IOT BASED SMART GARDEN SYTEM

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Abstract: Agriculture plays vital part in the development of agrarian country like India. Issues concerning husbandry have been always hindering the development of the country. The only result to this problem is smart husbandry by contemporizing the current traditional styles of husbandry. Hence the proposed system aims at making husbandry smart using robotization and IoT technologies. Internet of Effects (IoT) enables colorful operations crop growth monitoring and selection, irrigation decision support, etc. A Jeer Pi grounded automatic irrigation IOT system is proposed to modernization and improves productivity of the crop. Main end of this work to crop development at low volume water consumption, In order to concentrate on water available to the shops at the needed time, for that purpose utmost of the growers waste lot time in the fields. An effective operation of water should be developed and the system circuit complexity to be reduced. The proposed system developed on the information transferred from the detectors and estimate the volume of water demanded. A two detectors are used to get the data to the base station the moisture and the temperature of the soil, the moisture, the temperature, and the duration of sun per day. The proposed systems grounded on these values and calculate the water volume for irrigation is needed. The major advantage the system is enforcing of Precision Agriculture (PA) with pall computing, that will optimize the operation of water diseases while maximizing the yield of the crops and also will help in assaying the rainfall conditions of the field.

Keywords: Internet of Things (IOT), Agriculture, Automation

INTRODUCTION

This Automation rules the world nowadays. It is a technique of using computers or mobile phones in monitoring and controlling the simple parameters of day to day life. The standard of our life will be nourished by the practice of using automation for simple things. Using the concept of IOT we make sensors to communicate with each other which are powerful in automation. The important aspect of this prototype is that it saves cost and ensures safety. When people try to make plantings and set up their own garden, they were cautious in maintenance at only in their beginning stages. As days go on due to lack of maintenance the plants get destroyed. This prototype will help people to automatically monitor the parameters and ensures maintenance of the garden. It plays a vital role and serves as a good companion for plants. IOT provides solutions for various problems and it allows things to be sensed or controlled remotely in network infrastructure. Plants are considered to be the major source of the survival and helps to purify the air filled with pollutants. Many feel responsible to plant a tree and some consider it as a hobby. planting a tree is not just burying a seed ball in the soil, it has many factors to be considered. Some plants need more care for an efficient growth. There are some plants which are grown only for showcase purposes and homemade agriculture. The required environment must be provided to the plant and should be watered time to time to make the photosynthesis happen. We also know that one kind of soil or nutrient is not sufficient to all the plants to grow better. Each plant has its characteristics to gain a high yield. To overcome all these problems, we are going to set a monitoring machine. This can be defined as a system which not only monitors the growth but also gives alerts when there is a defect in the growth or proving a suitable environment. This type of system can be created with the help of Internet of Things (IOT).

PURPOSE

In an agricultural country like India a lot of people will work with green thumb in mind. Most of the people loves to grow plants at home, but due to their work schedule they very often take care of plants. The only solution to this problem is smart monitoring of the plant growth by modernizing the current traditional methods of gardening. Hence the proposed system targets at smart way of monitoring the plant growth using automation and IoT technologies. Internet of things (IoT) provides various applications for crop growth and monitoring the growth conditions.

EXISTING SYSTEM

R.Nageshwara Rao et.al, proposed a system which will helps for smart agriculture by using automatic and IoT technologies. The proposed system works on Raspberry pi based automation which improves the crop productivity. IoT provides various applications for crop growth and also helps in the decision support at the time of need. Main theme of this paper is to increase the crop productivity by consuming less amount of water. For watering the crops framers waste lot of time and also consume more than the required amount of water so to minimize the loss, this paper proposed a system which will efficiently manages the watering system with less complexity. This system works on the data which comes from the sensors used for gathering the information like moisture content, humidity and temperature of the soil. Major advantage of this system is to provide a smart agriculture and to implement an automatic watering system for farming which will helps to reduce the water consumption.

Tanu Sahu and Ashok Verma proposed an automated watering system by considering water scarcity at some regions. Excess watering will also affect the crop in many ways. Due to this the soil fertility will get reduced, crop production will get reduced, so to minimize the crop loss this system was developed with an automatic sprinkler which will distributes water to all crops in an efficient manner without any wastage of water. This system works on the data gathered like the soil temperature, humidity and

weather condition. This information will be gathered by using the temperature sensor and moisture sensor. Raspberry pi acts as a heart for this proposed system. Whenever there is a change in the moisture content or in the temperature the sensors will automatically sends the signals to the raspberry pi and it will alert the sprinklers and automatic watering will be done. This paper mainly projects the need of an automatic watering system for a proper irrigation and the development of an automated sprinkler by using raspberry pi.

1.　PROPOSED SYSTEM

The continuous in-depth research of the agricultural Internet of Things is an important measure to improve the comprehensive agricultural production performance and accelerate the development of modern agriculture. Based on the natural landscape with local characteristics, more local cultures can be tapped to expand and manufacture farming activities and tourist souvenirs with local characteristics to create a special brand of intelligent gardens.

SYSTEM ARCHITECTURE

This prototype will help people to automatically monitor the parameters and ensures maintenance of the garden. IOT provides solutions for various problems and it allows things to be sensed or controlled remotely in network infrastructure. The required environment must be provided to the plant and should be watered time to time to make the photosynthesis happen. We also know that one kind of soil or nutrient is not sufficient to all the plants to grow better. Each plant has its characteristics to gain a high yield. To overcome all these problems, we are going to set a monitoring machine.
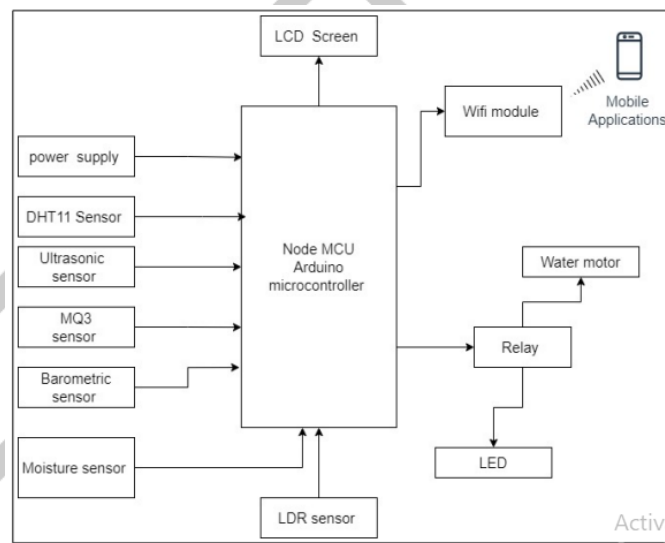

Fig -1: System Architecture Diagram

ADVANTAGES:

Connectivity – Connectivity is an important requirement of the IoT infrastructure. Things of IoT should be connected to the IoT infrastructure. Anyone, anywhere, anytime can connectivity should be guaranteed at all times without connection, nothing makes sense.

- **Intelligence and Identity** –
 The extraction of knowledge from the generated data is very important. For ex6 IOT Based Smart Garden System ample, a sensor generates data, but that data will only be useful if it is interpreted properly. Each IoT device has a unique identity. This identification is helpful in tracking the equipment and at times for querying its status.

- **Scalability** – The number of elements connected to the IoT zone is increasing day by day. Hence, an IoT setup should be capable of handling the massive expansion. The data generated as an outcome is enormous, and it should be handled appropriately.

- **Dynamic and Self-Adapting (Complexity)** –
IoT devices should dynamically adapt themselves to the changing contexts and scenarios. Assume a camera meant for the surveillance. It should be adaptable to work in different conditions and different light situations (morning, afternoon, night).

- **Safety** –
There is a danger of the sensitive personal details of the users getting compromised when all his/her devices are connected to the internet. This can cause a loss to the user. Hence, data security is the major challenge. Besides, the equipment involved is huge. IoT networks may also be at the risk. Therefore, equipment safety is also critical.

APPLICATION:
a)   Personal
b)   Gardening

DATA FLOW DIAGRAM
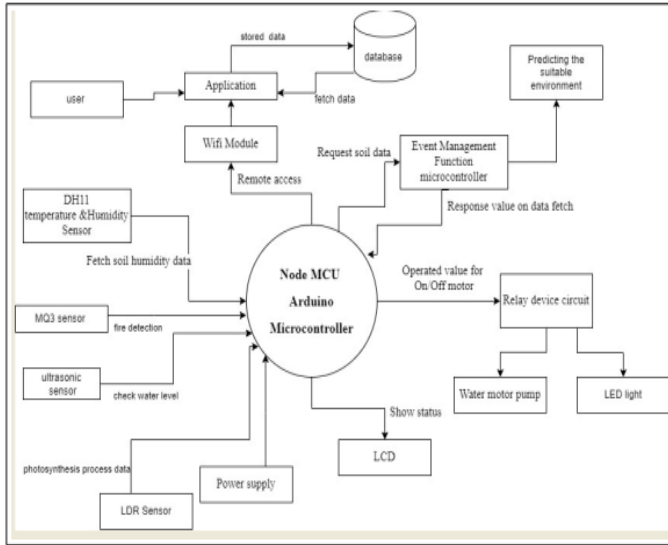
METHODOLOGY

- **Android 3.5 or Above**

Android Studio 3.5 is the perfection of this exertion. The consequences of Project Marble are centered around three center regions: framework well being, include clean and bugs. One of the significant purposes of criticism on Android Studio is how moderate the IDE runs after some time. Commonly the explanation for this experience is because of out of the blue arriving at memory weight or IDE memory spills. This usually enables users or developers to share and focus on the most moral issues. When we start with Android Studio 3.5, the IDE normally misplaces the memory statistics. As a result, we get the high-level estimation for the memory size and its related burden on the Application. With this data, the IDE can finish two things: prescribe better memory settings and offer to do an increasingly significant memory assessment.

- .**Arduino IDE**

 The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board. Arduino IDE(Integrated Development Environment) is the software for Arduino. It is a text editor like a notepad with different features. It is used for writing code, compiling the code to check if any errors are there and uploading the code to the Arduino.
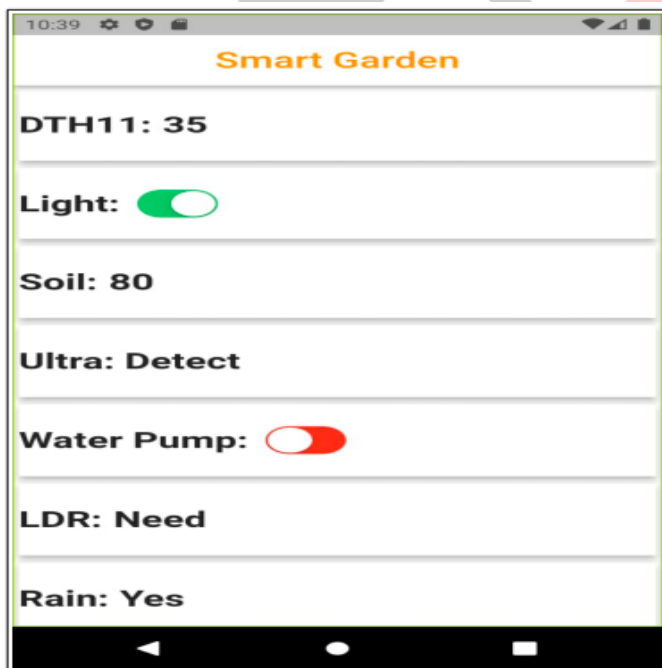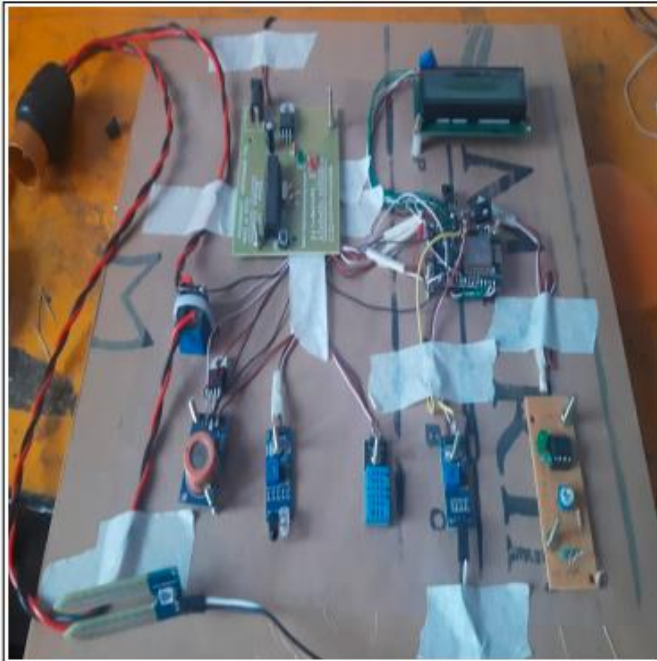
RESULTS:

Fig: 1

Fig: 2

Fig: 3

CONCLUSION

We presented the architecture and the implementation of a smart home irrigation system. The system consists of two types of sensors motes (TelosB and IRIS), special soil humidity sensors, electro-valves that are motedriven with the use of relays and a Java application that is used for data collection. Performance evaluation showed that our system manages to maintain soil hmidity levels regardless of external factors (i.e. variations at temperature and sunlight). It also proved that the system is aware of the different watering needs each.

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