Group 5

March 23. 2021

ENGR 1200_02 – Lab 7: Smart Parking Code

```
#include <HCSR04.h>

#define NOTE_E4 330
#define NOTE_E5 659
#define NOTE_A5 880
#define NOTE_B5 988

const int TRIG_PIN = 13;
const int ECHO_PIN = 12;
const int TRIG2 = 10;
const int ECHO2 = 9;
int latchPin = 3;
int clockPin = 4;
int dataPin = 2;
UltraSonicDistanceSensor distanceSensor(TRIG_PIN, ECHO_PIN);
UltraSonicDistanceSensor distanceSensor2(TRIG2, ECHO2);
double sensor1;
double sensor2;
int counter = 6;

byte seven_seg_digits[10] = { B11111100, // = 0
                              B01100000, // = 1
                              B11011010, // = 2
                              B11110010, // = 3
                              B01100110, // = 4
                              B10110110, // = 5
                             };
```

```
void sevenSegWrite(byte digit) {
  digitalWrite(latchPin, LOW);
  shiftOut(dataPin, clockPin, LSBFIRST, seven_seg_digits[digit]);
  digitalWrite(latchPin, HIGH);
}

void setup() {
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
  pinMode(TRIG2, OUTPUT);
  pinMode(ECHO2, INPUT);
  pinMode(latchPin, OUTPUT);
  pinMode(clockPin, OUTPUT);
  pinMode(dataPin, OUTPUT);
  Serial.begin(9600);
}

void loop() {
  sensor1 = distanceSensor.measureDistanceCm();
  digitalWrite(TRIG_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  double duration1 = pulseIn(ECHO_PIN, HIGH);
  sensor1 = duration1 * 0.034 / 2;
  delay(500);

  //sensor 1 - entrance
  if (sensor1 < 16.5 && sensor1 > 9)
  {
```

```
  if (counter > 0)
  {
    tone(8, NOTE_E4, 1000);
    counter--;
    sevenSegWrite(counter);
    delay(1000);
  }
  if (counter == 0)
  {
    tone(8, NOTE_E5, 1000);
  }
}

sensor2 = distanceSensor2.measureDistanceCm();
digitalWrite(TRIG2, LOW);
delayMicroseconds(2);
digitalWrite(TRIG2, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG2, LOW);
double duration2 = pulseIn(ECHO2, HIGH);
sensor2 = duration2 * 0.034 / 2;
Serial.print(sensor1);
Serial.print("\n");
Serial.print(sensor2);
Serial.print("\n");
Serial.print(counter);
Serial.print("\n");
delay(500);

//sensor 2 - exit
if (sensor2 < 8.5)
```

```
  {
    if (counter == 0)
    {
      tone(8, NOTE_A5, 1000);
      delay(1000);
    }
    tone(8, NOTE_B5, 1000);
    counter++;
    sevenSegWrite(counter);
    delay(1000);
  }
}
```