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IOT based Smart Home Garden Irrigation System using NodeMCU

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Abstract: — In this day and age programmed frameworks are more favored than manual framework. This paper approaches a structure for garden watering framework dependent on android application utilizing NodeMCU. Brilliant nursery water system is the programmed control and checking of greenhouse parameters and furthermore for nursery watering. The framework utilized Android application is utilized to control and screen the machines and Wi-Fi innovation as a correspondence convention to interface framework segments. Contingent on the dampness dimension of greenhouse soil and light force, the framework can identify the proper time of water supply to the plants and trees in the nursery. The simple information got from the sensor is transmitted as computerized signal by means of Wi-Fi module to the NodeMCU. It makes hard for individual to see all garden parameters time to time and take care in like manner. Along these lines, this framework beats this restriction to wind up keen garden water irrigation framework.

Keywords— NodeMCU, Moisture Sensor, Temperature Sensor, Humidity Sensor, Shelter Motor, Motor driver, Android Application

I INTRODUCTION

As the world is slanting into present day advances and executions it is an essential objective to water home greenhouse time to time and in productive way, to give required sunrays and avoid additional warm sunrays to enter in nursery by light finder, to screen this all framework on IOT far distance correspondence too. Numerous inquiries about are working in the field of water system. Most ventures mean the utilization of remote sensor system 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 components. Observing the ecological variables isn't the finished answer for increment the yield of greenhouse trees. There are number of different elements that reduction the profitability to a more prominent degree. Subsequently mechanization must be actualized in flooding fields to beat 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 home greenhouse. Be that as it may, total robotization in

water system isn't accomplished because of different issues. So we are executing a full verification framework which will shield our greenhouse plants from overwatering and over direct daylight. Proposed framework contains a temperature sensor and light sensor to oversee asylum opening and shutting as per daylight, Moisture sensor for programmed water system of plants as per soil sogginess.

II PROBLEM STATEMENT

In the event that nobody is at home it ends up hard to us to deal with nursery at home. Greenhouse requires water system and sun beams security time to time and it makes hard for individual to see this opportunity to time. Consequently system is proposing which will flood greenhouse and spread or open it naturally as per temperature of daylight.

III LITERATURE SURVEY

N. Agrawal et al. [1] depict this paper proposes a structure for home mechanization framework utilizing prepared to-utilize, financially savvy and vitality proficient gadgets including raspberry pi, Arduino microcontrollers, xbee modules and transfer sheets. Arduino microcontrollers are utilized to get the on/off

directions from the raspberry pi utilizing zigbee convention. The utilization of ultrasound sensors and solenoid valves make a brilliant dribble water irrigation framework.

Yao Chuanan et al. [2] presents a control structure of remote sensor arrange framework dependent on radio recurrence (RF) handset for nursery, which comprises of some sensor hubs put in the nursery and an ace hub associated with upper PC in the observing focus. The sensor hubs gather sign of nursery temperature, moisture, light and CO₂, control the actuators, and transmit the information through the remote RF handset; the ace hub gets the information through the RF handset and sends the information to the upper PC for ongoing observing.

M. Sagi, et al. [3] portray water irrigation framework is a strategy for enabling water to dribble gradually to the underlying foundations of plants, either onto the dirt surface or legitimately onto the root zone, through solenoid valve. Subsequently, this paper proposes a plan for keen home nursery water irrigation framework that executes prepared to-utilize, vitality proficient, and savvy gadgets. Raspberry Pi, which is executed in this framework, is incorporated with multi-sensors, for example, soil moisture sensors, ultrasonic sensors, and light sensors. This proposed framework figured out how to decrease cost, limit waste water, and lessen physical human interface. It is led with GUI utilizing Android application to actuate watering movement.

S. Folea et al. [4] portray the sensors can be had practical experience in estimating temperature, mugginess, weight, light, commotion, dust air, etc. In this paper, an answer for change a typical house in a shrewd house while decreasing the vitality utilization is proposed.

T. Thamaraimanalan et al. [5] Android programming is utilized to make portable applications which are utilized to screen the parameters of the greenhouse and mechanize the watering procedure. NodeMCU is utilized to interface various sensors which gather the parameters of soil and transmits the data to firebase through inbuilt Wi-Fi.

Satyam Kumar Sinha et al. [6] present IOT based shrewd nursery observing framework which sense the prerequisite of the plant and furnish it with water as the dirt loses its moisture. Various soils have diverse richness and moisture level so we have soil and moisture sensor utilized in this to distinguish this issue. In our nation there are six distinct seasons and every day have diverse temperature and moistness level so to check the

temperature and mugginess for the better wellbeing and survival of plant temperature and stickiness sensor are utilized which consistently sends information to the server. Along these lines it figures out how to play out its tasks naturally.

IV PROPOSE SYSTEM

In this paper, the proposed technique comprises of various sensors like moisture, temperature and light sensor. At first the NodeMCU is associates with the web through Wi-Fi. At the point when the association is built up it will begin perusing the parameters of sensors. The limit levels for the required sensors are set. The sensor information are sent to the web server and put away in the cloud. The information can be dissected anyplace whenever. In the event that the sensor parameters are more noteworthy than the edge level, at that point the separate required activation is accomplished for the controlling of the parameters.

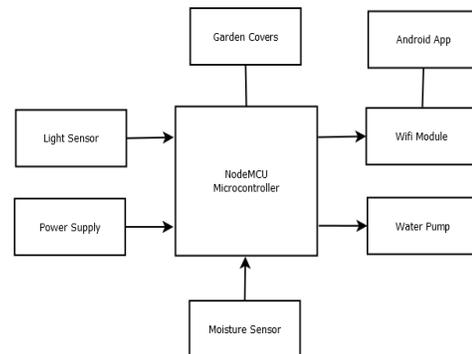


Figure 1: Block diagram of propose system

In the proposed model the moisture, temperature and light sensor in the nursery is checked. The temperature and the moisture discovery are put away in cloud for examination. On the off chance that the temperature surpasses the limit level, at that point the cooler will turn on naturally and it will off when the temperature comes to control. Likewise when moisture level goes beneath limit level water pump turns on naturally and it will off when moisture come adequate dimension. The required covers on greenhouse are turned open/close naturally by recognizing the light outside the house.

Upgraded highlights are improved power utilization, expanded availability and more noteworthy IO which made this incredible, little and lightweight framework. On the off chance that the dirt moisture esteem is beneath the moisture level, at that point the pump will be ON, while if the moisture level is high pump will be OFF through the hand-off. For keeping

away from more straightforward light to the nursery, LDR is utilized which sense the light and open/close covers on greenhouse.

V RESULT

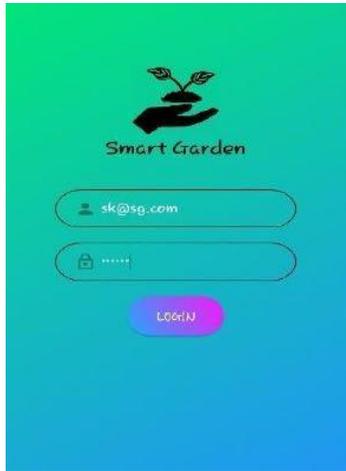


Figure 2: User login



Figure 3: Home page



Figure 4: Water level indication in tank

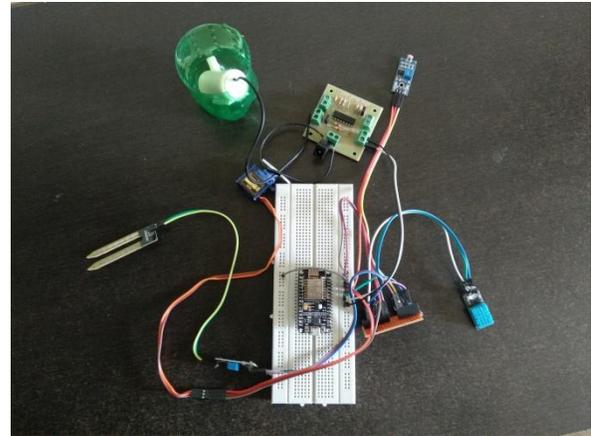


Figure 5: Project Hardware

VI CONCLUSION

In this paper, system propose an minimized brilliant smart garden irrigation framework which will control and screen various parameters of greenhouse and deal with it effectively and parameters can likewise be observed on android application.

VII FUTURE SCOPE

Proposed framework can be installing with home robotization module to make a propelled Smart Home framework which can support couple of days without human interface. It tends to be altered to greater degree and can be utilized in savvy agribusiness applications.

REFERENCES

- [1] N. Agrawal and S. Singhal, “Smart Drip Irrigation System using Raspberry Pi and Arduino”, International Conference on Computing, Communication & Automation, Noida, 2015
- [2] Yao Chuanan and Yu Yongchang, “Implementation of Greenhouse Monitoring System Based on RF Transceiver”, 2nd International Conference on Industrial Mechatronics and Automation, Wuhan, China, 2010.
- [3] M. Sagi, D. Mijic, D. Milinkov and B. Bogovac, “Smart Home Automation”, 20th Telecommunications Forum (TELFOR), Belgrade, 2012
- [4] S. Folea, D. Bordencea, C. Hotea and H. Valean, “Smart Home Automation System Using Wi-Fi Low Power Devices”, Proceedings of 2012 IEEE International Conference on Automation, Quality and Testing, Robotics, Cluj-Napoca, 2012
- [5] T. Thamaraimanalan, S. P. Vivekk, G. Satheeshkumar and P. Saravanan, Smart Garden Monitoring System Using IOT, Asian Journal of Applied Science and Technology (AJAST), 2018

[6] Satyam Kumar Sinha, Bhupendra Singh, Aashish Kumar Gupta, IOT Based Smart Garden Monitoring System, International Journal of Scientific & Engineering Research Volume 8, Issue 10, October-2017

[7] Chaudhary, D., Nayse, S., & Waghmare, L., “Application of Wireless Sensor Networks For Greenhouse Parameter Control in Precision Agriculture”, International Journal of Wireless & Mobile Networks (IJWMN), 2011