THE SMART IRRIGATION SYSTEM USING IOT

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ABSTRACT: Agriculture is the most important and worshipped occupation in India. Agriculture is livelihood for the most of the Indian who has rural background. Smart Irrigation helps to the development of agricultural country. In India, agriculture contributes about 16% of total GDP and 10% of total exports. Water plays an important role in Agriculture. Water is main resource for Agriculture. Irrigation is one method to supply water. In this irrigation process people are wasting water more by missing the timings. So too save water and time we have a excellent method called Smart irrigation system using IoT. By the smart irrigation system we are using various equipments like temperature sensor, humidity sensor, and soil moisture sensor. These sensors will find the various situations of the soil and based on soil moisture percent, land gets automatically irrigated. It means when field needs water then automatically motor will get ON and it will get OFF when it's get enough. These sensed parameters and motor status will be displayed on user devices.

Keywords: Smart Irrigation, IOT Smart system, Agriculture using IOT, Smart Agriculture.

I.   INTRODUCTION

India is one of the countries which have largest population in the world. Agriculture is the most important source of income in India to maintain good economy. In India agriculture provides employment to almost 70% of the population and it is the cause of 25% GDP.As increasing the agriculture in country, government is providing some online facilities and some service providers to the farmers to maintain good agricultural profits.

Most of the farmers are facing a major problem with water. Irrigation plays an important role in agriculture. To overcome this water deficiency in country we have to save it as we can. Unnecessary irrigation should be avoided. Farmers have been using irrigation through manual control. They irrigate the land at particular time.

The previous survey farming uses almost 80% of fresh water world. If it is continued world has to face many water deficiency problems according to the demand of food for increasing population. We have to manage the water by irrigating properly. For this smart irrigation helps a lot. By arranging some useful sensors like temperature, humidity, soil moisture sensors will find the percent of moisture in soil. Then if the moisture percent is low, then motor will gets ON atomically and OFF when it maintains a sufficient percent.

II.   EXISTING SYSTEM

Primary investigation is administered under the subsequent stages, like Understanding the existing approaches, Understanding the wants, developing an abstract for the system. Soil moisture sensor, temperature and humidity sensors placed at roots of a plant and the data is given to android app. The value of soil moisture is given to micro controller to control water quantity. Temperature, humidity and soil moisture values are displayed on the app in user's device. Smart Irrigation System on Sensing Soil Moisture, intension is to create an automated irrigation process which turns the water motor ON and OFF on detecting moisture percent of the earth.

Smart irrigation system developed for the irrigational use of agriculture, which is placed at the remote location and required water provides for plantation when the moisture of the soil gets low than the set-point value. This smart irrigation system made use of GSM to control the system which may cost more. A wireless application of drip irrigation automation supported by soil moisture sensors in this smart irrigation is carried out using soil moisture values. Butnthis IOT smart system displays temperature and humidity values.

III.   PROPOSED SYSTEM

All the sensors i.e. moisture sensor, humidity sensor, temperature sensor, is connected to the microcontroller.5volts of power is supplied to the micro controller. From that microcontroller a relay gets the information about the percent of the moisture in the soil. If the moisture percent is low then the motor gets automatically ON and the notification is sent to the user device. Block diagram of arduino based smart irrigation system which consist of three sensors which are connected to controller and sensed values from these sensors are send to the mobile application.
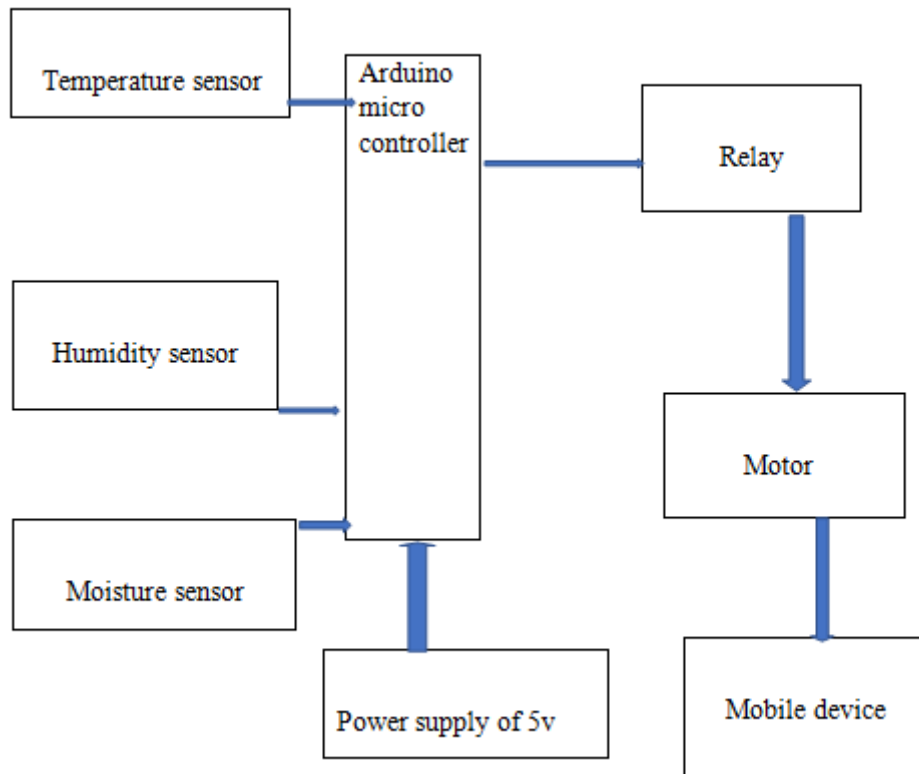
Fig 1: System Architecture Diagram

IV. DESIGN AND DEVELOPMENT

Design of this SMART IRRIGATION SYSTEM explains temperature, humidity and soil moisture values using flow chart. With the help of the sensors information the system came to know values of soil moisture, temperature and humidity. In these smart irrigation system low cost soil moisture sensors, temperature sensors, Wi-Fi module is used. They continuously monitor the sector and send it to the online server using transmitter. The sensor data are stored in database. The web application is meant in such hoe to research the info received and to see with the edge values of moisture and temperature. The decision making is completed at server to automate irrigation. If soil moisture is a smaller amount than the edge value the motor is switched ON and if the soil moisture exceeds the edge value the motor gets turned ON . It proposes low cost and wireless sensors to accumulate the soil moisture and temperature from farm locations. information's the water level should also be monitored and should be notified when there is a fall in water level of the water source.
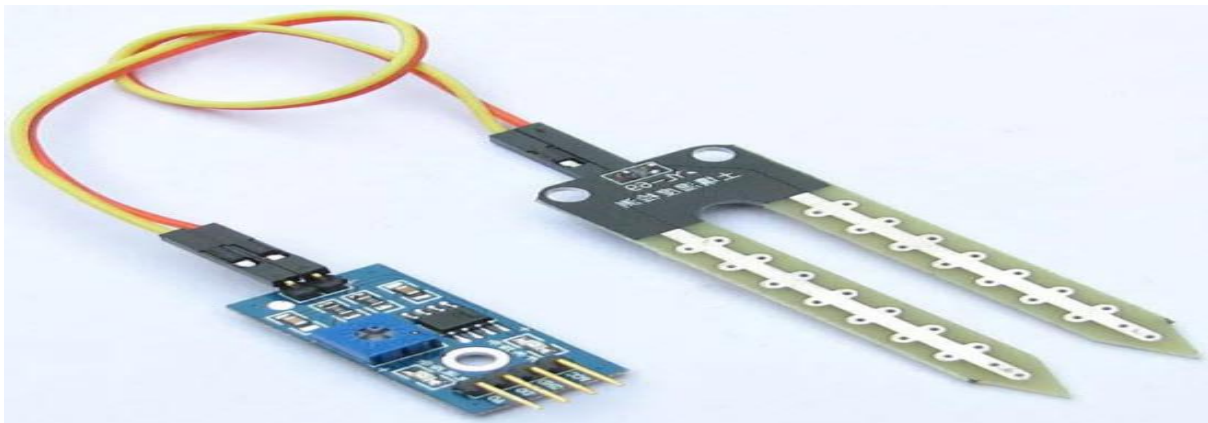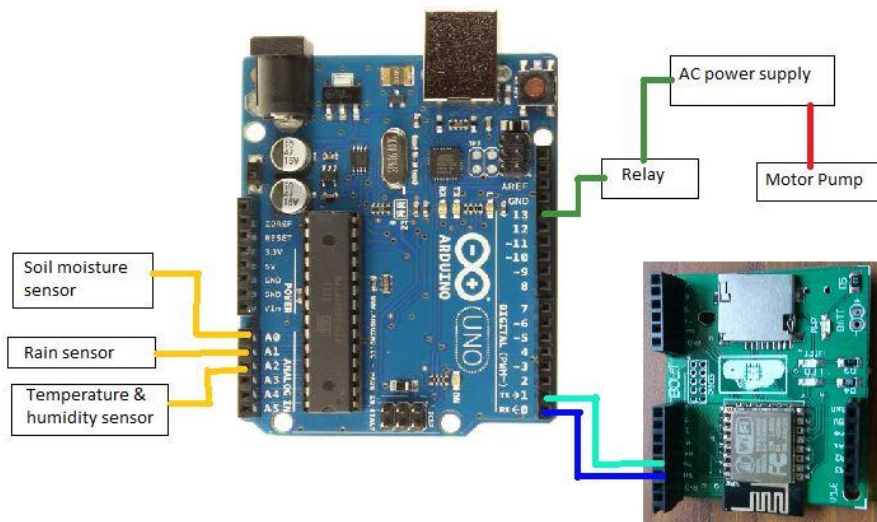
Fig 2: Soil Moisture Sensor

Fig 3: Smart irrigation control system

From the above connection we confirm that all the sensors are connected to the microcontroller and with the wifi module successfully. In the circuit the ardiuno microcontroller is with software code including water motor control and the soil moisture sensor is connected to the soil and it collects the value of moisture to the microcontroller.
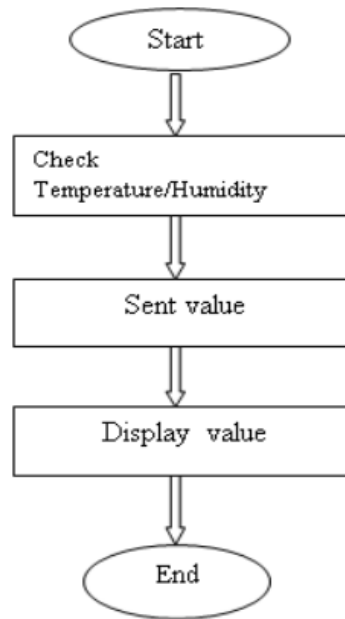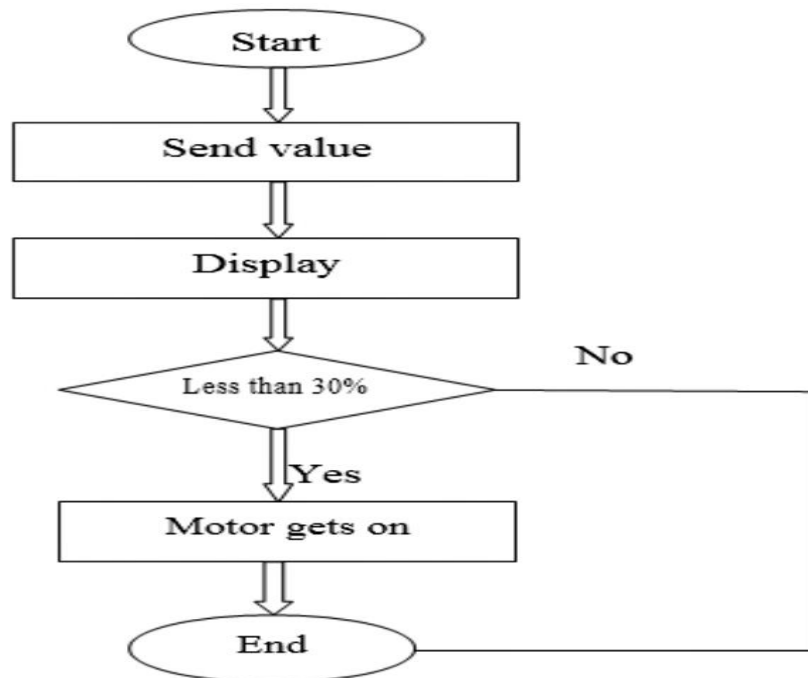
Fig 4: Temperature and Humidity Sensor
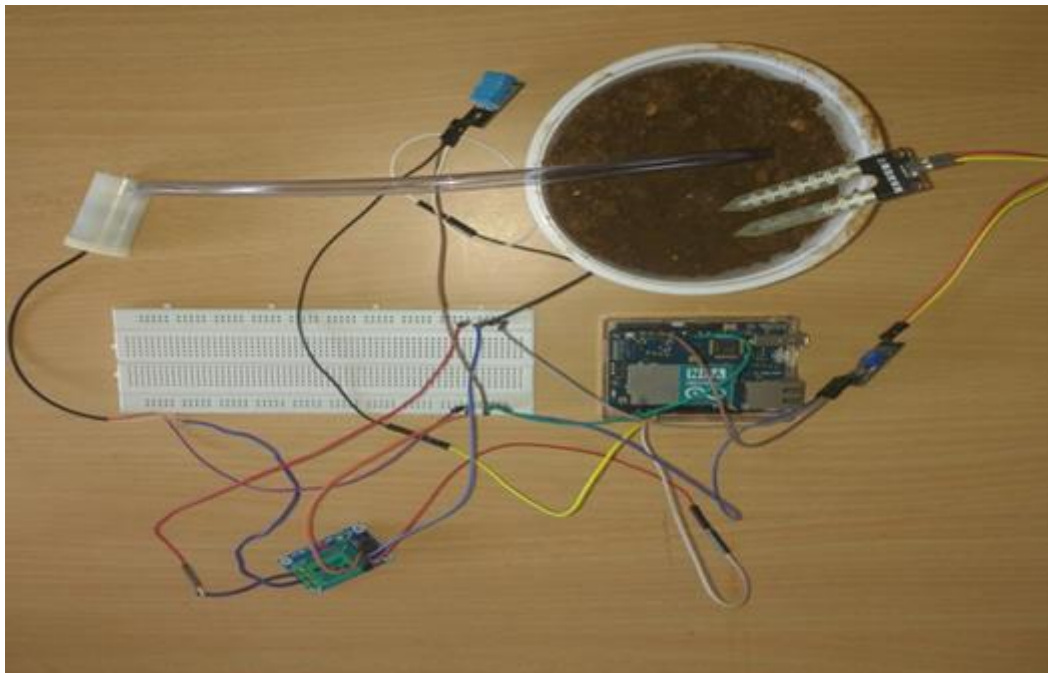
Fig 5: Soil Moisture Sensor

Fig 6: Smart Irrigation System Using IOT

V. RESULTS

The attached sensors will find the various situations of the soil and based on soil moisture percent, land gets automatically irrigated. It means when field needs water then automatically motor will get ON and it will get OFF when it's get enough. These sensed parameters and motor status will be displayed on user devices. These have been running successfully. It will reduce the farmer pore as well. By this type of Smart Irrigation System we can save water and we can maintain soil moisture percent, and it reduces power loss of humans.
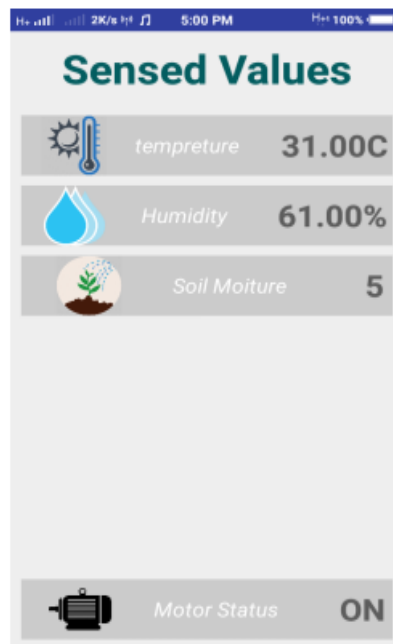
Fig 7: Sensors displays the values in the user device

VI. CONCLUSION

The application of agriculture networking technology is need of the fashionable agricultural development, but also an important symbol of the future level of agricultural development; it will be the future direction of agricultural development. After building the agricultural water irrigation system hardware and analyzing and researching the network hierarchy features, functionality and therefore the corresponding software architecture of precision agriculture water irrigation systems, actually applying the web of things to the highly effective and safe agricultural production has a significant impact on ensuring the efficient use of water resources also as ensuring the efficiency and stability of the agricultural production.

VII. REFERENCES

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