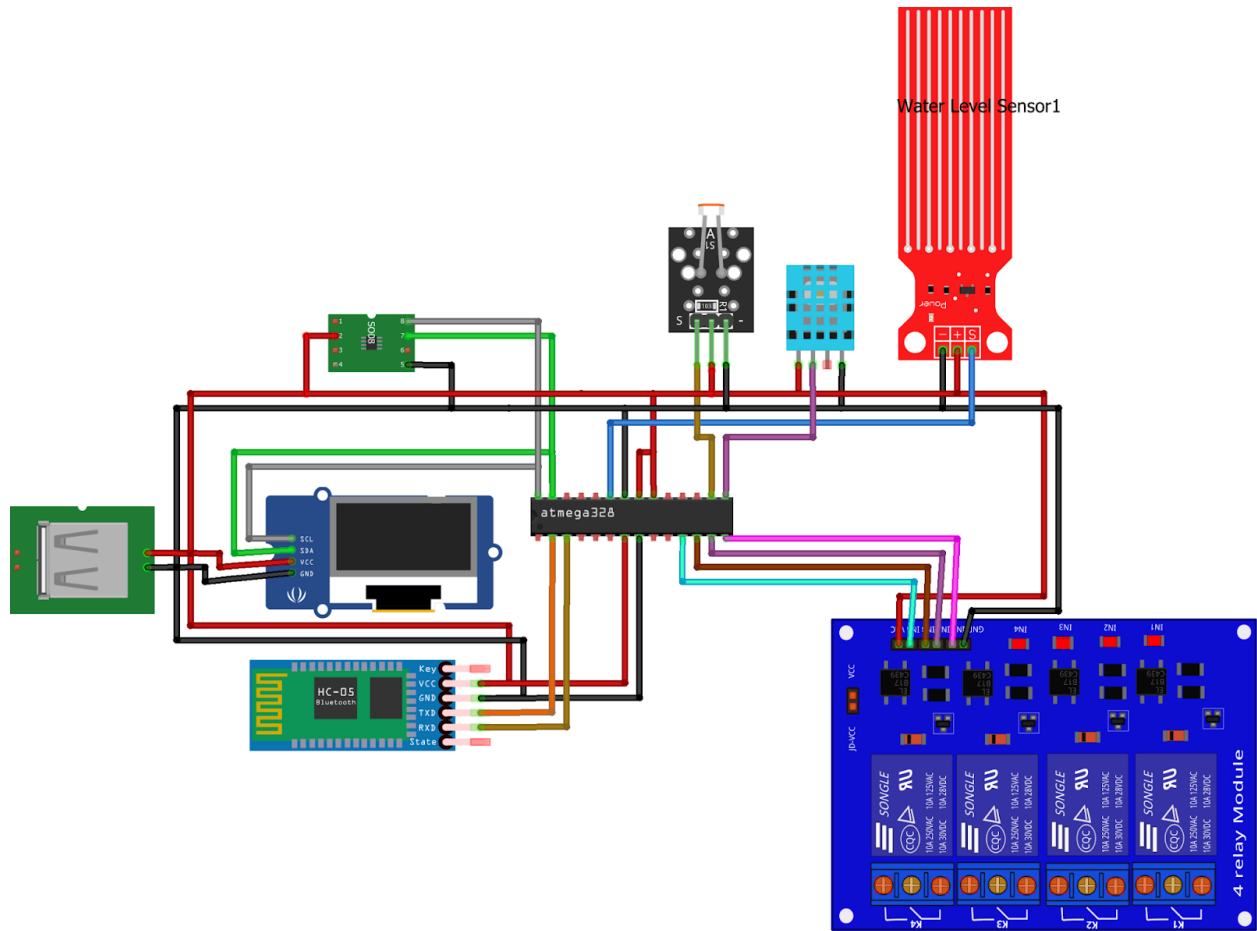


Previous Project:

- **Rough Circuit Diagram:**



Drawbacks of the above circuit:

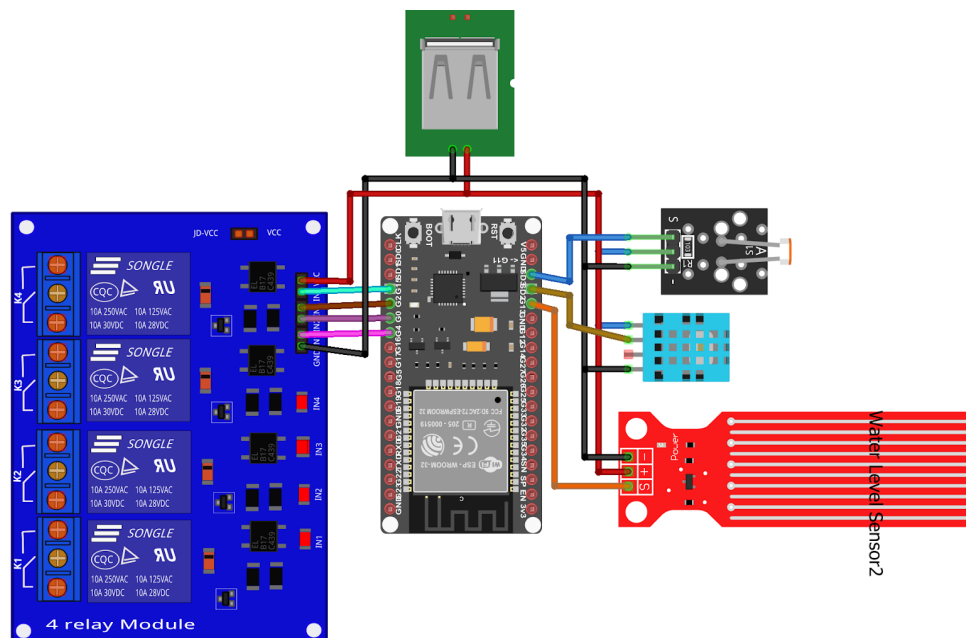
- We can't monitor and control this system from anywhere around the world.
- We will not get any alert or notification of the system failure in our smartphones.
- We can't change the internal schedule and program according to the requirements of specific plants.
- The cost is higher.
- We Can't update the firmware and software.
- We cannot integrate it with other systems using IoT.

Components List:

Components	Price
HC 05 Bluetooth Module	209

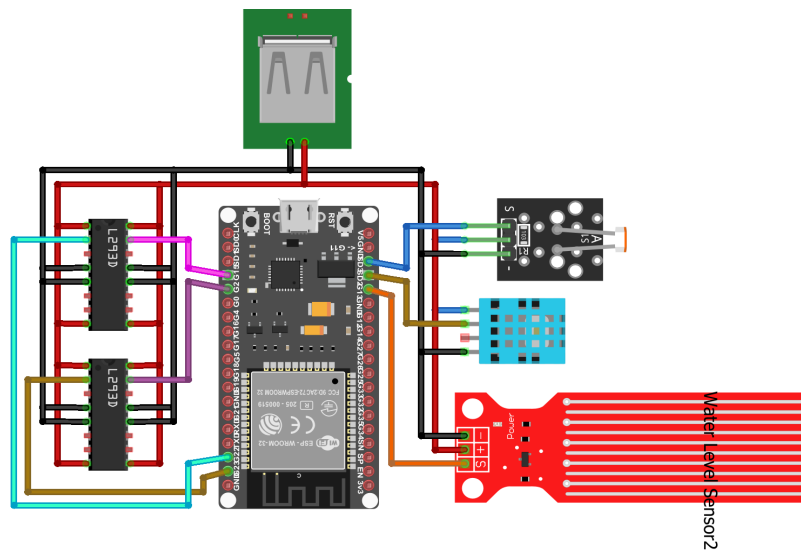
ATmega 328P	299
SSD1306 OLED Display Module	195
4 Channel Relay Module	183
DS3231 RTC Module	165
Water Level Depth Sensor	22
DHT 11 Sensor	75
LDR Module	24
Crystal Oscillator 16 MHz	8
Grand Total	1180 Rs

Modification #1:



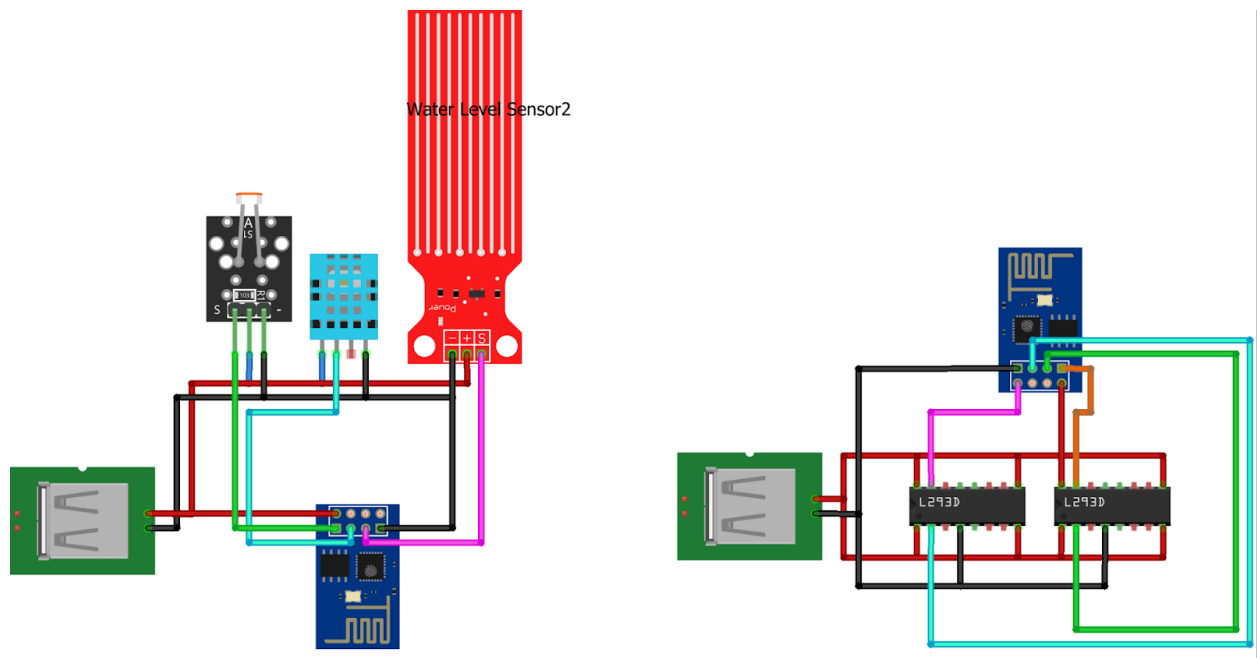
Here, we have removed the Bluetooth Module, RTC module, OLED Display, and ATmega 328P. Instead of them, we have introduced ESP 32 which enables IoT connectivity giving real time updates and controllability from anywhere around the world. Also, we have saved more than 470 Rs, making a total of 704 Rs.

Modification #2:



By understanding the requirement of only a DC power supply for the functioning of both sensors and actuators, we have removed the Relay module, and the L293D Motor driver is introduced instead of relays. Saving an additional 143 Rs, making a total of 561 Rs. Thus, making the project affordable for common people.

Modification #3:



In order to place the sensors in the middle of the plants and hydroponic tank in order to get accurate readings for monitoring and to avoid a lot of actuator's wirings near the sensors, we have introduced 2 separate modules one module for the sensor and one for the actuator.

It contains an ESP8266 WiFi module which will be connected to the cloud thus allowing multiple sensor modules to send data to the cloud for monitoring with only one or multiple actuator modules to control the system.

With the modification above, the cost is further reduced by 230 Rs. Making the total of only 331 Rs with enhanced scalability as there can be multiple sensor modules for different systems

Advantages:

- Integration of Cloud with Monitoring and Control via the Internet.
- We can store the data and can do the analytics later.
- We can monitor and control this system from anywhere around the world.
- We will get any alert or notification of the system failure in our smartphones.
- We can change the internal schedule and program according to the requirements of specific plants.
- The cost is lower.
- We can update the firmware and software.
- We can integrate it with other systems using IoT.

Component list:

Component	Price	Qty	Total
ESP 8266-01 WiFi Module	85	2	170
L293D motor driver	20	2	40
LDR module	24	1	24
DHT 11	75	1	75
Water level sensor	22	1	22
		Grand Total	331

