Block diagram of Proposed System is shown below:

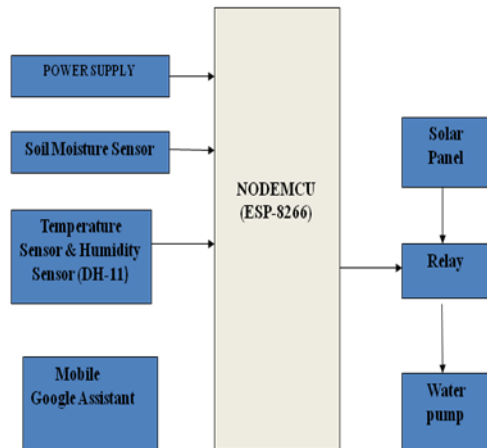


Fig 1 : Block Diagram of Proposed System

A. NODEMCU(ESP-8266-12E) :

The Node MCU is an open-source firmware and development kit that helps you to Prototype your IOT product within a few Lua script lines. It includes firmware which runs on the ESP8266 Wi-Fi SOC from Express, and hardware which is based on the ESP-12 module



Fig.2 : NODEMCU(ESP-8266-12E)

B.ESP8266-12E WiFi module

ESP8266-12E WiFi module is developed by Ai-thinker Team [3]. core processor ESP8266 in smaller sizes of the module encapsulates Ten silica L106 integrates industry-leading ultra low power 32-bit

MCU micro, with the 16-bit short mode, Clock speed support 80 MHz, 160 MHz, supports the RTOS, integrated Wi-Fi MAC/BB/RF/PA/LNA, on-board antenna. The module supports standard IEEE802.11 b/g/n agreement, complete TCP/IP protocol stack. Users can use the add modules to an existing device networking, or building a separate network controller. ESP8266 is high integration wireless SOCs, designed for space and power constrained mobile platform designers. It provides unsurpassed ability to embed Wi-Fi capabilities within other systems, or to function as a standalone application, with the lowest cost, and minimal space requirement.



Fig.3 : ESP8266-12E Wi-Fi Module

C. Soil Moisture Sensor

This sensor can be used to test the moisture of soil, when the soil is having water shortage, the module output is at high level, else the output is at low level. By using this sensor one can automatically water the flower plant, or any other plants requiring automatic watering technique. Module triple output mode, digital output is simple, analog output more accurate, serial output with exact readings.

Soil Moisture Sensor is a simple breakout for measuring the moisture in soil and similar materials. The soil moisture sensor is pretty straight forward to use.

The two large exposed pads function as probes for the sensor, together acting as a variable resistor. The more water that is in the soil means the better the conductivity between the pads will be and will result in a lower resistance, and a higher SIG out.

Soil Moisture Sensor functioning all you will need is to connect the VCC and GND pins to your Arduino-based device (or compatible development board) and you will receive a SIG out which will depend on the

amount of water in the soil. One commonly known issue with soil moisture sensors is their short lifespan when exposed to a moist environment. To combat this, we've had the PCB coated in Gold Finishing (ENIG or Electro less Nickel Immersion Gold).

We recommend either a simple 3-pin screw pin terminal or a 3-pin jumper wire assembly (both can be found in the *Recommended Products* section below) to be soldered onto the sensor for easy wiring.

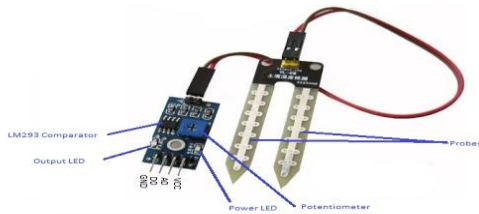


Fig.4 : Soil Moisture Sensor

Soil moisture sensors measure the volumetric water content in soil. Since the direct gravimetric measurement of free soil moisture requires removing, drying, and weighting of a sample, soil moisture sensors measure the volumetric water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with neutrons, as a proxy for the moisture content.

The relation between the measured property and soil moisture must be calibrated and may vary depending on environmental factors such as soil type, temperature, or electric conductivity. Reflected microwave radiation is affected by the soil moisture and is used for remote sensing in hydrology and agriculture. Portable probe instruments can be used by farmers or gardeners.

Soil moisture sensors typically refer to sensors that estimate volumetric water content. Another class of sensors measure another property of moisture in soils called water potential; these sensors are usually referred to as soil water potential sensors and include tensiometers and gypsum blocks.

D. Temperature and Humidity Module DHT11

DHT11 digital temperature and humidity sensor is a calibrated digital signal output of the temperature and humidity combined sensor. It uses a dedicated digital modules capture technology and the temperature and humidity sensor technology to ensure that products with high reliability and excellent long-term stability. Sensor includes a resistive element and a sense of wet NTC temperature measurement devices and with a high-performance 8-bit microcontroller connected.

DHT11 output calibrated digital signal. It utilizes exclusive digital-signal-collecting-technique and humidity sensing technology, assuring its reliability and stability. Its sensing elements are connected with 8-bit single-chip computer. Every sensor of this model is temperature compensated and calibrated in accurate calibration chamber and the calibration-coefficient is saved in OTP memory. Small size & low consumption & long transmission distance (20m) enable DHT11 to be suited in all kinds of harsh application occasions. Single-row packaged with four pins, making the connection very convenient.

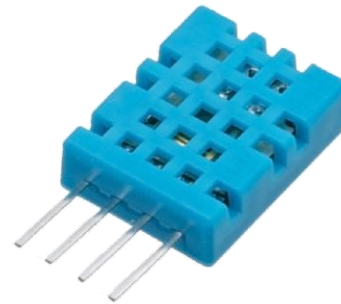


Fig .5 : DHT-11 Module

Applications:

HVAC, dehumidifiers, testing and inspection equipment, consumer goods, automotive, automation, data loggers, weather stations, home appliances, humidity regulator, medical and other relevant humidity measurement and control.

E. Relay

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is

necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers: they repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

A type of relay that can handle the high power required to directly control an electric motor or other loads is called a contactor. Solid-state relays control power circuits with no moving parts, instead using a semiconductor device to perform switching. Relays with calibrated operating characteristics and sometimes multiple operating coils are used to protect electrical circuits from overload or faults; in modern electric power systems these functions are performed by digital instruments still called "protectiverelays".

Magnetic latching relays require one pulse of coil power to move their contacts in one direction, and another, redirected pulse to move them back. Repeated pulses from the same input have no effect. Magnetic latching relays are useful in applications where interrupted power should not be able to transition the contacts.

Magnetic latching relays can have either single or dual coils. On a single coil device, the relay will operate in one direction when power is applied with one polarity, and will reset when the polarity is reversed. On a dual coil device, when polarized voltage is applied to the reset coil the contacts will transition. AC controlled magnetic latch relays have single coils that employ steering diodes to differentiate between operate and reset commands.

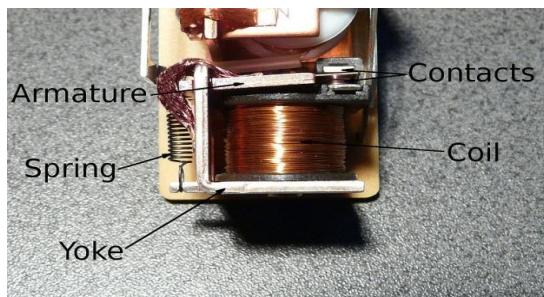


Fig.6:Simple electromechanical relay

F. Solar Panel

Solar panels absorb the sunlight as a source of energy to generate electricity or heat.

A photovoltaic (PV) module is a packaged; connect assembly of typically 6x10 photovoltaic solar cells. Photovoltaic modules constitute the photovoltaic array of a photovoltaic system that generates and supplies solar electricity in commercial and residential applications. Each module is rated by its DC output power under standard test conditions (STC), and typically ranges from 100 to 365 Watts (W). The efficiency of a module determines the area of a module given the same rated output – an 8% efficient 230 W module will have twice the area of a 16% efficient 230 W module. There are a few commercially available solar modules that exceed efficiency of 22%^[1] and reportedly also exceeding 24%.^{[2][3]} A single solar module can produce only a limited amount of power; most installations contain multiple modules. A photovoltaic system typically includes an array of photovoltaic modules, an inverter, a battery pack for storage, interconnection wiring, and optionally a solar tracking mechanism.

The most common application of solar panels is solar water heating systems.^[4]

The price of solar power has continued to fall so that in many countries it is cheaper than ordinary fossil fuel electricity from the grid (there is "grid parity")

Solar cells and solar panels have lots of uses. They are in everyday things like calculators, watches, and flashlights. There are solar-powered toys, radios, and MP3 players. There are solar-powered cell phones and pagers. Using solar power with devices like these means you never have to worry about batteries. Solar panels are sometimes used to make the electricity to light up road signs and bus stops. They may make the electricity that makes roadside emergency phones or parking meters work. Even some ATMs (machines that let you get money from or put money into your bank account) have solar panels.



Fig.7 : Solar Panels

Solar cell manufacturing technologies are:

- Mono crystalline,
- Polycrystalline,
- Bar- crystalline silicon,
- Thin film technology.

G.6V Water pump



Fig.8 : 6V Water Pump

It is lightweight, small size, high efficiency, low consumption and low noise. It has been used widely; in household include cooking, cleaning, etc. Please do not test long time with no-load, inside is with plastic leaves, can't suction impurity. Micro dc 3-6v micro submersible pump mini water pump for fountain garden mini water circulation system diy project dc 3v to 6v submersible pump micro mini submersible water pump 3v to 6vdc water pump for diy dc pump for hobby kit mini submersible pump motor this is a low cost, small size submersible pump motor which can be operated from a 2.5 ~ 6V power supply. It can take up to 120 liters per hour with very low current consumption of 220ma. Just connect tube

pipe to the motor outlet, submerge it in water and power it. Make sure that the water level is always higher than the motor. The dry run may damage the motor due to heating and it will also produce noise.

Description:

This is lightweight, small size, high efficiency, low consumption and low noise water pump. It has been used widely; in household include cooking, cleaning, bathing, space heating and water flowers, etc. Note: Please do not test long time with no-load, inside is with plastic leaves, can't suction impurity.

H. Power Supply

Almost all basic household electronic circuits need an unregulated AC to be converted to constant DC, in order to operate the electronic device. All devices will have a certain power supply limit and the electronic circuits inside these devices must be able to supply a constant DC voltage within this limit. That is, all the active and passive electronic devices will have a certain DC operating point (Q-point or Quiescent point), and this point must be achieved by the source of DC power. The DC power supply is practically converted to each and every stage in an electronic system. Thus a common requirement for all this phases will be the DC power supply. All low power system can be run with a battery. But, for long time operating devices, batteries could prove to be costly and complicated. The best method used is in the form of an unregulated power supply –a combination of a transformer, rectifier and a filter

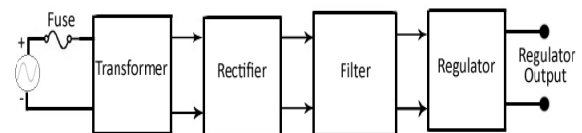


Fig.9 : Block Diagram of a Power Supply

I. Transformer:

A transformer is a static electrical device that transfers energy by inductive coupling between its winding circuits. A varying current in the primary winding creates a varying magnetic flux in the

transformer's core and thus a varying magnetic flux through the secondary winding. This varying magnetic flux induces a varying electromotive force (EMF) or voltage in the secondary winding. Transformers range in size from thumbnail-sized used in microphones to units weighing hundreds of tons interconnecting the power grid. A wide range of transformer designs are used in electronic and electric power applications. Transformers are essential for the transmission, distribution, and utilization of electrical energy.

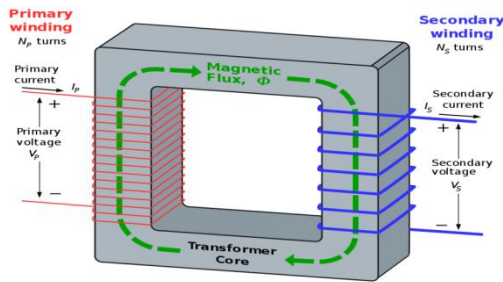


Fig.10: Transformer

J. Rectifier:

A rectifier is an electrical device that converts alternating current (AC), which periodically reverses direction, to direct current (DC), which flows in only one direction. The process is known as rectification. Physically, rectifiers take a number of forms, including vacuum tube diodes, mercury-arc valves, copper and selenium oxide rectifiers, solid-state diodes, silicon-controlled rectifiers and other silicon-based semiconductor switches. Historically, even synchronous electromechanical switches and motors have been used. Early radio receivers, called crystal radios, used a "cat's whisker" of fine wire pressing on a crystal of galena (lead sulfide) to serve as a point-contact rectifier or "crystal detector". Rectifiers have many uses, but are often found serving as components of DC power supplies and high-voltage direct current power transmission systems.

Rectification may serve in roles other than to generate direct current for use as a source of power. As noted, detectors of radio signals serve as rectifiers. In gas heating systems flame rectification is used to detect presence of flame. The simple process of rectification produces a type of DC

characterized by pulsating voltages and currents (although still unidirectional). Depending upon the type of end-use, this type of DC current may then be further modified into the type of relatively constant voltage DC characteristically produced by such sources as batteries and solar cells. A more complex circuitry device which performs the opposite function, converting DC to AC, is known as an inverter.

- Single-phase rectifiers
- Half-wave rectification
- Full-wave rectification

K. Filter Capacitor:

Filter capacitors are capacitors used for filtering of undesirable frequencies.

They are common in electrical and electronic equipment, and cover a number of applications, such as:

- Glitch removal on Direct current (DC) power rails
- Radio frequency interference (RFI) removal for signal or power lines entering or leaving equipment
- Capacitors used after a voltage regulator to further smooth dc power supplies
- Capacitors used in audio, intermediate frequency (IF) or radio frequency (RF) frequency filters (e.g. low pass, high pass, notch, etc.)
- Arc suppression, such as across the contact breaker or 'points' in a spark-ignition engine

Filter capacitors are not the same as reservoir capacitors, the tasks the two perform are different, albeit related. The simple capacitor filter is the most basic type of power supply filter. The application of the simple capacitor filter is very limited. It is sometimes used on extremely high-voltage, low-current power supplies for cathode-ray and similar electron tubes, which require very little load current from the supply.

The capacitor filter is also used where the power-supply ripple frequency is not critical; this frequency can be relatively high. The capacitor (C1) shown in figure 4-15 is a simple filter connected across the output of the rectifier in parallel with the load



Fig.11: Capacitor

L. Resistor:

A resistor is a passive two terminal electrical component that implements electrical resistor as a circuit element. The current through a resistor is in direct proportion to the voltage across the resistor's terminals.

This relationship is represented by Ohm's law. where I is the current through the conductor in units of amperes V is the potential difference measured across the conductor in units of volts and R is the resistance of the conductor in units of ohm .The ratio of the voltage applied across a resistor's terminals to the intensity of current in the circuit is called its resistance, and this can be assumed to be a constant (independent of the voltage) for ordinary resistors working within their ratings.

Resistors are common elements of electrical networks and electronic circuits and are ubiquitous in electronic equipment. Practical resistors can be made of various compounds and films, as well as resistance wire (wire made of a high-resistivity alloy, such as nickel-chrome).Resistors are also implemented within integrated circuits particularly analog devices, and can also be integrated into hybrid and printed circuits.

The electrical functionality of a resistor is specified by its resistance: common commercial resistors are

manufactured over a range of more than nine orders of magnitude. When specifying that resistance in an electronic design, the required precision of the resistance may require attention to the manufacturing tolerance of the chosen resistor, according to its specific application.

The temperature coefficient of the resistance may also be of concern in some precision applications. Practical resistors are also specified as having a maximum power rating which must exceed the anticipated power dissipation of that resistor in a particular circuit: this is mainly of concern in power electronics applications. Resistors with higher power ratings are physically larger and may require heat sinks. In a high-voltage circuit, attention must sometimes be paid to the rated maximum working voltage of the resistor.

Practical resistors have a series inductance and a small parallel capacitance; these specifications can be important in high-frequency applications. In a low-noise amplifier or pre-amp, the noise characteristics of a resistor may be an issue.

The unwanted inductance, excess noise, and temperature coefficient are mainly dependent on the technology used in manufacturing the resistor.

They are not normally specified individually for a particular family of resistors manufactured using a particular technology. A family of discrete resistors is also characterized according to its form factor, that is, the size of the device and the position of its leads (or terminals) which is relevant in the practical manufacturing of circuits using them.



Fig.12: Resistor

M. Voltage Regulator:

A voltage regulator is designed to automatically maintain a constant voltage level. A voltage regulator may be a simple "feed-forward" design or may include negative feedback control loops. It may use an electromechanical mechanism, or electronic components. Depending on the design, it may be used to regulate one or more AC or DC voltages. Electronic voltage regulators are found in devices such as computer power supplies where they stabilize the DC voltages used by the processor and other elements. In automobile alternators and central power station generator plants, voltage regulators control the output of the plant. In an electric power distribution system, voltage regulators may be installed at a substation or along distribution lines so that all customers receive steady voltage independent of how much power is drawn from the line.

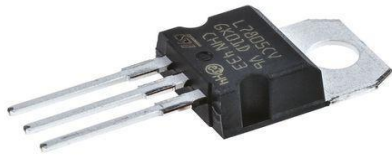


Fig.13: Voltage Regulator

VI. ALGORITHM

Step 1: START

Step 2: Give Power supply to Circuit

Step 3: Connect the sensor pins to NODEMCU

Step 4: Provide proper WiFi Connection to the NODEMCU board

Step 5: Checking Soil moisture sensor values and

Step 6: Publish the soil moisture

Step 7: Checking DHT-11 values

Step 8: Publish the DHT-11 values to adafruit

Step 9: if Moisture sensor(Moisture content reduced)

Step 10: Send the Mail.

Step 11: Turn ON the Motor

Step 12: Otherwise

Step 13: STOP the process.

VII. RESULTS

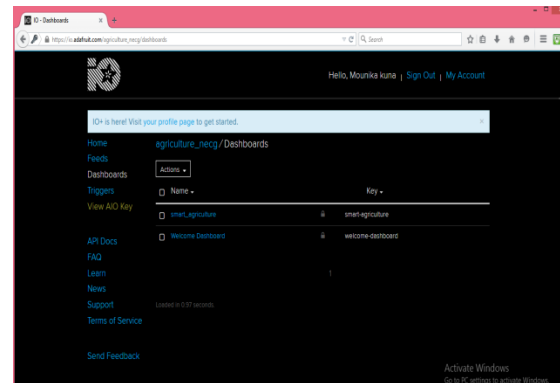


Fig.14: Create a Dashboard in ADAFRUIT through IFTTT app

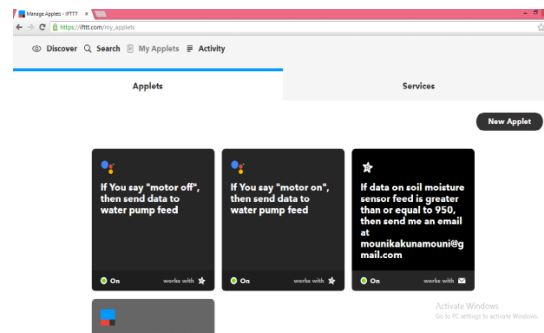


Fig .15 : My Applets in an IFTTT

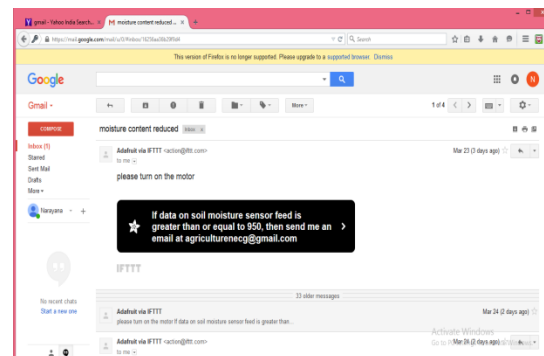


Fig.16 : Acknowledgement of Moisture Content through Mail. (turn on the motor)

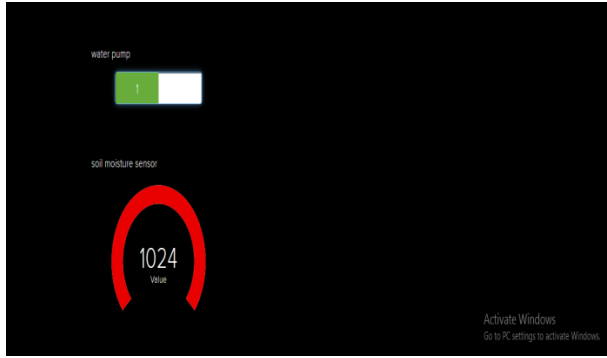


Fig.17 : Input – Moisture Content Reduced(>950).

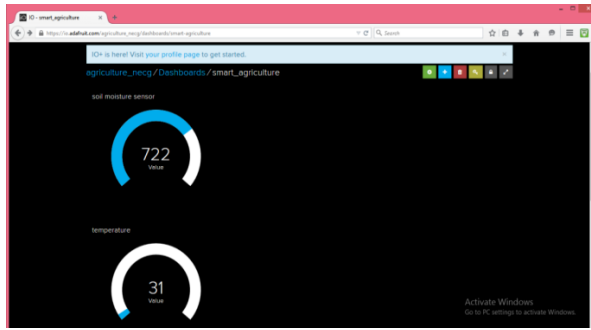


Fig.18: Soil Moisture Content is increased(<950)



Fig.19 : Final Result

VIII. CONCLUSION

A framework to screen dampness levels in the dirt was planned and the task gave a chance to contemplate the current frameworks, alongside their highlights and disadvantages. The proposed framework can be utilized to switch on/off the water sprinkler as indicated by soil dampness levels in this manner mechanizing the procedure of irrigation which is a standout amongst the most tedious exercises in cultivating. Agriculture is a standout amongst the most water-devouring exercises. The framework utilizes data from soil dampness sensors to flood soil which forestalls over irrigation or under irrigation of soil along these lines maintaining a strategic distance from trim harm. The ranch proprietor can screen the procedure online through a site. Through this undertaking it can be presumed that there can be impressive improvement in cultivating with the utilization of IOT and mechanization. Subsequently, the framework is a potential answer for the issues looked in the current manual and unwieldy procedure of irrigation by empowering proficient usage of water assets.

IX. FUTURE SCOPE

In Future, an Intelligent IoT based Automated Irrigation system can be extended not just for irrigating the field with water but also for deciding on spraying appropriate chemicals for proper growth of crop. The same work can be extended by looking into water level in tank before irrigating the field. Lastly the data security and integrity of agricultural data can be secured while transmitting for analysis towards prediction and sending the control signal for actuation.

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