Smart water system

Soil Moisture Sensor

DHT11 Temperature & Humidity Sensor

LED1

DC Watre Pump

R1
220Ω

Single Channel Relay

TECHATRONIC.COM

NodeMCU
V1.0

blog-squix-ch

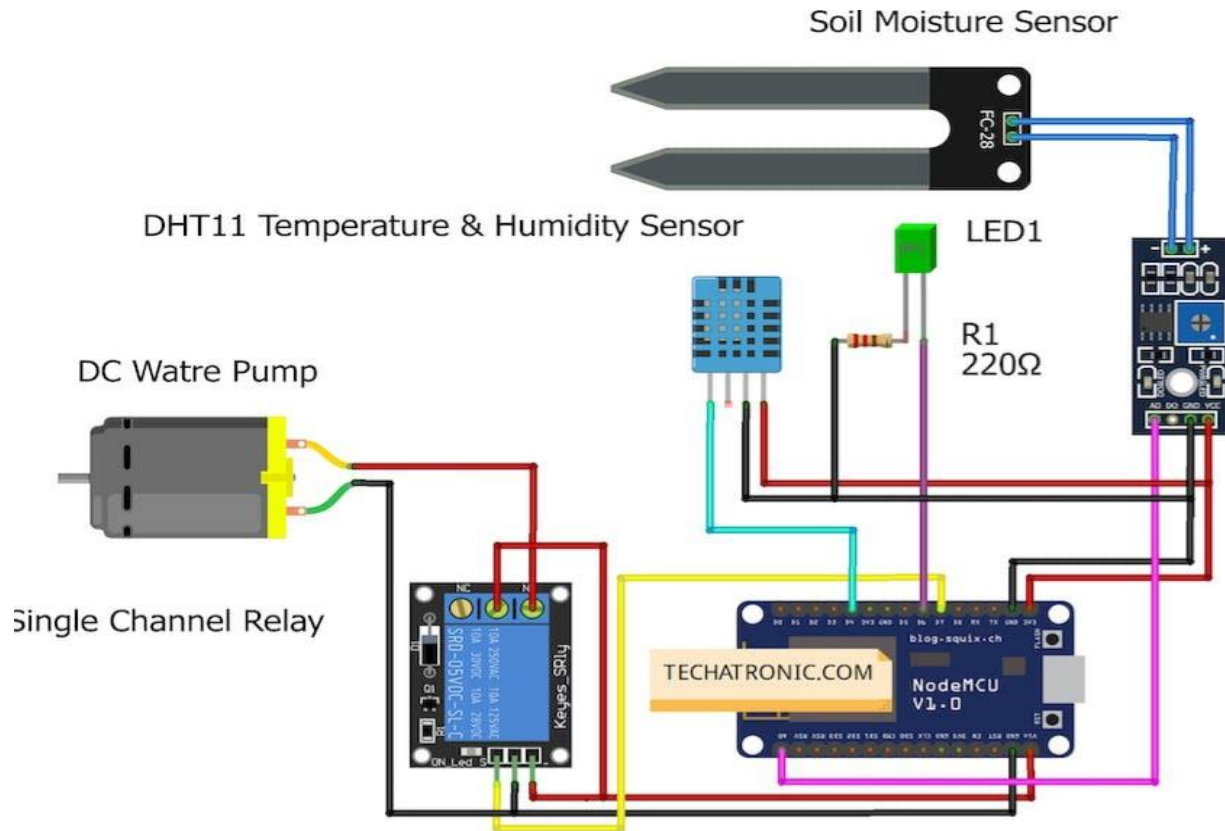## Problem statement:

Water is essential resource in the world. It is used in various fields such as buildings, gardens, restrooms, agricultural , factories ect. Let us consider one such field i ,e. PUBLIC GARDEN- To maintain public gardens regular watering of plants must be needed. So the gardener used to water the plants every morning and evening. It seems to have loss of water because gardener doesn't notice the moisture content in the soil. He/She may simply water the plants even though rainfall happened before. They may water the plants beyond the limit. Thus water is wasted in this case. To overcome the problem I have decided a scenario.

Problem Abstraction:

Water is a **valuable resource**, and water shortages are a serious problem in many parts of the world. The problem can be made worse by people who waste water; for example, by watering a garden or using sprinklers on their lawn**. How can you help conserve water and prevent such waste?** One way is to build an electronic soil moisture sensor. This project will show you how to build a circuit that indicates whether soil is wet or dry, but the circuit itself is unprotected. It will be given by engineering solution, like **a waterproof** carrying case that turns the basic circuit into a useful, portable soil moisture sensor.

We interfaced the ESP32 with **a moisture sensor, temperature sensor, air humidity sensor, water flow sensor, and solenoid valve**. Using the data from these sensors, the **ESP32** determines when to open the solenoid valve. The solenoid valve controls the flow of water into the pipes of the drip irrigation system.

The efficient Water management practices based on the monitoring of the moisture in the soil provide a great benefit for the appropriate amount of water applied in the fields. This is a design and development of a soil moisture sensor and a response monitoring system. The probes used in this sensor are made of **nickel** which is an **anti-corrosive** and **robust material** for use in agricultural and garden related applications. The response monitoring system measure the moisture of the soil, compare it with the desired values given by the user and **generate alert** if soil moisture goes below desired value. It helps in problems related to growing of crops in which irrigation is required at irregular interval. It is also helpful in monitoring of soil moisture in golf fields.

Conclusion:

Due to increasing population, the basic need such as food and water is increasing day by day. Thus there is a need of saving these resources and utilize them in an efficient manner. Since water is one of the most important elements in our daily life, thus we must use efficient ways to utilize water and save it for future generations. So I have choosen this project . These project will increase crop yield, improve quality of crops, conserve water resources, save energy, and decrease fertilizer supplies