#include <SoftwareSerial.h>

#include <Servo.h>

#include <NewPing.h>2

const int HC\_06\_TXD = 5;

const int HC\_06\_RXD = 6;

SoftwareSerial bluetooth(HC\_06\_TXD, HC\_06\_RXD);

char datainput, dataoutput;

const int LeftMotorForward = 9;

const int LeftMotorBackward = 10;

const int RightMotorForward = 8;

const int RightMotorBackward = 7;

int frontv, leftv, rightv;

#define trig\_pin 12

#define echo\_pin 13

#define frontf A3

#define rightf A4

#define leftf A5

#define MQ\_2 A2

#define maximum\_distance 200

boolean goesForward = false;

const int buzzr = 2;  //buzzr

int distance;

int gasValue;

int distanceRight = 0;

int distanceLeft = 0;

char command;

int mode;

NewPing sonar(trig\_pin, echo\_pin, maximum\_distance);

Servo servo\_motor;

void setup() {

  Serial.begin(9600);

  bluetooth.begin(9600);

  pinMode(buzzr, OUTPUT);  //buzzr

  pinMode(RightMotorForward, OUTPUT);

  pinMode(LeftMotorForward, OUTPUT);

  pinMode(LeftMotorBackward, OUTPUT);

  pinMode(RightMotorBackward, OUTPUT);

  pinMode(3, OUTPUT);

  pinMode(frontf, INPUT);

  pinMode(leftf, INPUT);

  pinMode(rightf, INPUT);

  pinMode(MQ\_2, INPUT);

  servo\_motor.attach(11);

  servo\_motor.write(115);

  delay(2000);

  distance = readPing();

  delay(100);

  distance = readPing();

  delay(100);

  distance = readPing();

  delay(100);

  distance = readPing();

  delay(100);

}

int lookRight() {

  servo\_motor.write(50);

  delay(500);

  int distance = readPing();

  delay(100);

  servo\_motor.write(115);

  return distance;

}

int lookLeft() {

  servo\_motor.write(170);

  delay(500);

  int distance = readPing();

  delay(100);

  servo\_motor.write(115);

  return distance;

  delay(100);

}

int readPing() {

  delay(70);

  int cm = sonar.ping\_cm();

  if (cm == 0) {

    cm = 250;

  }

  return cm;

}

void moveStop() {

  digitalWrite(RightMotorForward, LOW);

  digitalWrite(LeftMotorForward, LOW);

  digitalWrite(RightMotorBackward, LOW);

  digitalWrite(LeftMotorBackward, LOW);

  delay(50);

}

void moveBackward() {  //lin c....

  if (!goesForward) {

    goesForward = true;

    digitalWrite(LeftMotorForward, HIGH);

    digitalWrite(RightMotorForward, HIGH);

    digitalWrite(LeftMotorBackward, LOW);

    digitalWrite(RightMotorBackward, LOW);

    delay(50);

  }

}

void moveForward() {  //lin c............

  goesForward = false;

  digitalWrite(LeftMotorBackward, HIGH);

  digitalWrite(RightMotorBackward, HIGH);

  digitalWrite(LeftMotorForward, LOW);

  digitalWrite(RightMotorForward, LOW);

  delay(50);

}

void turnRight() {

  digitalWrite(LeftMotorForward, HIGH);

  digitalWrite(RightMotorBackward, HIGH);

  digitalWrite(LeftMotorBackward, LOW);

  digitalWrite(RightMotorForward, LOW);

  delay(250);

  digitalWrite(LeftMotorForward, HIGH);

  digitalWrite(RightMotorForward, HIGH);

  digitalWrite(LeftMotorBackward, LOW);

  digitalWrite(RightMotorBackward, LOW);

}

void turnLeft() {

  digitalWrite(LeftMotorBackward, HIGH);

  digitalWrite(RightMotorForward, HIGH);

  digitalWrite(LeftMotorForward, LOW);

  digitalWrite(RightMotorBackward, LOW);

  delay(250);

  digitalWrite(LeftMotorForward, HIGH);

  digitalWrite(RightMotorForward, HIGH);

  digitalWrite(LeftMotorBackward, LOW);

  digitalWrite(RightMotorBackward, LOW);

}

void flame() {

  Serial.print("distance  ");

  Serial.println(distance);

  frontv = analogRead(frontf);

  leftv = analogRead(leftf);

  rightv = analogRead(rightf);

  gasValue = analogRead(MQ\_2);

  Serial.println(frontv);

  Serial.println(leftv);

  Serial.println(rightv);

  Serial.println(gasValue);

  if (frontv < 500) {

    moveStop();

    digitalWrite(buzzr, HIGH);

    delay(3000);

    moveStop();

    goesForward = false;

    Serial.println("front fire");

  } else if (rightv < 500) {

    moveBackward();

    turnRight();

    moveStop();

    digitalWrite(buzzr, HIGH);

    delay(3000);

    moveStop();

    goesForward = false;

    Serial.println("right fire");

  } else if (leftv < 500) {

    moveBackward();

    turnLeft();

    moveStop();

    digitalWrite(buzzr, HIGH);

    delay(3000);

    moveStop();

    goesForward = false;

    Serial.println("left fire");

  } else {

    digitalWrite(buzzr, LOW);

    delay(50);

  if (gasValue > 250){

    digitalWrite(buzzr, HIGH);

    delay(3000);

    moveStop();

    goesForward = false;

    Serial.println("Gas Detected");

  } else {

    digitalWrite(buzzr, LOW);

    delay(50);

  }

    if (distance <= 35) {

      moveStop();

      delay(300);

      moveBackward();

      delay(400);

      moveStop();

      delay(300);

      distanceRight = lookRight();

      delay(300);

      distanceLeft = lookLeft();

      delay(300);

      if (distance >= distanceLeft) {

        turnRight();

        moveStop();

        delay(50);

      } else {

        turnLeft();

        moveStop();

        delay(50);

      }

    } else {

      moveForward();

    }

    distance = readPing();

  }

}

void moveCar(char command) {

  switch (command) {

    case 'u':  //forward

      digitalWrite(LeftMotorForward, HIGH);

      digitalWrite(LeftMotorBackward, LOW);

      digitalWrite(RightMotorForward, HIGH);

      digitalWrite(RightMotorBackward, LOW);

      break;

    case 'd':  //backward

      digitalWrite(LeftMotorForward, LOW);

      digitalWrite(LeftMotorBackward, HIGH);

      digitalWrite(RightMotorForward, LOW);

      digitalWrite(RightMotorBackward, HIGH);

      break;

    case 'r':  //right

      digitalWrite(LeftMotorForward, HIGH);

      digitalWrite(LeftMotorBackward, LOW);

      digitalWrite(RightMotorForward, LOW);

      digitalWrite(RightMotorBackward, LOW);

      break;

    case 'l':  //left

      digitalWrite(LeftMotorForward, LOW);

      digitalWrite(LeftMotorBackward, LOW);

      digitalWrite(RightMotorForward, HIGH);

      digitalWrite(RightMotorBackward, LOW);

      break;

    default:  //stop

      digitalWrite(LeftMotorForward, LOW);

      digitalWrite(LeftMotorBackward, LOW);

      digitalWrite(RightMotorForward, LOW);

      digitalWrite(RightMotorBackward, LOW);

      break;

  }

}

void loop() {

  analogWrite(3, 128);

  if (bluetooth.available()) {

    command = bluetooth.read();

    moveCar(command);

    Serial.print(command);

    if (command == 'f') {

      mode = 99;

    } else if (command == 'j') {

      mode = 88;

    }

  } else if (Serial.available()) {

    dataoutput = Serial.read();

    bluetooth.write(command);

  }

  if (mode == 99) {

    flame();

    if (mode == 88) {

      moveCar(command);

    }

  }

}