

Plantation Monitoring System Based on Internet of Things



TEAM-16

Submitted By

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INTRODUCTION ✦



Nowadays world is fully overtaken by the internet and internet of things. The Internet of Things (IOT) is the network of physical objects.

It simply means to monitor a physical device or machine which is **embedded** with electronics, sensors, software and network connectivity to enable it to achieve greater value and services by exchanging data with the manufacturer.

PROBLEM STATEMENT:

Agriculture is the backbone of our country; most of the people depend on agriculture. The main issue in agriculture is water scarcity. The water resource is not used in an effective manner, so the water is wasted.

HOW TO OVERCOME THE PROBLEM USING EMBEDDED SYSTEM & IOT?

- In order to overcome the problem of scarcity and wastage of water we can make the irrigation process automated.
- The use of Microcontrollers & IOT in this field will be helpful to reduce the wastage of water. So that the temperature as well as humidity and light are measured by means of sensors and depend up on the outcome further processing can be performed.
- We propose a system that will capture all the details about the soil and the temperature by means of different sensors
- Here, IOT permits objects to be sensed or controlled remotely across the network infrastructure.

COMPONENTS NEEDED

Software Required:
ARDUINO IDE

NODEMCU
ESP8266
(190/-)

SOIL MOISTURE
SENSOR (180/-)

DHT11 (temp &
humidity sensor) (140/-)

1-channel 5V
RELAY MODULE
for Arduino(100/-)

SOLENOID
WATER VALVE OR
WATER
PUMP(200/-)

12 V BATTERY OR
Original HW
Battery(50/-)

BREAD
BOARD (300/-)

WIRES FOR
CONNECTING
DEVICES(120/-)

SMART PHONE

Total: 1,280/-

OUTCOME OF THE PROJECT

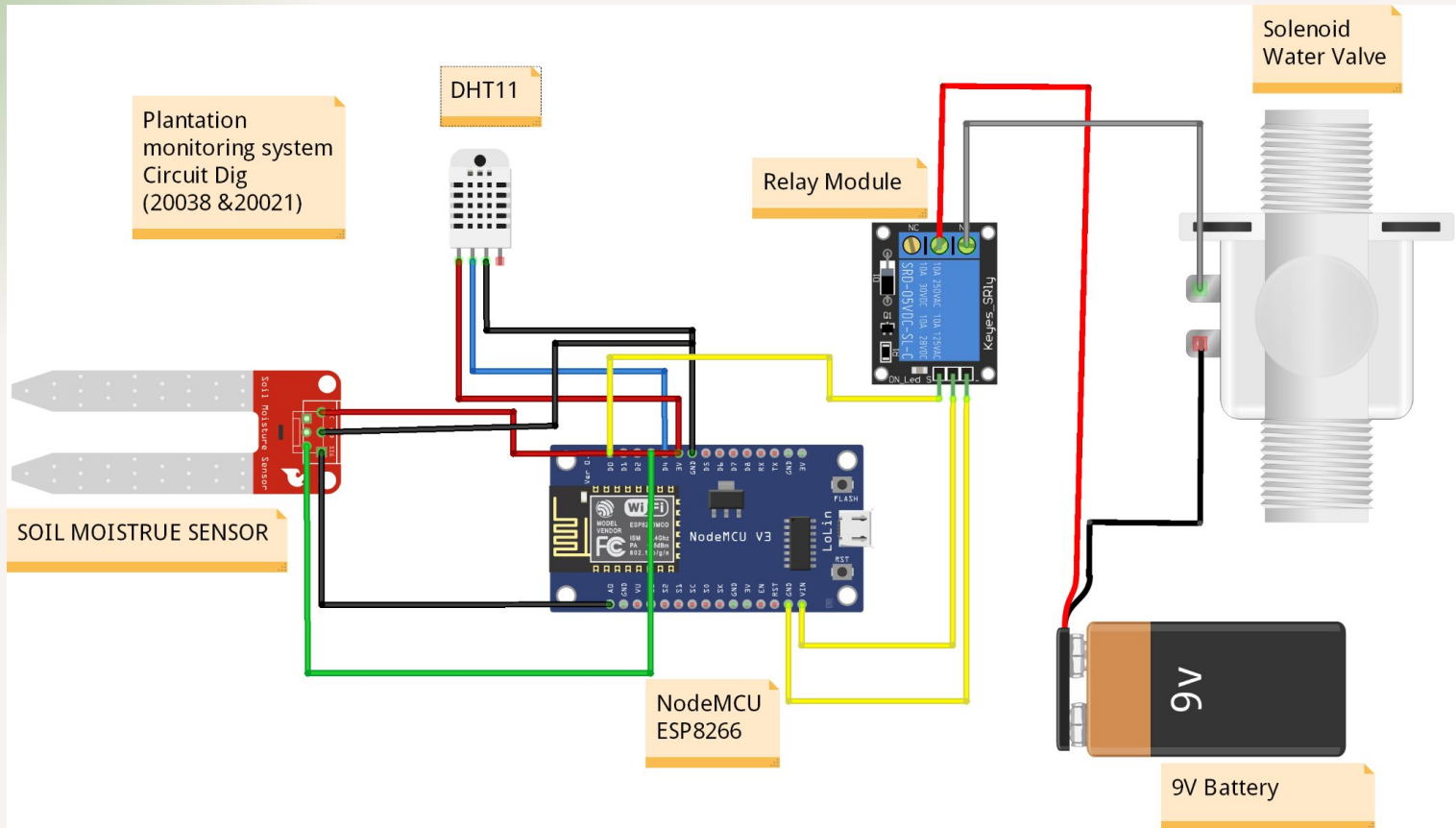
- Through the project we are able to see and check the soil moisture, temperature and humidity by transmitting the data through our smartphone wherever in the Local area and Long distance.
- If the sensor detects a lack of water an automatic watering (water treatment system) will be carried out through the pump engine which is executed by IoT. We can also control the overflow of the water through our smartphone with a simple application (BLYNK) downloaded in our phone
- Through our project we are able to reduce a great amount of water wastage all our country and can reduce the manpower to a great length.



WORKING FUNCTION

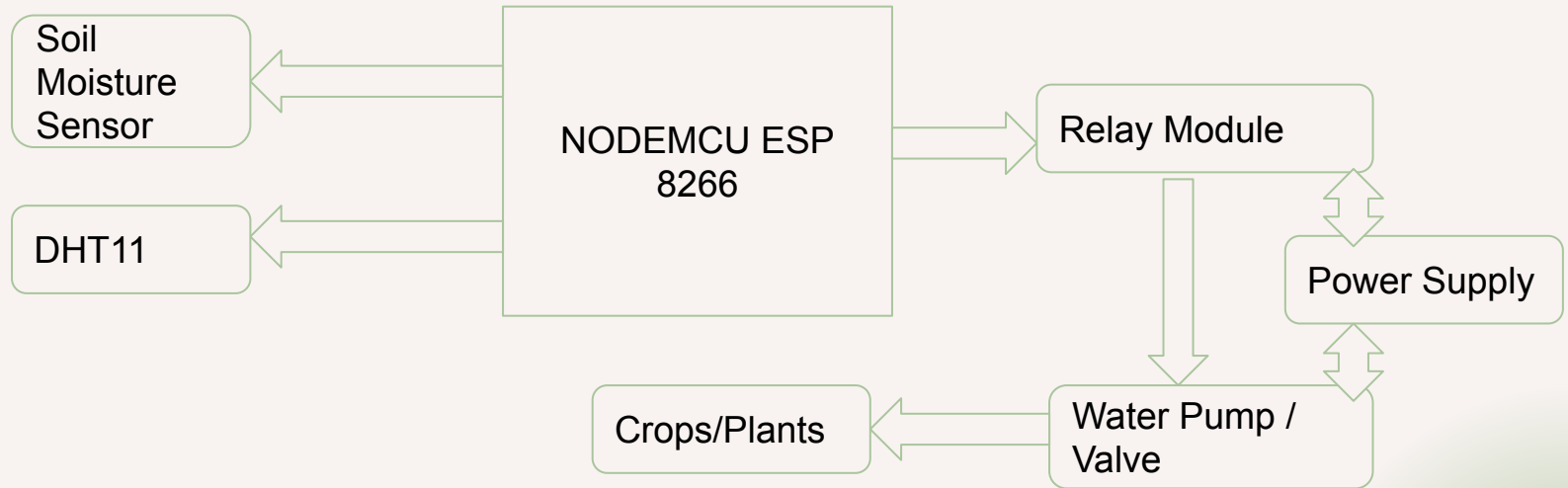
- The system will be tested to function automatically. The moisture sensors measure the moisture level (water content) of the different plants and humidity temperature of the air.
- If the moisture level is goes to be below the desired and limited level, the moisture sensor sends the signal to the MicroController Unit (Nodemcu) which triggers the Water Pump to turn ON and supply the water to respective plant using the Rotating Platform/Sprinkler.
- When the desired moisture level is reached, the system halts on it's own and the water Pump is turned OFF

CIRCUIT DIAGRAM OF THE PROJECT

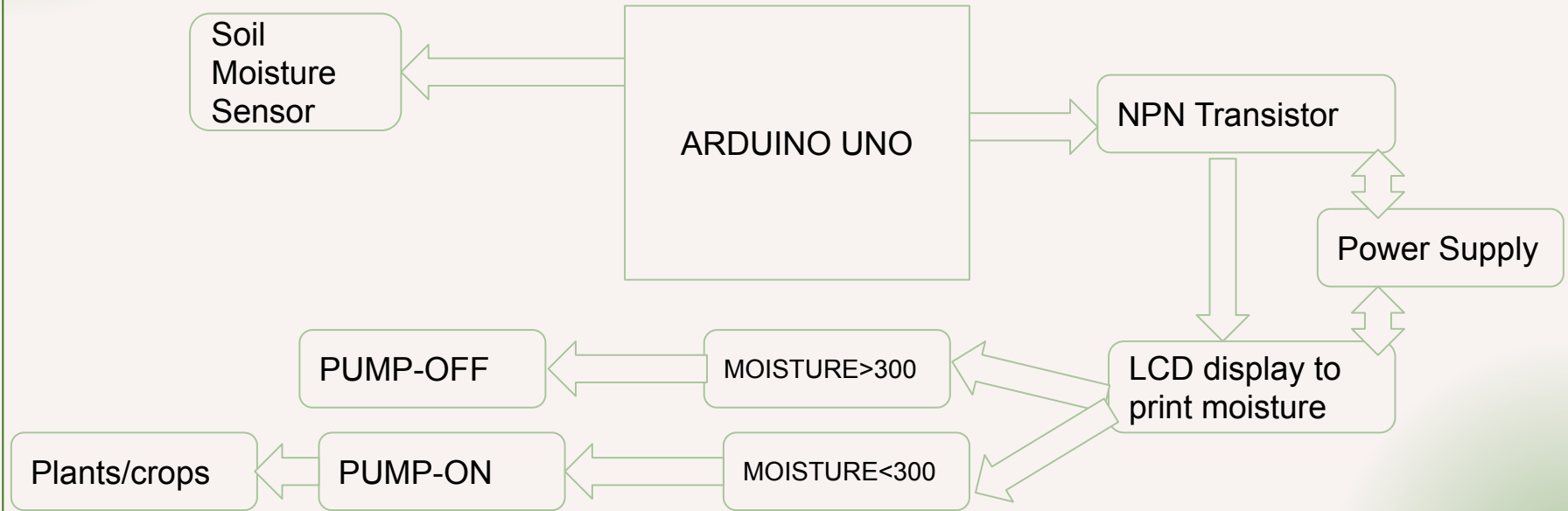


BLOCK DIAGRAM OF PROJECT

20038 & 20021



MODIFIED BLOCK DIAGRAM OF PROJECT



INDIVIDUAL CONTRIBUTION

KONDURU VENKATA PRIYANKA VARMA

[CH.EN.U4CSE20038]

- Implementation of circuit
- Done Circuit Diagram
- Literature Survey

ENGU HIMESH

[CH.EN.U4CSE20021]

- Coding on NodeMCU
- Connecting to Blynk App

LITERATURE SURVEY

- AUTOMATED IRRIGATION SYSTEM USING ARDUINO
 - Abhishek Kumar Et al
 - 2017
- The Design of Monitoring System of Smart Farming Based on IoT Technology to Support Operational Management of Tea Plantation
 - Nadia THEREZA Et al
 - 2019

PROBLEMS FACED

- Along the process of project completion, we encountered various problems and obstacles.
- Not everything that we had planned went smoothly during the project development span.
- Also, we had a limited amount of time for its completion so we were under a certain amount of pressure as well.
- We had to start from the research phase at the beginning and needed to gain knowledge on all the devices and components that we had intended to use for our project.
- Other phases of the project included coding, debugging, testing, documentation and implementation and it needed certain time for completion so we really had to manage the limited time available to us and work accordingly to finish the project within the schedule.

FUTURE SCOPE

- The performance of the system can be further improved in terms of the operating speed, memory capacity, and instruction cycle period of the microcontroller by using other high end controllers.
- The number of channels can be increased to interface more number of sensors which is possible by using advanced versions of controllers.
- The system can be modified with the use of a data logger and a graphical LCD panel showing the measured sensor data over a period of time.
- A speaking voice alarm could be used.
- The device can be made to perform better by providing the power supply with the help of renewable source.

CONCLUSIÓN

- Using an automated Plantation Monitoring system based on IOT reduces the farmers presence for irrigation which is the major part of the practice of farming and optimizes the usage of water by reducing the wastage of water. The proposed controller eliminates the manual switching mechanism used by the farmers.
- The use of this system will be able to contribute to the socio-economic development of the nation.

THANK YOU !



