



UNDERGROUND AUTOMATIC PLANT WATER SUPPLY AND MONITORING SYSTEM

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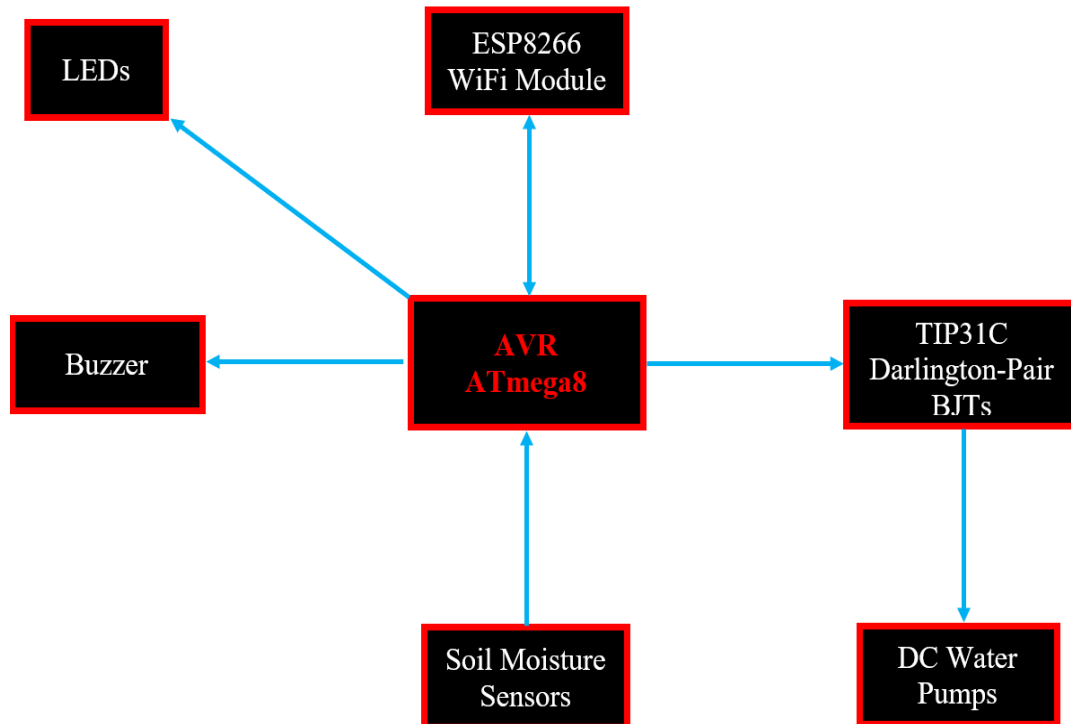
Abstract: In daily operations related to farming or gardening watering is the most important practice and the most laborintensive task. No matter whichever weather it is, either too hot and dry or too cloudy and wet, you want to be able to control the amount of water that reaches your plants. Modern watering systems could be effectively used to water plants when they need it. But this manual process of watering requires two important aspects to be considered: when and how much to water. In order to replace manual activities and making gardener's work easier, we have create automatic plant watering system. By adding automated plant watering system to the garden or agricultural field, you will help all of the plants reach their fullest potential as well as conserving water. Using sprinklers drip emitters, or a combination of both, we have design a system that is ideal for every plant in the yard. For implementation of automatic plant watering system, we have used combination of sprinkler systems, pipes, and nozzles. In this paper we have used ATmega328 microcontroller. It is programmed to sense moisture level of plants at particular instance of time, if the moisture content is less than specified threshold which is predefined according to particular plant's water need then desired amount of water is supplied till it reaches threshold. Generally, plants need to be watered twice a day, morning and evening. Thus, the microcontroller is programmed to water plants two times per day. System is designed in such a way that it reports its current state as well as remind the user to add water to the tank. All this notifications are made through mobile application. We hope that through this prototype we all can enjoy having plants, without being worried about absent or forgetfulness.

1. INTRODUCTION:-

Automatic Plant Water Irrigation System with IoT Monitoring & Control is an embedded system-based approach to implement a smart system which is able to water plants over manual or automatic control using IoT connectivity and feedback sensor system. This system can be operated in any one of the two modes that is manual control of water pump over IoT connectivity using android application or automatic control of water pump by sensing moisture level in plant's soil. It uses moisture sensors which acts as a feedback device to microcontroller in order to control pump automatically without any human interaction. If the moisture level detected by sensors is below some setpoint/threshold the system will keep water pump ON until it reaches setpoint moisture level. For manual control over IoT connectivity, a WiFi module is used which acts as a medium to connect our system to outside world over internet. This in-system WiFi is connected to one of the available WiFi or WLAN access point in order to get access to internet. To select mode of operation of system (Auto or Manual) and to control water pump manually an android application is designed which is able to connect to our system over internet for wireless control from any point/place. For watering plants, a DC/AC water pumps are used which is driven through BJTs or Relays switch. These pumps take inlet water from large water tank and sprinkles water from outlet pipeline at certain distances. Along with water pump control this system is also consists of soil moisture level monitoring and data logging over internet to one of the IoT/Cloud platform/services such as ThingSpeak, ThingsIO, AWS, etc.



2. BLOCK DIAGRAM:-



3. CONCLUSION:-

Automatic system using a microcontroller, moisture sensor and other electronic tools were been developed. It was observed that the proposed methodology controls the moisture content of the soil of cultivated land. The motor automatically start pumping water if the soil is dry and need water and stops when the moisture content of the soil is maintained as required. and to control water pump manually an android application is designed which is able to connect to our system over internet for wireless control from any point/place.

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