IOT based smart irrigation system

Introduction

- Automatic Irrigation
- An over- irrigation and Under-irrigation
- For better production, soil moisture, air humidity, temperature and water are wisely transmitted using wireless technology.

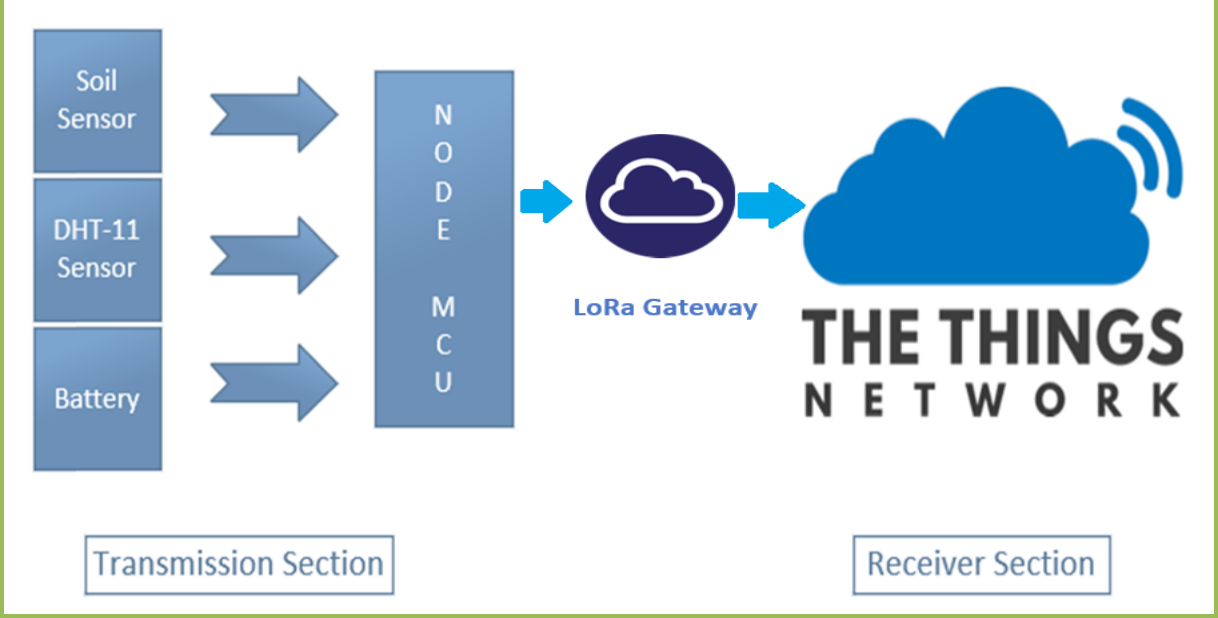
OBJECTIVES

- To save water and reduce human intervention in agriculture field
- Continuously monitoring the status of sensors and provide signal for taking necessary actions
- To get the output of soil water sensor and provide water to crop
- To observe other parameters for better yield

SYSTEM HARDWARE DESIGN

The hardware consists of two sections

1. Transmitter section
2. receiver section



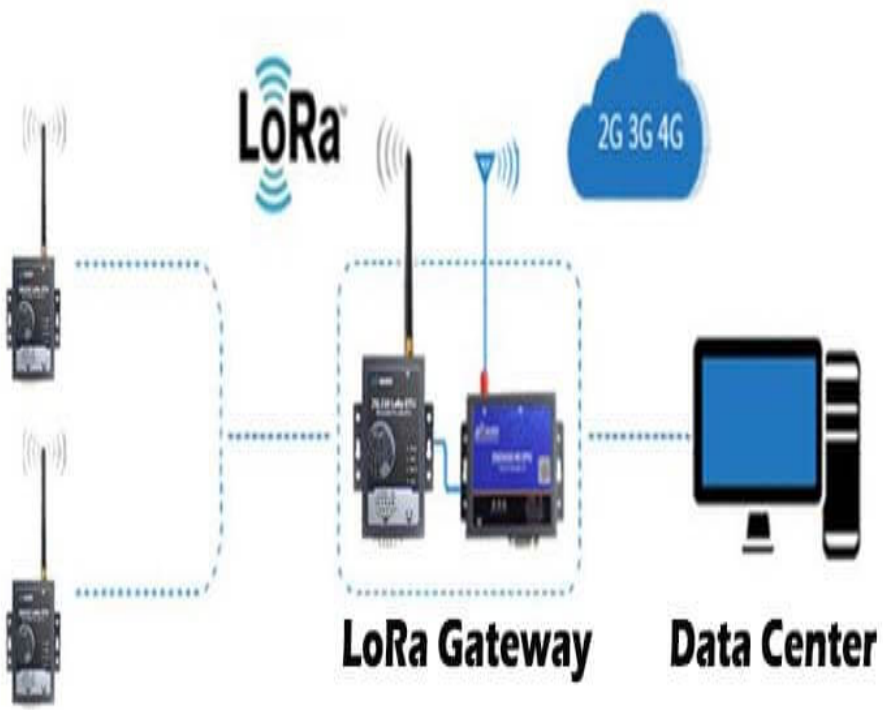
TRANSMISSION SECTION

In this section we have;

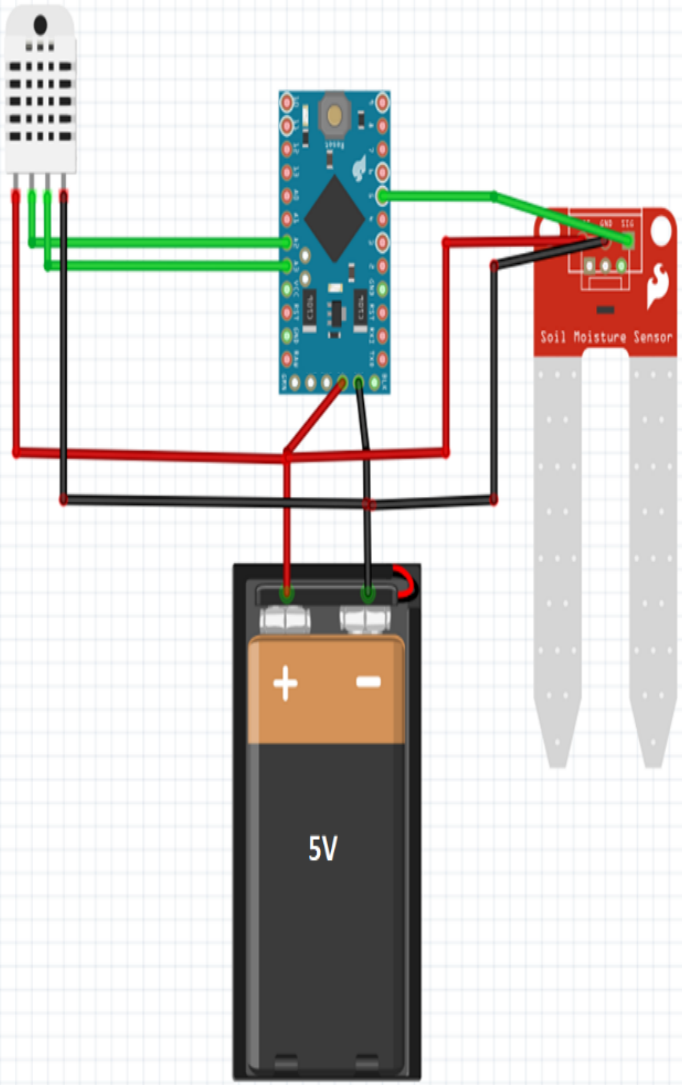
- Node MCU as our controller
- DHT-11 sensor which is used to get the information of the temperature and the humidity in the green house
- a soil moisture sensor is also deployed with the controller which provides us the moisture level of the soil.

LORA GATEWAY

- Basically enables the communication between field side and remote side.
- Transmit the data to cloud server where data could be stored for further processing.



Hardware



The hardware consists of two sensors;

- DHT-11 sensor
- soil moisture sensor

DHT-11 SENSOR

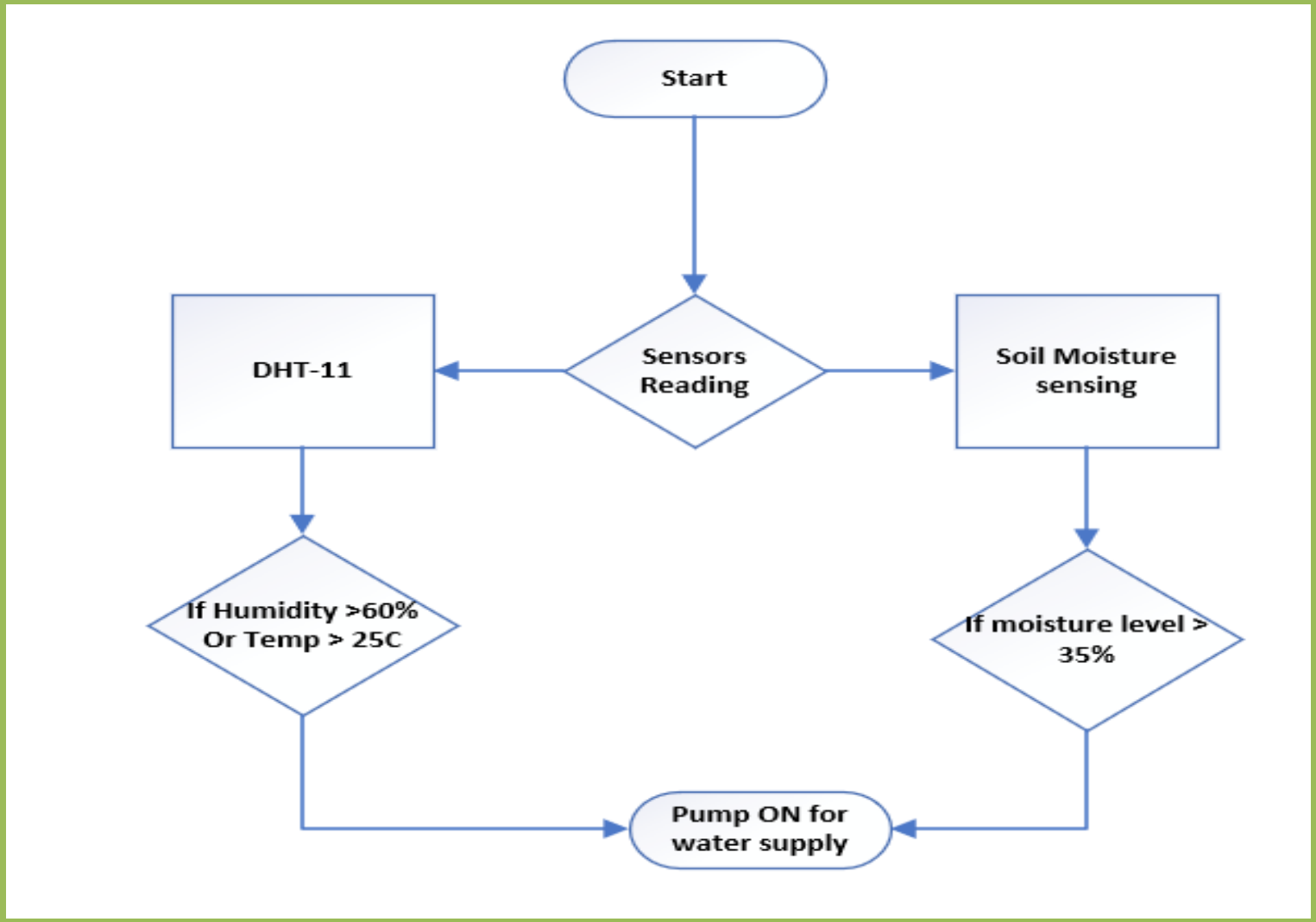
Has 4 pins

- 2 pins connected with the battery to power it up
- 2 pins are data pins
- They are in green wires
- provide the information of temperature and moisture levels in the environment to the controller

SOIL MOISTURE SENSOR

Has 3 pins

- 2 pins provide the input power to the sensor
- The third pin is the data pin which provides the controller with the information of the moisture levels of the soil


Start
Sensors Reading
DHT-11
Soil Moisture sensing
If Humidity >60% Or Temp > 25C
If moisture level > 35%
Pump ON for water supply

POSITIVE IMPACTS

- Increase in productivity
- Reduced water consumption
- Safe
- No manpower required hence economical
- Reduce soil erosion and nutrients leaching
- Require smaller water sources

CONCLUSION

- The smart irrigation system is feasible and cost effective for optimizing water resources for agricultural production
- The irrigation system allows cultivation in places with water scarcity hence improving sustainability
- It proves that the use of water can be diminished