Smart Irrigation System Using IOT

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ABSTRACT:
Automation of farm activities seems to have the possibility of transforming the agricultural domain from one that is manual and static to one which is intelligent and dynamic, leading to greater outcome with less human supervision. The above document suggests a robotic irrigation system that makes use of automatic watering to monitor and maintain the desired soil moisture content. The control unit is applied using a microcontroller ATMEGA328P on an arduino uno platform. The system utilizes soil moisture sensors to identify the precise moisture level in the soil. This value makes it possible to use an appropriate quantity of water while ignoring over/under irrigation. IOT is used to keep farmers notified of the status of their sprinklers. [1]

I.   INTRODUCTION:

Agribusiness is hurting the economy of many nations all over the globe. Despite the movement of money, development is the basis of the economy. The Horticulture is an industrial foundation. It increases the people entire yield. Farming relates to the nature of food from a comprehensive network and some materials that institutions find unpleasant. However, given that In green environments, there would be creature blocks. a huge loss of yields. Crushed yield will be generated. totally. Ranchers' concerns would be freely represented. misfortunes. It is crucial to safeguard communal fields or domains from animals to ensure a basic separation from these economic crises. To resolve this problem, will serve as a framework in our suggested safeguarding measuresshields the gather from harming the yield of the yield of the proposition by expanding gathering. The structure would not be Perilous and inconvenient to creatures similarly as people. The focal point of the endeavor is the utilization of the installed framework to structure a brilliant assurance system for home protection. Electric divider utilized in flow procedure to shield the yields from the wild animals. Due to high-control creatures, it is generally debilitated and not just influences wild animals, it is likewise perilous to pet animals and even people. The electrical divider is utilized to protect the yields, however was utilized to observe the animals in the flow methodology camera, which is monetarily astonishing expense. In the framework, the sign is accessible, however it sends the message just to the forest official not to leave people in the farmland. [2]

TECHNOLOGIES USED:
Atmega328P:
The Atmega328P embedded device (IC) is a programmable microcontroller used for taking information from controlling the electronic systems that are connected to it via sensors. C++ and the Atmega328P are the scripting language used. using the Arduino IDE programHave an Atmega328P digital input and output, in addition to analogwrite, pins analogue input and output pins. [3]
FC-28:
The FC-28 is a sensor for measuring soil moisture and is used with the Arduino Uno. FC-28 works on a relatively simple detection of soil resistance When there is more water in the soil, the conductivity of the current will increase, causing less resistance, and when there is less water in the soil, the conductivity of the current will fall, causing increased resistance.Hence, we may measure the soil's water content by estimating the current flow.
**Rain Sensor:**
The rain sensors detect rain, and its main use is resistance checking. The sensor has two different conduction printed leads on its outer surface. When water droplets fall on the sensor's surface, the circuit completes, creating a resistance that is dramatically lower than the sensor's open circuit resistance, and the observed data is sent to the controlling unit

II. Literature review:

An Online Control and Measuring System for a Greenhouse The proposed system, which was based on GSM-SMS introduced a GSM-SMS remote measurement and control system for farms that was connected to a base station through a PC-based database system. A cpu, GSM module, sensors, and actuators are employed during the development of ground stations.In real use, the central station uses a GSM module to receive and send messages. The central station determines the lowest parameter value for each base station, and then base station parameters such as air temperature and air humidity were measured here. The Android SDK provides the tools and APIs needed to begin developing Programming language applications for the Android platform. The multiple needs of humans are almost totally met by mobile phones, that have almost become a part of us. This application uses the GPRS capabilities of a mobile phone as a means of irrigation control. These solutions weren't cost effective and only covered a tiny fraction of agriculture field. [4]

III. METHODOLOGY:

The primary objective of the proposed system is to collect sensor data and convey it to the user whenever they require it to check the required soil moisture and water pump status. As a gateway server, the Esp8266 NodeMCU-12E connects to the Internet. It operates as a small network having control over the sensors providing updates on the soil moisture content, water pump status, and component status. Using security Protocol, the data is secured..For our project, we've selected a two-channel relay module having five voltages and ten watts of electrical power and a soil moisture sensor which can track both conventional and digital information.In addition, MQTT Server constantly stores the data. The advantage of using the MQTT protocol and the cryptographic transport layer security (TLS) protocol is that no deceptive information is retained along with the information that is required. [5]
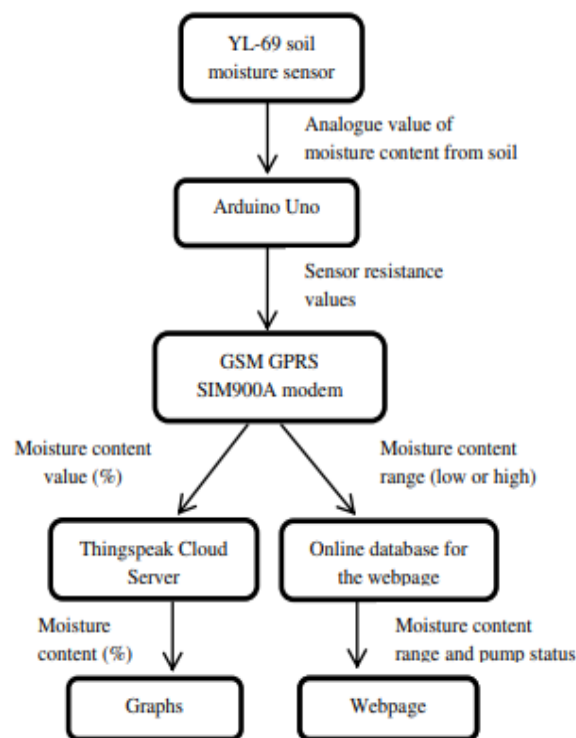
WORKING PRINCIPLE:

After a user command, the system analyzes the soil moisture using a sensor and, according to the information provided by the sensor, operates the water pump or motor. If the soil has sufficient water in it, the control won't start the motor.Rain is continuously recorded by the rain sensor. The control unit stops the water pump or motor according to the sensor data if rain starts falling. The sensor detects the start of rain and sends a signal to the control unit.The control unit generates a graphical representation of the sensor data and continually uploads it to cloud storage using the BOLT module. [6]
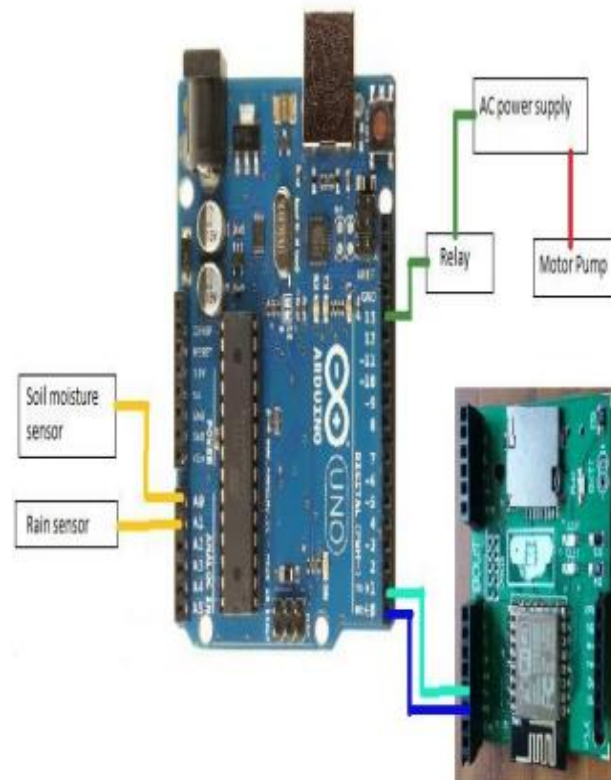
IV.   CONCLUSION:

The project provided the opportunity to look at existing methods, their benefits and drawbacks, and the design of a system to monitor soil moisture levels. The irrigation process, one of the most tedious duties in farming, can be simplified via the suggested technique of turning on and off the water sprinkler according with soil moisture levels. One of the activities that necessitates the most water is agriculture. The system uses data from soil moisture sensors to irrigate the soil, assisting to avoid crop damage by avoiding over- or under-irrigation of the soil. Through a website, the farm owner may follow the steps online. The study has shown that the use of automation and the Web of Information could significantly improve farming. Thus, by allowing ideal use of water resources, the system offers an effective remedy for the problems found in the present manual and costly irrigation procedure.

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