SMART WATER FOUNDATION

Diagram:

{

"version": 1,

"author": " Jemima Hannah ",

"editor": "wokwi",

"parts": [

{ "type": "wokwi-esp32-devkit-v1", "id": "esp", "top": -110.5, "left": -14.6, "attrs": {} },

{

"type": "wokwi-pir-motion-sensor",

"id": "pir1",

"top": -216.8,

"left": 194.22,

"attrs": {}

},

{

"type": "wokwi-led",

"id": "led1",

"top": 111.6,

"left": -284.2,

"attrs": { "color": "cyan" }

},

{ "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": -228.9, "left": -330.5, "attrs": {} },

{ "type": "wokwi-slide-switch", "id": "sw1", "top": 129.2, "left": 281.5, "attrs": {} }

],

"connections": [

[ "esp:TX0", "$serialMonitor:RX", "", [] ],

[ "esp:RX0", "$serialMonitor:TX", "", [] ],

[ "ultrasonic1:VCC", "esp:VIN", "red", [ "v0" ] ],

[ "ultrasonic1:TRIG", "esp:D33", "green", [ "v0" ] ],

[ "ultrasonic1:ECHO", "esp:D12", "green", [ "v0" ] ],

[ "ultrasonic1:GND", "esp:GND.2", "black", [ "v0" ] ],

[ "led1:C", "esp:GND.2", "green", [ "v0" ] ],

[ "led1:A", "esp:D26", "green", [ "v0" ] ],

[ "pir1:VCC", "esp:3V3", "red", [ "v163.2", "h0", "v-86.4" ] ],

[ "pir1:OUT", "esp:D23", "green", [ "v38.4", "h-153.74" ] ],

[ "pir1:GND", "esp:GND.1", "black", [ "v0" ] ],

[ "sw1:1", "esp:GND.1", "green", [ "v0" ] ],

[ "sw1:2", "esp:D4", "green", [ "v0" ] ]

],

"dependencies": {}

}

Sketch.ion:

const int pirSensorPin = 23; // Pin connected to PIR motion sensor

const int ultrasonicTriggerPin = 33; // Pin connected to Ultrasonic sensor trigger

const int ultrasonicEchoPin = 12; // Pin connected to Ultrasonic sensor echo

const int switchRelayPin = 26;

int pirState = LOW;

int val = 0; // Pin connected to the switch relay

// Variables

bool isMotionDetected = false;

// Flag to track motion detection

void setup() {

// Initialize pins

pinMode(pirSensorPin, INPUT);

pinMode(ultrasonicTriggerPin, OUTPUT);

pinMode(ultrasonicEchoPin, INPUT);

pinMode(switchRelayPin, OUTPUT);

digitalWrite(switchRelayPin, LOW); // Turn off the switch initially

// Other setup code for Ultrasonic sensor if needed

}

void loop() {

// Check PIR motion sensor

val = digitalRead(pirSensorPin); // read input value

if (val == HIGH) { // check if the input is HIGH

digitalWrite(switchRelayPin, HIGH); // turn LED ON

if (pirState == LOW) {

// we have just turned on

Serial.println("Motion detected!");

// We only want to print on the output change, not state

pirState = HIGH;

}

} else {

digitalWrite(switchRelayPin, LOW); // turn LED OFF

if (pirState == HIGH) {

// we have just turned of

Serial.println("Motion ended!");

// We only want to print on the output change, not state

pirState = LOW;

}

}

// Check Ultrasonic sensor

int distance = measureDistance();

// Control switch based on motion and distance

if (isMotionDetected || distance <= 100) {

digitalWrite(switchRelayPin, LOW); // Turn on the switch

} else {

digitalWrite(switchRelayPin, HIGH); // Turn off the switch

}

}

int measureDistance() {

// Send a pulse to the Ultrasonic sensor

digitalWrite(ultrasonicTriggerPin, LOW);

delayMicroseconds(2);

digitalWrite(ultrasonicTriggerPin, HIGH);

delayMicroseconds(10);

digitalWrite(ultrasonicTriggerPin, LOW);

// Measure the duration of the pulse

long duration = pulseIn(ultrasonicEchoPin, HIGH);

// Calculate the distance based on the speed of sound

// (343 m/s or 0.0343 cm/µs)

int distance = duration \* 0.0343 / 2;

return distance;

}

Wokwi-project:

Downloaded from https://wokwi.com/projects/380286986317422593

Simulate this project on https://wokwi.com