#include <ESP8266WiFi.h>

// Motor control pins

const int motor1Pin1 = 14;// D5

const int motor1Pin2 = 12; // D6

const int motor2Pin1 = 13;// D7

const int motor2Pin2 = 15; // D8

//Ultrasonic pins

const int trigPin = 5; //D1

const int echoPin = 4;  //D2

//define sound velocity in cm/uS

#define SOUND\_VELOCITY 0.034

long duration;

float distanceCm;

int flag = 0;

void setup() {

  Serial.begin(115200);

  // Set motor control pins as output

  pinMode(motor1Pin1, OUTPUT);

  pinMode(motor1Pin2, OUTPUT);

  pinMode(motor2Pin1, OUTPUT);

  pinMode(motor2Pin2, OUTPUT);

  pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output

  pinMode(echoPin, INPUT); // Sets the echoPin as an Input

}

void loop() {

  moveForward();

  //Checking for obstacle

  // Clears the trigPin

  digitalWrite(trigPin, LOW);

  delayMicroseconds(2);

  // Sets the trigPin on HIGH state for 10 micro seconds

  digitalWrite(trigPin, HIGH);

  delayMicroseconds(10);

  digitalWrite(trigPin, LOW);

  // Reads the echoPin, returns the sound wave travel time in microseconds

  duration = pulseIn(echoPin, HIGH);

  // Calculate the distance

  distanceCm = duration \* SOUND\_VELOCITY/2;

  // Prints the distance on the Serial Monitor

  Serial.print("Distance (cm): ");

  Serial.println(distanceCm);

  if(distanceCm <= 6.0)

  {

    Serial.print("Obstacle detected");

    Serial.print("Distance (cm): ");

    Serial.println(distanceCm);

    flag = 1;

    stopMotors();

    delay(2000);

  }

  if(flag == 1)

  {

    moveLeft();

    delay(2000);

    moveForward();

  }

  // Example: Move the motors forward for 2 seconds

  // Serial.print("1");

  // moveForward();

  // Serial.print("2");

  // delay(2000);

  // // Stop the motors for 1 second

  // Serial.print("3");

  // stopMotors();

  // Serial.print("4");

  // delay(1000);

  // // Example: Move the motors backward for 2 seconds

  // moveBackward();

  // delay(2000);

  // // Stop the motors for 1 second

  // stopMotors();

  // delay(1000);

  // // Example: Move the motors left for 2 seconds

  // moveLeft();

  // delay(2000);

}

// Function to move motors forward

void moveBackward() {

  digitalWrite(motor1Pin1, HIGH); // Motor 1 forward

  digitalWrite(motor1Pin2, LOW);  // Motor 2 forward

  digitalWrite(motor2Pin1, HIGH); // Motor 1 forward

  digitalWrite(motor2Pin2, LOW);

}

// Function to move motors backward

void moveForward() {

  digitalWrite(motor1Pin1, LOW); // Motor 1 forward

  digitalWrite(motor1Pin2, HIGH);  // Motor 2 forward

  digitalWrite(motor2Pin1, LOW); // Motor 1 forward

  digitalWrite(motor2Pin2, HIGH);  // Motor 2 forward

}

// Function to move motors left

void moveLeft() {

  digitalWrite(motor1Pin1, LOW); // Motor 1 forward

  digitalWrite(motor1Pin2, LOW);  // Motor 2 forward

  digitalWrite(motor2Pin1, LOW); // Motor 1 forward

  digitalWrite(motor2Pin2, HIGH);  // Motor 2 forward

}

// Function to move motors right

void moveRight() {

  digitalWrite(motor1Pin1, LOW); // Motor 1 forward

  digitalWrite(motor1Pin2, HIGH);  // Motor 2 forward

  digitalWrite(motor2Pin1, LOW); // Motor 1 forward

  digitalWrite(motor2Pin2, LOW);  // Motor 2 forward

}

// Function to stop motors

void stopMotors() {

  digitalWrite(motor1Pin1, LOW);  // Motor 1 stopped

  digitalWrite(motor1Pin2, LOW);  // Motor 2 stopped

  digitalWrite(motor2Pin1, LOW);  // Motor 1 stopped

  digitalWrite(motor2Pin2, LOW);  // Motor 2 stopped

}