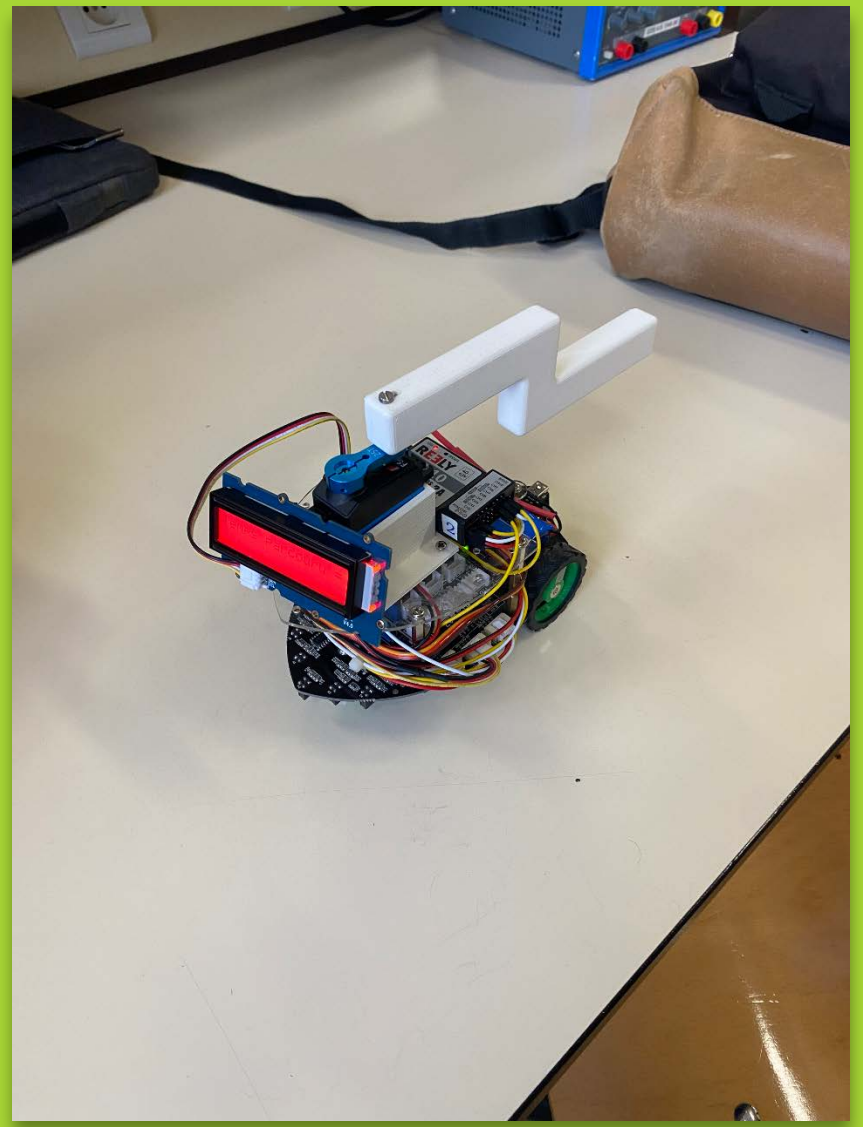
Projet Robotik



1STI2D

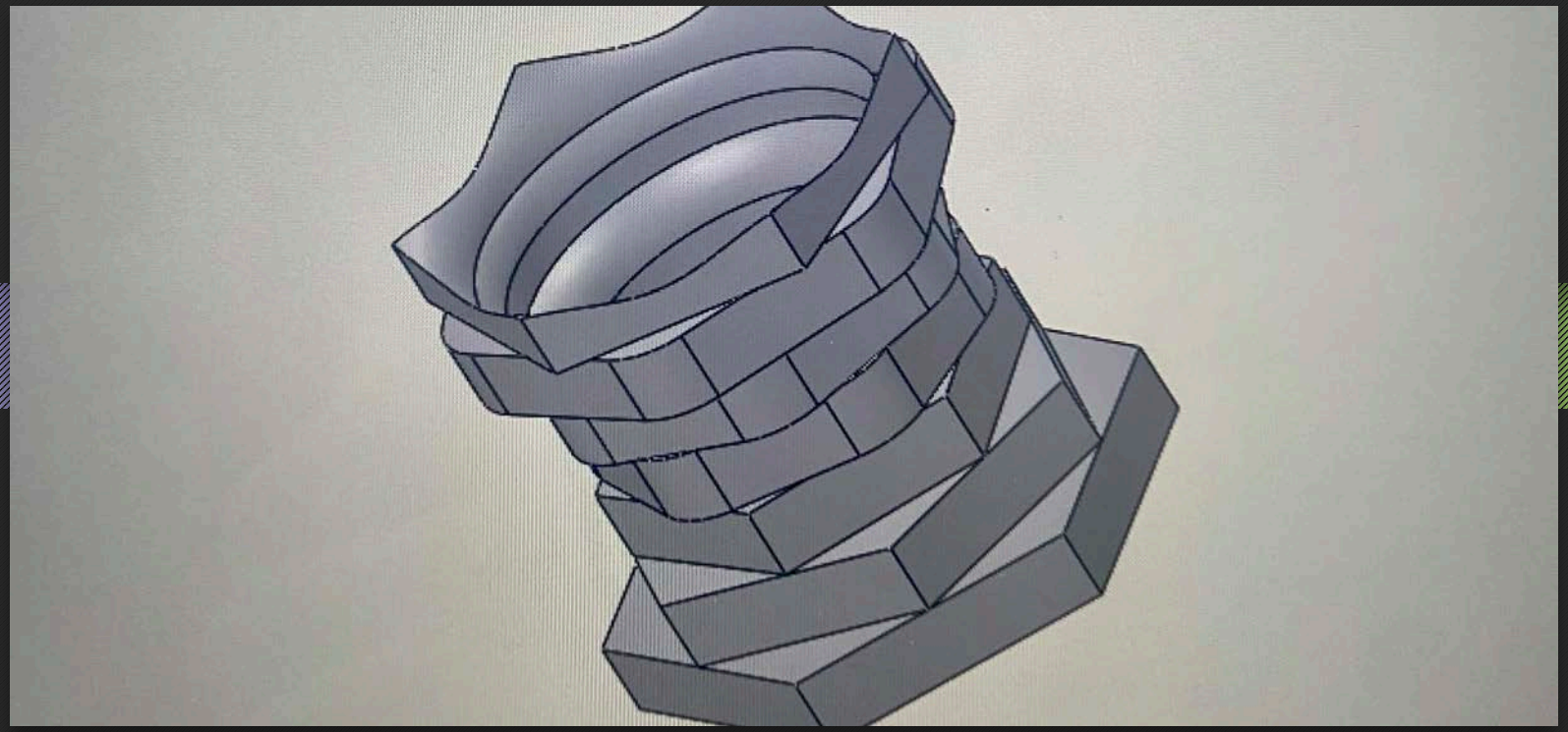
Corrieras Lucas

Qu'elles sont les objectifs de ce projet

ARDUINO
OPEN-SOURCE
COMMUNITY

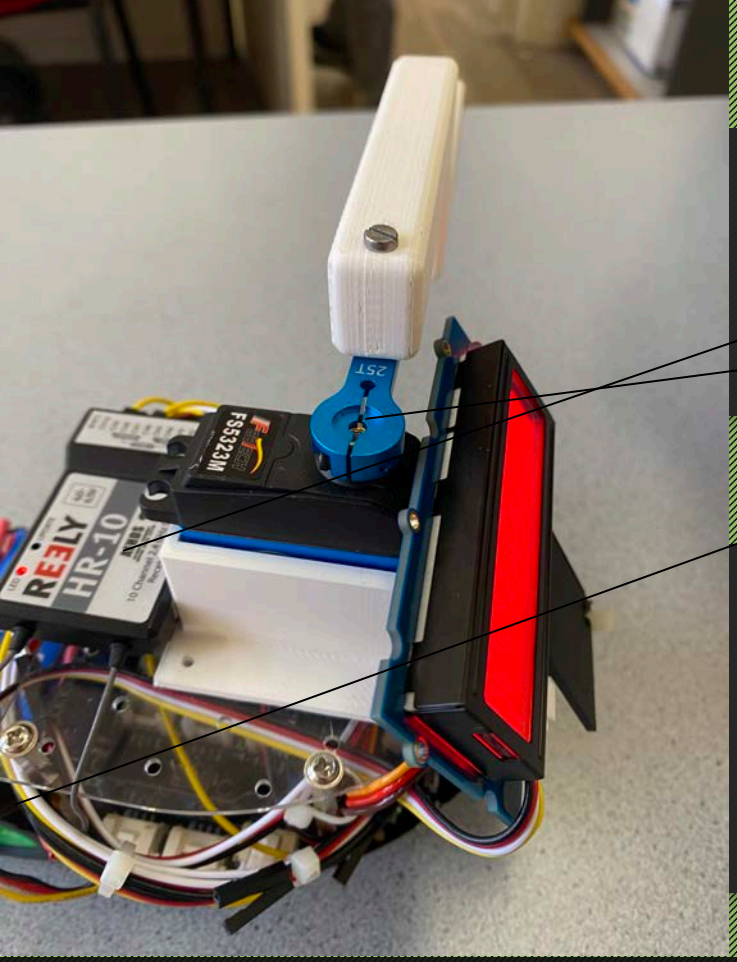
Visual Paradigm
Online

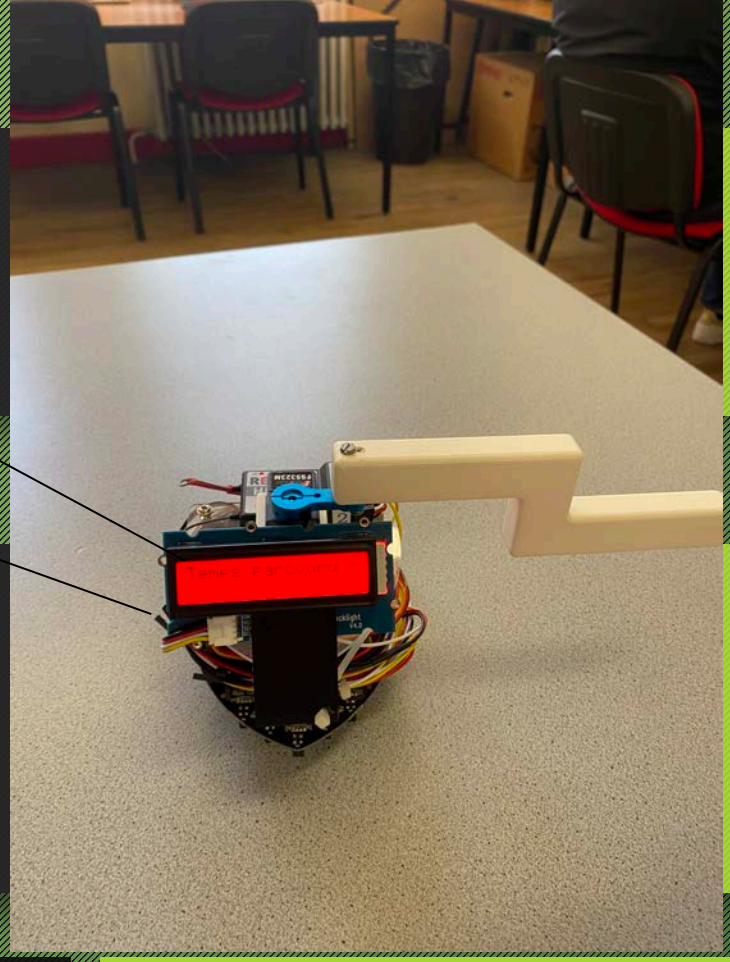
SolidWorks



Cahier des charges

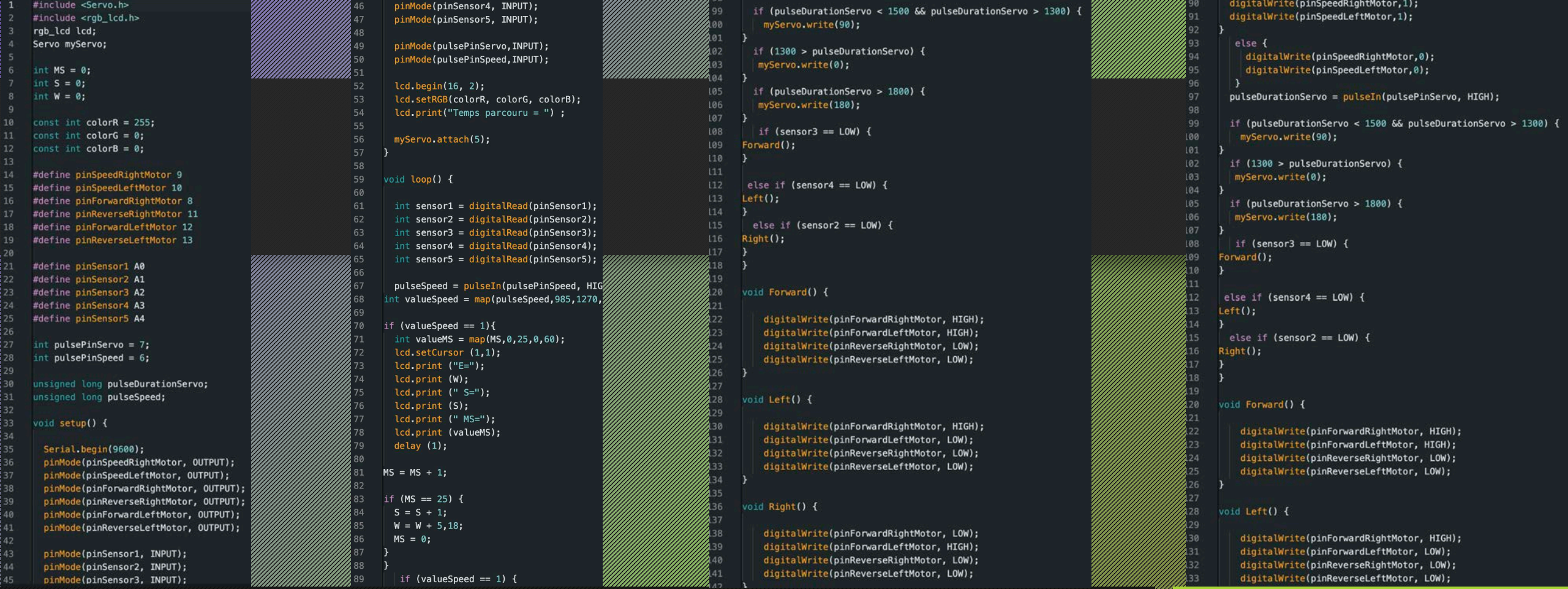
Première tâche





Cahier des charges

Deuxièmes tâche

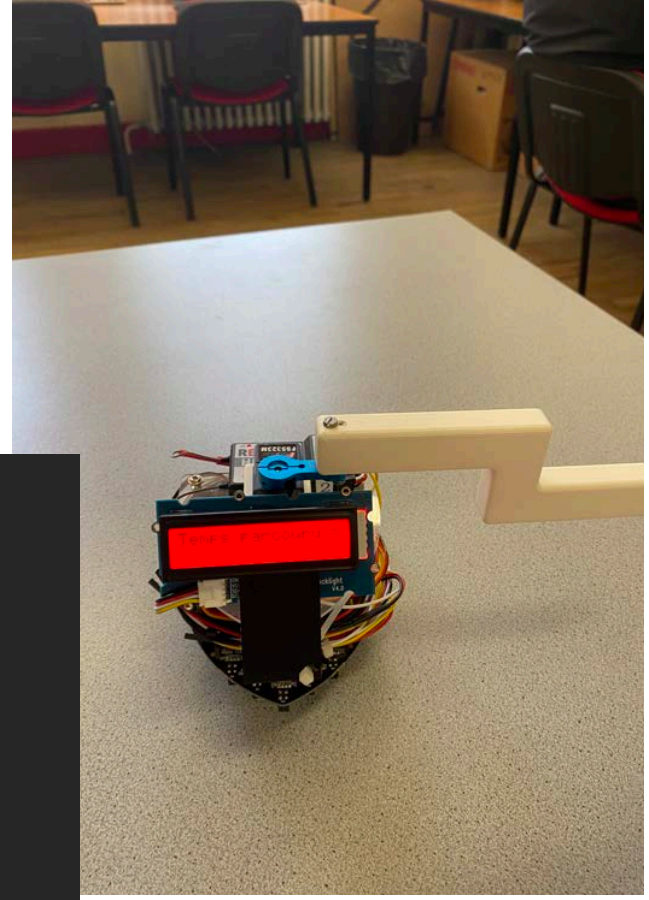


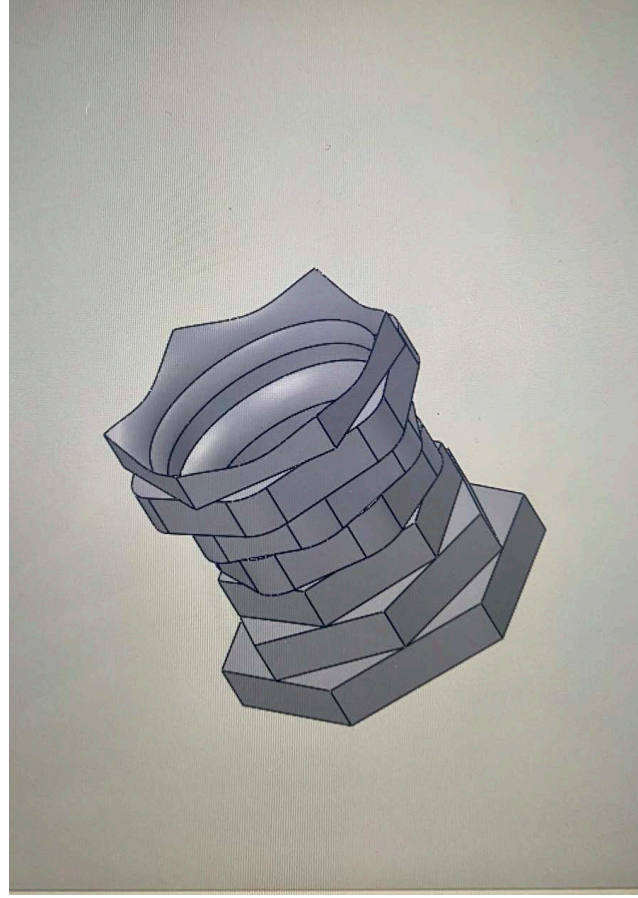
```
#include <Servo.h>
#include <rgb_lcd.h>
rgb_lcd lcd;
Servo myServo;

int MS = 0;
int S = 0;
int W = 0;

const int colorR = 255;
const int colorG = 0;
const int colorB = 0;

#define pinSpeedRightMotor 9
#define pinSpeedLeftMotor 10
#define pinForwardRightMotor 8
#define pinReverseRightMotor 11
#define pinForwardLeftMotor 12
#define pinReverseLeftMotor 13

#define pinSensor1 A0
#define pinSensor2 A1
#define pinSensor3 A2
#define pinSensor4 A3
#define pinSensor5 A4

int pulsePinServo = 7;
int pulsePinSpeed = 6;

unsigned long pulseDurationServo;
unsigned long pulseSpeed;

void setup() {

  Serial.begin(9600);
  pinMode(pinSpeedRightMotor, OUTPUT);
  pinMode(pinSpeedLeftMotor, OUTPUT);
  pinMode(pinForwardRightMotor, OUTPUT);
  pinMode(pinReverseRightMotor, OUTPUT);
  pinMode(pinForwardLeftMotor, OUTPUT);
  pinMode(pinReverseLeftMotor, OUTPUT);

  pinMode(pinSensor1, INPUT);
  pinMode(pinSensor2, INPUT);
  pinMode(pinSensor3, INPUT);
  pinMode(pinSensor4, INPUT);
  pinMode(pinSensor5, INPUT);

  pinMode(pulsePinServo,INPUT);
  pinMode(pulsePinSpeed,INPUT);

  lcd.begin(16, 2);
  lcd.setRGB(colorR, colorG, colorB);
  lcd.print("Temps parcouru = ") ;

  myServo.attach(5);
}

void loop() {

  int sensor1 = digitalRead(pinSensor1);
  int sensor2 = digitalRead(pinSensor2);
  int sensor3 = digitalRead(pinSensor3);
  int sensor4 = digitalRead(pinSensor4);
  int sensor5 = digitalRead(pinSensor5);

  pulseSpeed = pulseIn(pulsePinSpeed, HIG
int valueSpeed = map(pulseSpeed,985,1270,

if (valueSpeed == 1){
  int valueMS = map(MS,0,25,0,60);
  lcd.setCursor (1,1);
  lcd.print ("E=");
  lcd.print (W);
  lcd.print (" S=");
  lcd.print (S);
  lcd.print (" MS=");
  lcd.print (valueMS);
  delay (1);

MS = MS + 1;

if (MS == 25) {
  S = S + 1;
  W = W + 5,18;
  MS = 0;
}
}
  if (valueSpeed == 1) {
  if (pulseDurationServo < 1500 && pulseDurationServo > 1300) {
    myServo.write(90);
}
  if (1300 > pulseDurationServo) {
   myServo.write(0);
}
  if (pulseDurationServo > 1800) {
   myServo.write(180);
}
   if (sensor3 == LOW) {
Forward();
}

 else if (sensor4 == LOW) {
Left();
}
  else if (sensor2 == LOW) {
Right();
}
}

void Forward() {

    digitalWrite(pinForwardRightMotor, HIGH);
    digitalWrite(pinForwardLeftMotor, HIGH);
    digitalWrite(pinReverseRightMotor, LOW);
    digitalWrite(pinReverseLeftMotor, LOW);
}

void Left() {

    digitalWrite(pinForwardRightMotor, HIGH);
    digitalWrite(pinForwardLeftMotor, LOW);
    digitalWrite(pinReverseRightMotor, LOW);
    digitalWrite(pinReverseLeftMotor, LOW);
}

void Right() {

    digitalWrite(pinForwardRightMotor, LOW);
    digitalWrite(pinForwardLeftMotor, HIGH);
    digitalWrite(pinReverseRightMotor, LOW);
    digitalWrite(pinReverseLeftMotor, LOW);
}
  digitalWrite(pinSpeedRightMotor,1);
  digitalWrite(pinSpeedLeftMotor,1);
}
  else {
    digitalWrite(pinSpeedRightMotor,0);
    digitalWrite(pinSpeedLeftMotor,0);
  }
  pulseDurationServo = pulseIn(pulsePinServo, HIGH);

  if (pulseDurationServo < 1500 && pulseDurationServo > 1300) {
    myServo.write(90);
}
  if (1300 > pulseDurationServo) {
   myServo.write(0);
}
  if (pulseDurationServo > 1800) {
   myServo.write(180);
}
   if (sensor3 == LOW) {
Forward();
}

 else if (sensor4 == LOW) {
Left();
}
  else if (sensor2 == LOW) {
Right();
}
}

void Forward() {

    digitalWrite(pinForwardRightMotor, HIGH);
    digitalWrite(pinForwardLeftMotor, HIGH);
    digitalWrite(pinReverseRightMotor, LOW);
    digitalWrite(pinReverseLeftMotor, LOW);
}

void Left() {

    digitalWrite(pinForwardRightMotor, HIGH);
    digitalWrite(pinForwardLeftMotor, LOW);
    digitalWrite(pinReverseRightMotor, LOW);
    digitalWrite(pinReverseLeftMotor, LOW);
```

Cahier des charges

Résultat obtenu et résultat attendue

Modification possible à l'avenir





```
60
61      int sensor1 = digitalRead(pinSensor1);
62      int sensor2 = digitalRead(pinSensor2);
63      int sensor3 = digitalRead(pinSensor3);
64      int sensor4 = digitalRead(pinSensor4);
65      int sensor5 = digitalRead(pinSensor5);
```

Conclusion