

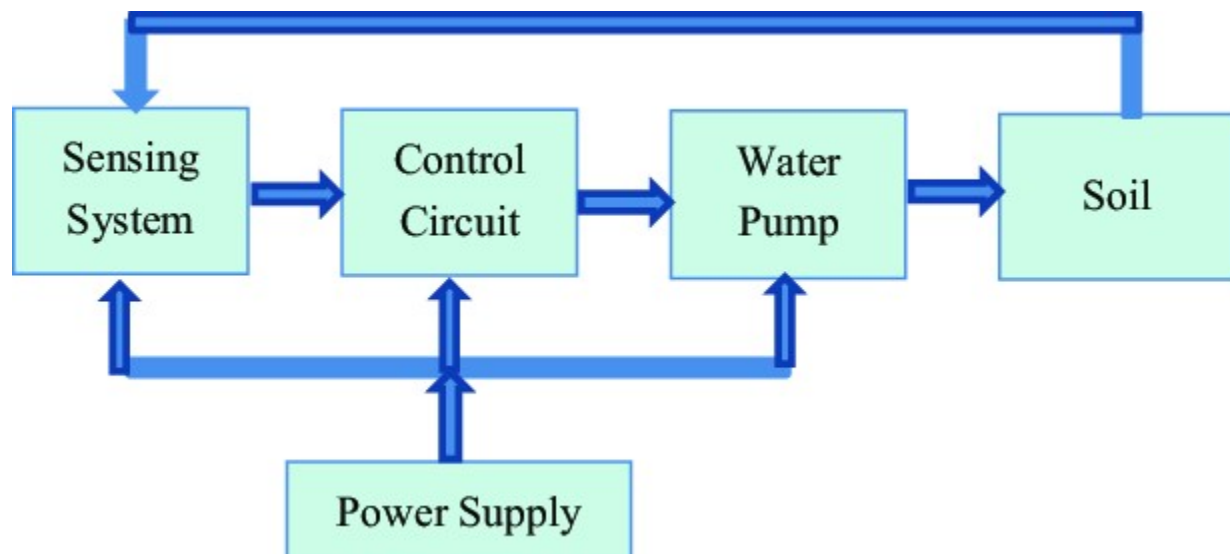
Smart water management

Project in Smart irrigation system

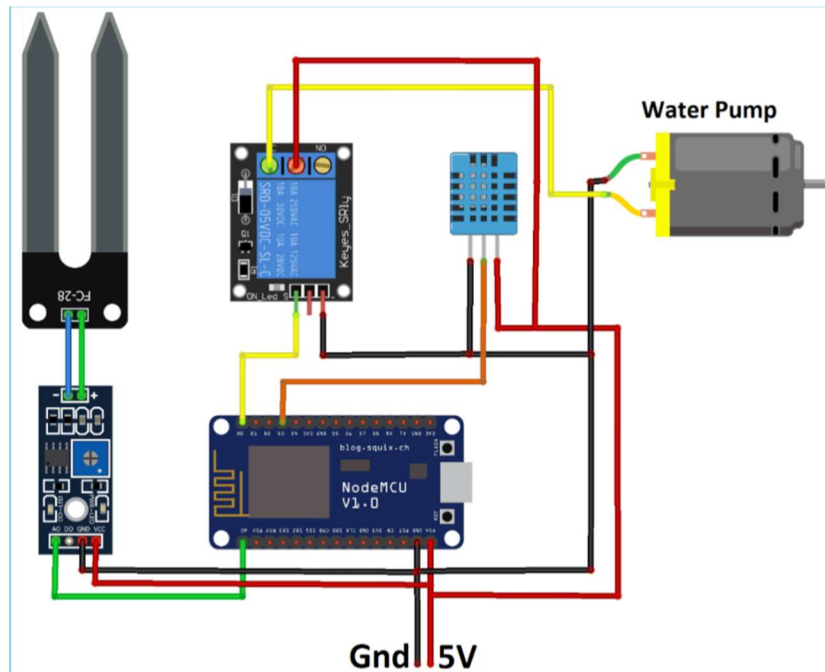
why smart irrigation system is needed.?!

Smart irrigation systems are needed to save water, reduce costs, promote environmental sustainability, enhance plant health, provide convenience, adapt to weather conditions, offer data insights, and enable remote control for efficient water management.

Functional block diagram



Circuit connection diagram

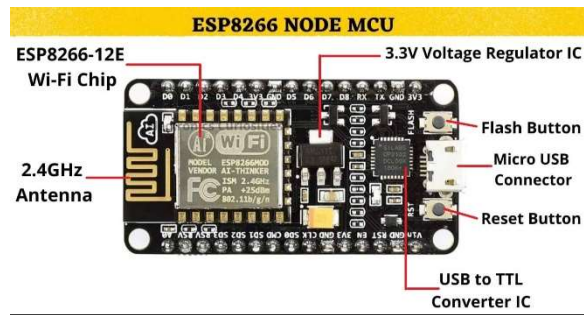


Components Required

- NodeMCU ESP8266
- Soil Moisture Sensor Module
- Water Pump Module
- Relay Module
- DHT11
- Connecting Wires

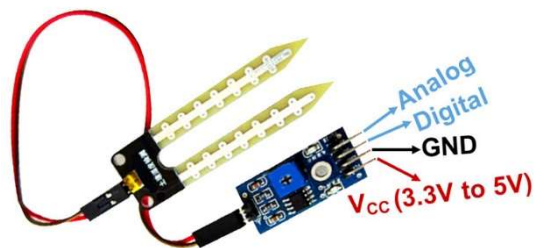
About the components

NodeMCU ESP8266



NodeMCU allows developers to program the ESP8266 SoC (System on Chip) using the Lua scripting language, which makes it easy and convenient for users to get started with IoT projects. NodeMCU also provides a rich set of libraries that let you connect your device with web servers, send sensor data, access databases, etc.

Soil moisture



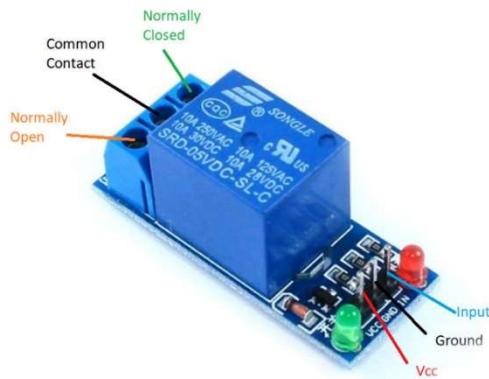
Soil moisture sensors measure or estimate the amount of water in the soil. These sensors can be stationary or portables such as handheld probes. Stationary sensors are placed at the predetermined locations and depths in the field, whereas portable soil moisture probes can measure soil moisture at several locations.

A water pump



A water pump can drain water from a basement or shallow flooded areas, drain and fill a swimming pool or dam, or alternatively can also be utilised in the irrigation needed for agriculture. The main function of Water pumps is to get rid of excess water or transfer water between two points.

Relays



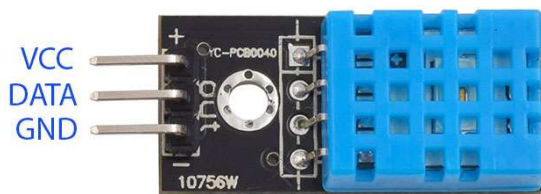
electrically operated switches that open and close the circuits by receiving electrical signals from outside sources. Some people may associate “relay” with a racing competition where members of the team take turns passing batons to complete the race.

Jumper wires



Jumper wires are simply wires that have connector pins at each end, allowing them to be used to connect two points to each other without soldering. Jumper wires are typically used with breadboards and other prototyping tools in order to make it easy to change a circuit as needed.

DHT11



This sensor is used in various applications such as measuring humidity and temperature values in heating, ventilation and air conditioning systems. Weather stations also use these sensors to predict weather conditions. The humidity sensor is used as a preventive measure in homes where people are affected by humidity.

Conclusion

In conclusion, a smart irrigation system offers numerous benefits for efficient water management in agriculture and landscaping. By utilizing real-time data and automation, it conserves water resources, reduces operational costs, and enhances crop yields. Additionally, it promotes sustainability and environmental conservation.