

Embedded Systems Project

SMART GARDENING

Group-6

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Title: Smart Agriculture System

Abstract:

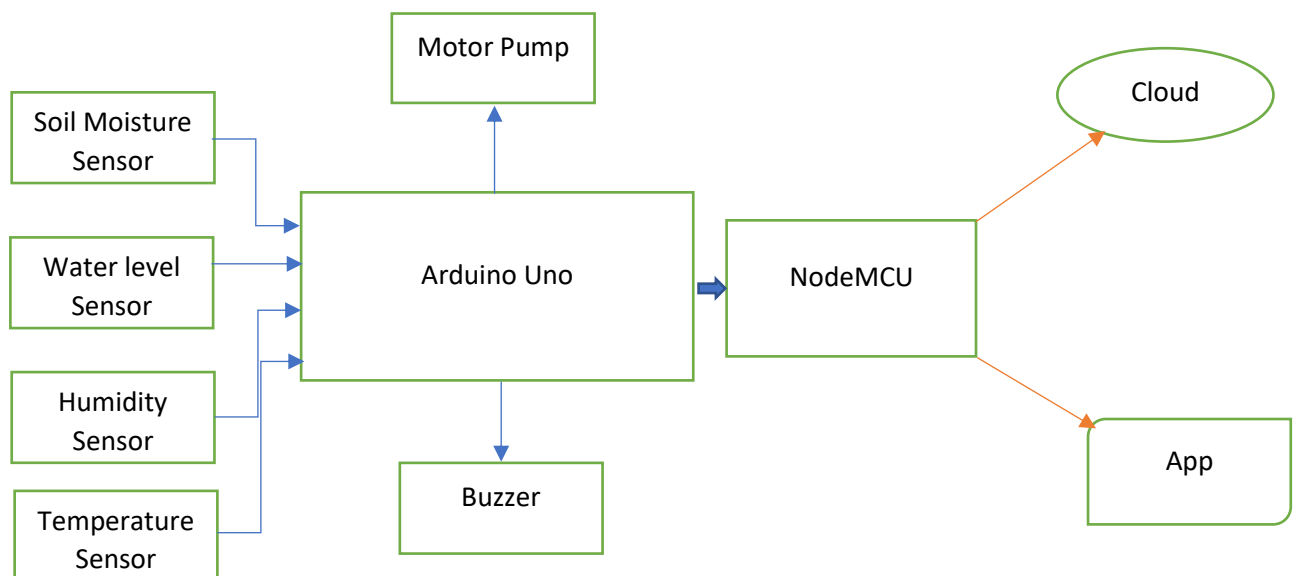
As we all know maximum amount of water is of salty in nature and we have only a little amount of water which can be used for drinking, irrigation, some other purposes. Saving the remaining water is a big challenge to humans. One of the ways is smart irrigation system, In the irrigation part smart irrigation system is thereby believed to be a major solution to control the wastage of water. The irrigation system is able to automatically start/stop water pumps on the irrigation land based on some sensors like soil moisture sensor, etc.

The measured sensor values can be sent to the Arduino board, this microcontroller will do all the operations like start/stop of the motor, buzzer, etc. In this way we can irrigate different kinds of crops based on their respective water needs. Also, the amount of water pumping out, usage of electricity can be calculated and can be saved in a cloud or can be transferred to the owner with the help of NodeMCU.

Justification:

This project is mainly to reduce the wastage of water and electricity. Lack of water leads to less crop. More water more crop. This justifies that water is very essential in irrigation. The manual irrigation needs monitoring frequently but automatic systems can be programmed to turn OFF and, ON the system, depending on various parameters. Knowing the amount of water pumped out for a crop can be helpful to the farmer.

Functional Block Diagram:



Components Required:

Hardware Components:

Component	Quantity	Available	Need to Purchase (Price)
Arduino	1	Yes	-
NodeMCU	1	Yes	-
Soil Moisture Sensor	1	No	60
Water Level Sensor	1	No	45
Motor Pump	1	Yes	-
Temp Sensor	1	Yes	-
Humidity Sensor	1	No	120
Buzzer	1	No	20

Software:

Arduino IDE

Thingspeak (Cloud)

App to share information

Mid Demonstration:

In mid demonstration expected results are sensing soil moisture and based on the sensor values ON and OFF of the pump motor, Temperature in the field, Humidity in the field. Buzzer when water in tank is empty.

Final Demonstration:

In the Final demonstration expected results are with the inclusion of automatic switching ON and OFF of motor based on the soil moisture and calculating the amount of water pumped out and power consumed and sharing this information to the farmer with NodeMCU.