PRÁCTICA 5. ESTRUCTURA DE COMPUTADORES
NOELIA ESCALERA MEJÍAS. GRUPO A3

Primer montaje: Zumbador pasivo

Código:

```
#include "pitches.h"

// notes in the melody:
int melody[] = {
  NOTE_C5, NOTE_D5, NOTE_E5, NOTE_F5, NOTE_G5, NOTE_A5, NOTE_B5, NOTE_C6};
int duration = 500;  // 500 miliseconds

void setup() {

}

void loop() {
  for (int thisNote = 0; thisNote < 8; thisNote++) {
    // pin8 output the voice, every scale is 0.5 sencond
    tone(8, melody[thisNote], duration);

    // Output the voice after several minutes
    delay(1000);
  }

  // restart after two seconds
  delay(2000);
}
```

Esquema del circuito:

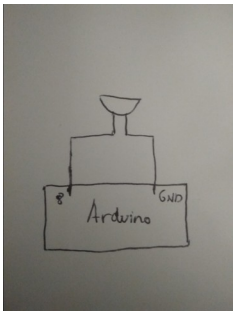
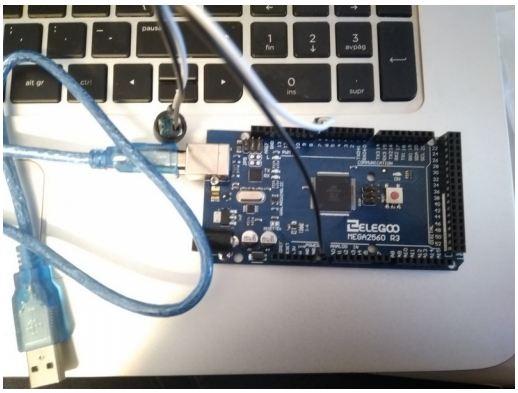


Foto:



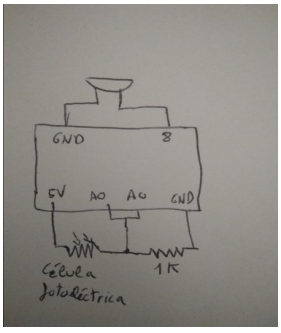
El vídeo está en el archivo **zumbador_pasivo.mp4**, el circuito no es exactamente igual ya que se hizo un día distinto.

Segundo montaje: Theremín

Código:

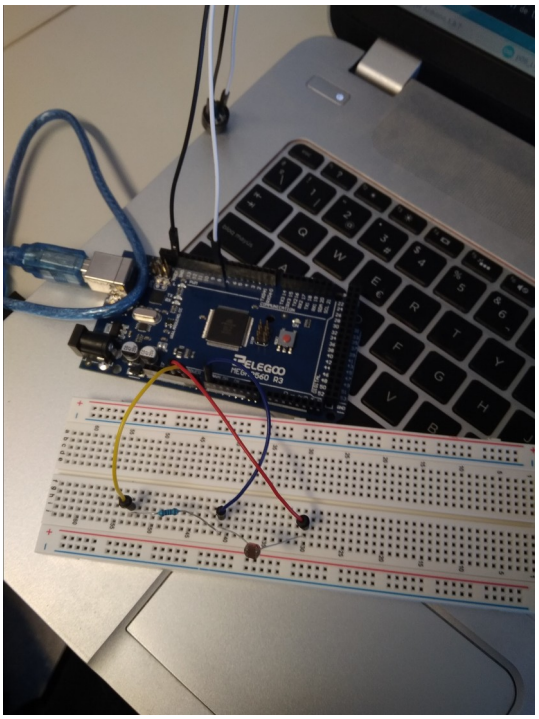
```
// variable to hold sensor value
int sensorValue;
// variable to calibrate low value
int sensorLow = 1023;
// variable to calibrate high value
int sensorHigh = 0;
// LED pin
const int ledPin = 13;

void setup() {
  // Make the LED pin an output and turn it on
  pinMode(ledPin, OUTPUT);
  digitalWrite(ledPin, HIGH);

  // calibrate for the first five seconds after program runs
  while (millis() < 5000) {
    // record the maximum sensor value
    sensorValue = analogRead(A0);
    if (sensorValue > sensorHigh) {
      sensorHigh = sensorValue;
    }
    // record the minimum sensor value
    if (sensorValue < sensorLow) {
      sensorLow = sensorValue;
    }
  }
  // turn the LED off, signaling the end of the calibration period
  digitalWrite(ledPin, LOW);
}

void loop() {
  //read the input from A0 and store it in a variable
  sensorValue = analogRead(A0);

  // map the sensor values to a wide range of pitches
  int pitch = map(sensorValue, sensorLow, sensorHigh, 50, 4000);

  // play the tone for 20 ms on pin 8
  tone(8, pitch, 20);

  // wait for a moment
  delay(10);
}
```

Esquema del circuito:



Noelia Escalera Mejías
Grupo A3

Foto:



El vídeo se encuentra en **theremin.mp4**

Montaje 3: Digital Inputs

Código:

```
int ledPin = 5;
int buttonApin = 9;
int buttonBpin = 8;

byte leds = 0;

void setup()
{
  pinMode(ledPin, OUTPUT);
  pinMode(buttonApin, INPUT_PULLUP);
  pinMode(buttonBpin, INPUT_PULLUP);
}

void loop()
{
  if (digitalRead(buttonApin) == LOW)
  {
    digitalWrite(ledPin, HIGH);
  }
  if (digitalRead(buttonBpin) == LOW)
  {
    digitalWrite(ledPin, LOW);
  }
}
```

Esquema del circuito:

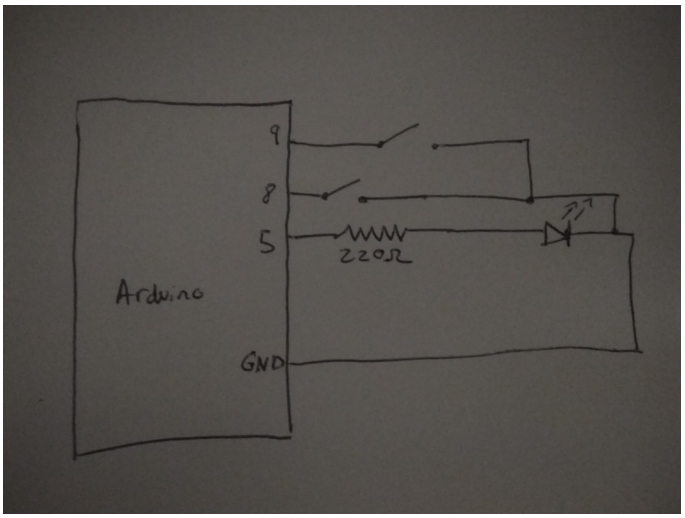
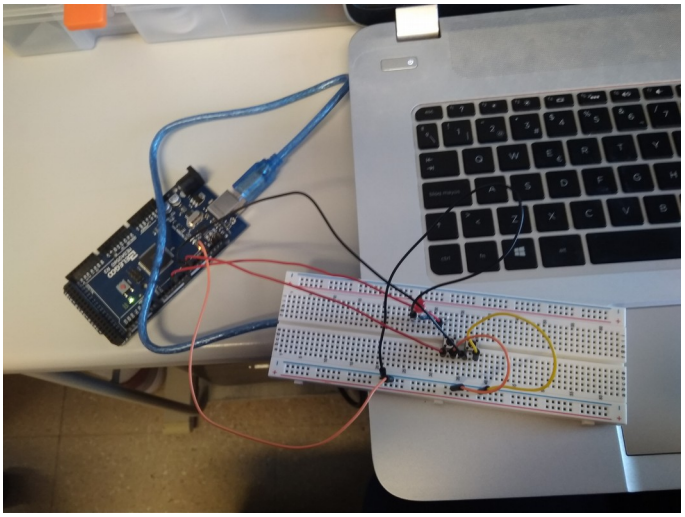


Foto:



El vídeo se encuentra en el archivo **digital_inputs.mp4**.

Noelia Escalera Mejías
Grupo A3