#include <Servo.h>

// Define pins for ultrasonic sensor

const int trigPin = 2;

const int echoPin = 3;

// Define pins for IR sensors

const int irLeftPin = 4;

const int irRightPin = 5;

// Define pins for servo motor

const int servoPin = 6; // Pin for the servo

// Define pins for L298N motor driver

const int motorLeftForward = 7;

const int motorLeftBackward = 8;

const int motorRightForward = 9;

const int motorRightBackward = 10;

// Define variables for distance and servo angle

int distance = 0;

int servoAngle = 90; // Initial servo angle

// Create a Servo object

Servo servoMotor;

void setup() {

// Initialize pins as outputs/inputs

pinMode(trigPin, OUTPUT);

pinMode(echoPin, INPUT);

pinMode(irLeftPin, INPUT);

pinMode(irRightPin, INPUT);

pinMode(motorLeftForward, OUTPUT);

pinMode(motorLeftBackward, OUTPUT);

pinMode(motorRightForward, OUTPUT);

pinMode(motorRightBackward, OUTPUT);

// Attach servo motor to the defined pin

servoMotor.attach(servoPin);

// Set initial servo position

servoMotor.write(servoAngle);

Serial.begin(9600); // For debugging

}

void loop() {

// Read distance from ultrasonic sensor

distance = readDistance();

Serial.print("Distance: ");

Serial.println(distance);

// Read IR sensor values

int irLeftValue = digitalRead(irLeftPin);

int irRightValue = digitalRead(irRightPin);

// Calculate servo angle based on IR sensor values

if (irLeftValue == HIGH && irRightValue == LOW) {

servoAngle = 60; // Turn right

} else if (irLeftValue == LOW && irRightValue == HIGH) {

servoAngle = 120; // Turn left

} else {

servoAngle = 90; // Move forward

}

// Update servo motor angle

servoMotor.write(servoAngle);

// Control DC gear motors based on distance and servo angle

if (distance < 20) {

// Stop motors if distance is too close

stopMotors();

} else {

if (servoAngle == 60) {

// Turn right

turnRight();

} else if (servoAngle == 120) {

// Turn left

turnLeft();

} else {

// Move forward

moveForward();

}

}

delay(50); // Small delay for stability

}

// Function to read distance from ultrasonic sensor

int readDistance() {

digitalWrite(trigPin, LOW);

delayMicroseconds(2);

digitalWrite(trigPin, HIGH);

delayMicroseconds(10);

digitalWrite(trigPin, LOW);

int duration = pulseIn(echoPin, HIGH);

int distance = duration \* 0.034 / 2;

return distance;

}

// Function to stop DC gear motors

void stopMotors() {

digitalWrite(motorLeftForward, LOW);

digitalWrite(motorLeftBackward, LOW);

digitalWrite(motorRightForward, LOW);

digitalWrite(motorRightBackward, LOW);

}

// Function to move DC gear motors forward

void moveForward() {

digitalWrite(motorLeftForward, HIGH);

digitalWrite(motorLeftBackward, LOW);

digitalWrite(motorRightForward, HIGH);

digitalWrite(motorRightBackward, LOW);

}

// Function to turn left

void turnLeft() {

digitalWrite(motorLeftForward, LOW);

digitalWrite(motorLeftBackward, LOW);

digitalWrite(motorRightForward, HIGH);

digitalWrite(motorRightBackward, LOW);

}

// Function to turn right

void turnRight() {

digitalWrite(motorLeftForward, HIGH);

digitalWrite(motorLeftBackward, LOW);

digitalWrite(motorRightForward, LOW);

digitalWrite(motorRightBackward, LOW);

}