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/*
 * created by Rui Santos, https://randomnerdtutorials.com
 *
 * Complete Guide for Ultrasonic Sensor HC-SR04
 *
    Ultrasonic sensor Pins:
        VCC: +5VDC
        Trig : Trigger (INPUT) - Pin11
        Echo: Echo (OUTPUT) - Pin 12
        GND: GND
 */
#include <Adafruit_NeoPixel.h>

#define PIN      2
#define N_LEDS 15
Adafruit_NeoPixel strip = Adafruit_NeoPixel(N_LEDS, PIN, NEO_GRB + NEO_KHZ800);


int trigPin = 4;    // Trigger
int echoPin = 3;    // Echo
long duration, cm, inches;
#define ACT 5
boolean control_sound = false;

void setup() {
  //Serial Port begin
  Serial.begin (9600);
  //Define inputs and outputs
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);


// SOUND
  pinMode(14, OUTPUT);
  pinMode(15, OUTPUT);
  pinMode(16, OUTPUT);
  pinMode(17, OUTPUT);
  pinMode(18, OUTPUT);
  pinMode(ACT, INPUT_PULLUP);

 digitalWrite(14, HIGH);
  digitalWrite(15, HIGH);
 digitalWrite(16, HIGH);
 digitalWrite(17, HIGH);
 digitalWrite(18, HIGH);
```

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    strip.begin();
}

int getDistance() {
  // The sensor is triggered by a HIGH pulse of 10 or more microseconds.
  // Give a short LOW pulse beforehand to ensure a clean HIGH pulse:
  digitalWrite(trigPin, LOW);
  delayMicroseconds(5);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  // Read the signal from the sensor: a HIGH pulse whose
  // duration is the time (in microseconds) from the sending
  // of the ping to the reception of its echo off of an object.
  pinMode(echoPin, INPUT);
  duration = pulseIn(echoPin, HIGH);

  // Convert the time into a distance
  //cm = (duration/2) / 29.1;     // Divide by 29.1 or multiply by 0.0343
  return inches = (duration/2) / 74;   // Divide by 74 or multiply by 0.0135

//  Serial.print(inches);
//  Serial.print("in, ");
//  Serial.print(cm);
//  Serial.print("cm");
//  Serial.println();
}

static void chase(uint32_t c, int t) {
  for(uint16_t i=0; i<strip.numPixels()+4; i++) {
      strip.setPixelColor(i   , c); // Draw new pixel
      strip.setPixelColor(i-4, 0); // Erase pixel a few steps back
      strip.show();
      delay(t);
  }
}

void determineState(int d) {
  int play = -1;

  if(d < 15) {
    chase(strip.Color(255, 0, 0), 5);
    //delay(1000);
    digitalWrite(14, LOW);
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  } else
    digitalWrite(14, HIGH);

  if((d > 15) && (d < 40))  { chase(strip.Color(0, 255, 0), 15);
digitalWrite(15, LOW);  } else digitalWrite(15, HIGH);
  if((d > 40) && (d < 80))  { chase(strip.Color(0, 90, 100), 30);
digitalWrite(16, LOW);  } else digitalWrite(16, HIGH);
  if((d > 80) && (d < 100))  { chase(strip.Color(60, 90, 100), 45);
digitalWrite(17, LOW); } else digitalWrite(17, HIGH);
  if((d > 100) && (d < 130)) { chase(strip.Color(100, 10, 128), 100);
digitalWrite(18, LOW); } else digitalWrite(18, HIGH);
  if(d > 150) Serial.println("FAR");
//
//    while(digitalRead(ACT) == LOW) {
//      delay(1500);
//   }


  //digitalWrite(play, HIGH);
  //digitalWrite(14, HIGH);
//  digitalWrite(15, HIGH);
//  digitalWrite(16, HIGH);
//  digitalWrite(17, HIGH);
//  digitalWrite(18, HIGH);
}


void loop() {
  determineState(getDistance());
  delay(50);
}
```