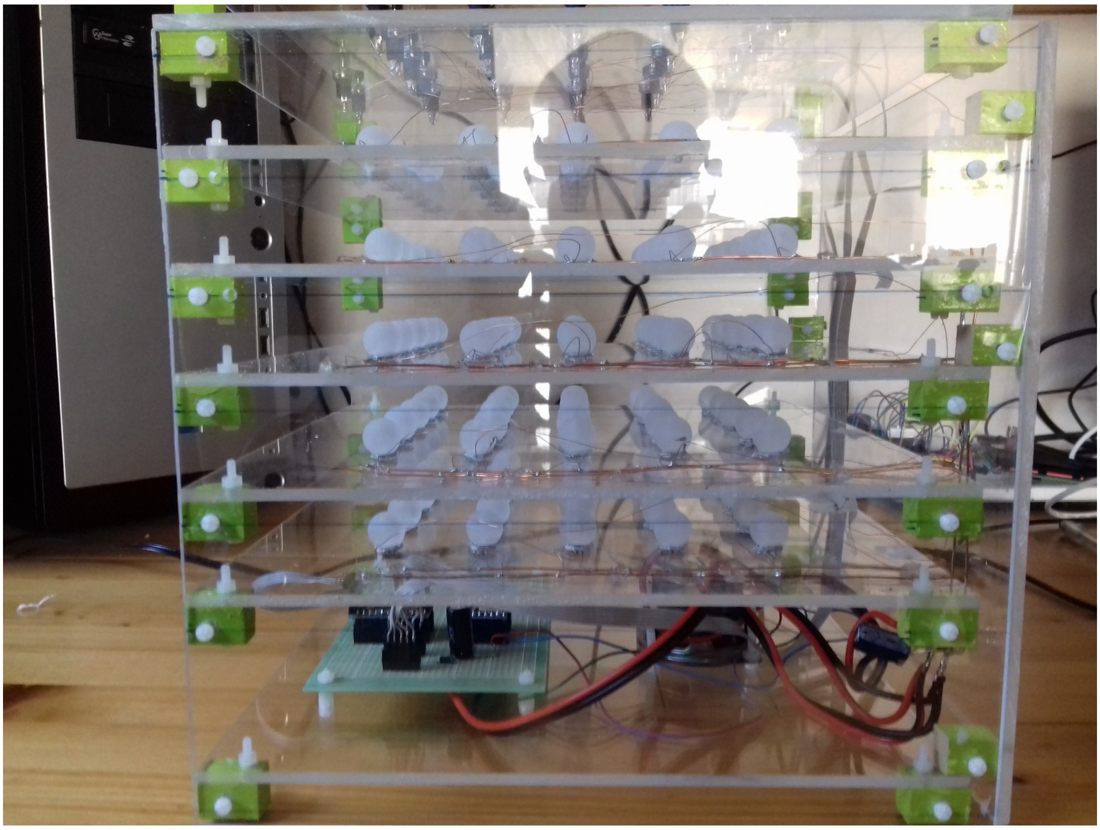
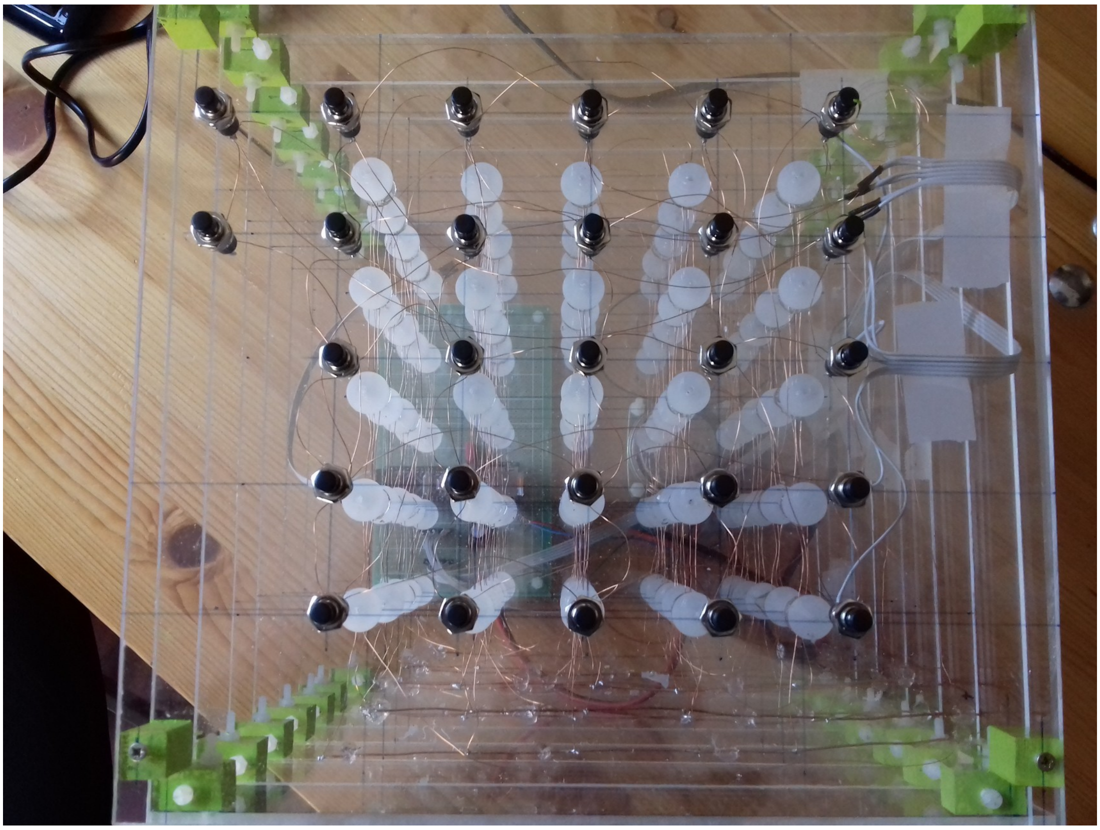
4 in a row 3D





Components

1 x Arduino Mini Pro 5V
https://nl.aliexpress.com/item/32821902128.html?spm=a2g0o.productlist.main.5.43516e4536dFM5&algo_pvid=819301d5-e02d-4da7-9aab-7aae2a8d7724&algo_exp_id=819301d5-e02d-4da7-9aab-7aae2a8d7724-2&pdp_npi=3%40dis%21EUR%213.06%212.48%21%21%21%21%21%40211beca116822778264517938d0763%2167225925112%21sea%21BE%210&curPageLogUid=vw4chKLRJlzt

1 x DF player mini
https://nl.aliexpress.com/item/32427720062.html?spm=a2g0o.productlist.main.5.6e7f3406P6oSd9&algo_pvid=79f5e113-1500-4a34-9519-a320a0e02dcc&algo_exp_id=79f5e113-1500-4a34-9519-a320a0e02dcc-2&pdp_npi=3%40dis%21EUR%211.13%210.91%21%21%21%21%21%40211bf3f116822779988055774d075c%2157508085057%21sea%21BE%210&curPageLogUid=mvRoMVyKh2ee

1 x SD card

1 x speaker

27 x push button
https://nl.aliexpress.com/item/1005003989505144.html?spm=a2g0o.productlist.main.19.7ecc66f9v6k5sJ&algo_pvid=df9cc738-a22a-435b-a5b8-ceda301158b7&aem_p4p_detail=202304231227382502745775763520012749484&algo_exp_id=df9cc738-a22a-435b-a5b8-ceda301158b7-9&pdp_npi=3%40dis%21EUR%210.79%210.72%21%21%21%21%21%40211bea0816822780581346571d0760%2112000027671796726%21sea%21BE%210&curPageLogUid=b0iQAqMP56FT&ad_pvid=202304231227382502745775763520012749484_2&ad_pvid=202304231227382502745775763520012749484_2

125 x WS2812B
https://nl.aliexpress.com/item/33026835790.html?spm=a2g0o.productlist.main.11.5de560d2ulnxRL&algo_pvid=3e6d91b1-d0ff-4bc9-9184-997662c4cfd1&algo_exp_id=3e6d91b1-d0ff-4bc9-9184-997662c4cfd1-5&pdp_npi=3%40dis%21EUR%212.9%212.44%21%21%21%21%21%40211be10916822781731326499d074a%2167286460865%21sea%21BE%210&curPageLogUid=oPtH2HA8Az83

!!! Test LEDs first before gluing !!!

125 x clear matte pearls 16 mm
https://nl.aliexpress.com/item/32982212917.html?spm=a2g0o.store_pc_groupList.8148356.6.3e1c5697MTDgvI&pdp_npi=2%40dis%21USD%21US%20%2416.34%21US%20%2413.07%21%21%21%21%21%402103205316823631924997449e72d6%2166799261893%21sh

copper winding wire
https://www.conrad.be/nl/p/block-koperdraad-gelakt-buitendiameter-excl-isolatielak-0-22-mm-571-m-0-20-kg-605311.html

Transparent glue
https://www.conrad.com/p/pattex-multi-purpose-glue-100-p1bc6-50-g-892573

wood drill 8mm

6 x plexiglass 245 x 245 x 4 (leds)

1 x plexiglass 255 x 245 x 4 (pushbuttons)

2 x plexiglass 255 x 280 x 4 (zijkanten / sides)

2 x plexiglass 253 x 280 x 4 (voor en achterkant /front and back)

lot of nylon bolts m3 x 20 and nuts m3

1 x a lot of time and patience

TO BUILD

Ground Floor

Mount the Arduino mini pro and DF player mini here.
SD card structure

- mp3 folder
  - 0001_Alweer een winnaar.mp3
  - 0002_5 4 3 2 are you readyyyy.mp3
  - 0003_yabbadabbadoo.mp3
  - 0004_stoomboot.mp3
  - 0005_Tot ziens.mp3
  - 0006_oh lala.mp3
  - 0007_Nieuwe ronde.mp3
  - 0008_Lage hoorn.mp3
  - 0009_langzaam_lachen.mp3
  - 0010_Ja wat is dat hier allemaal.mp3
  - 0011_Vogeltjesdans.mp3
  - 0012_tuut tuut.mp3
  - 0012_Scream_1.mp3
  - 0013_Opgepast voor de start.mp3

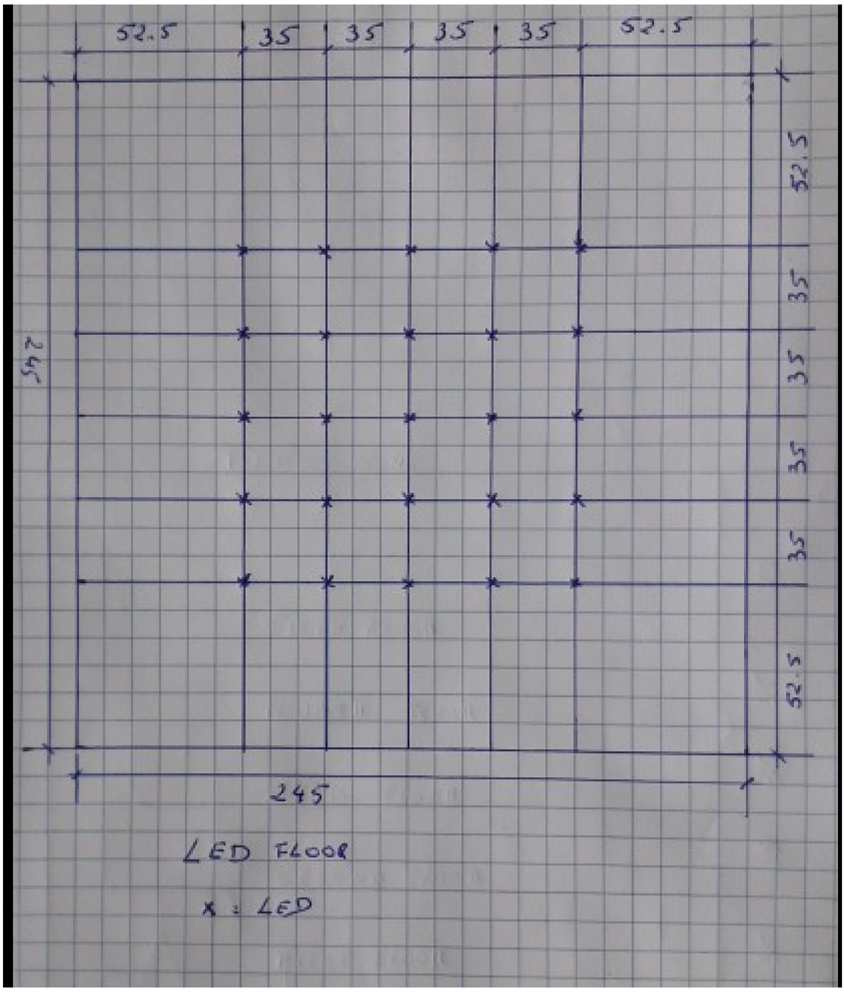
You can find the sound files here:

https://peterdoina.nl/KERMIS-GELUIDEN.html

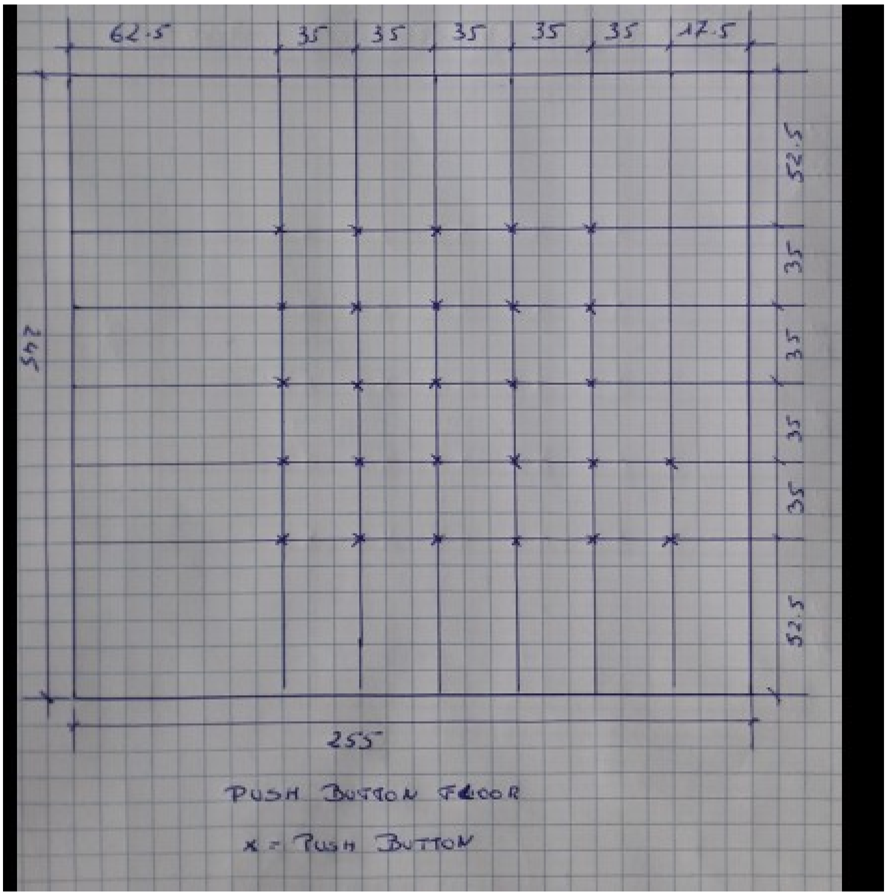
Audacity can help download and save.

Photos are clearer than explanation

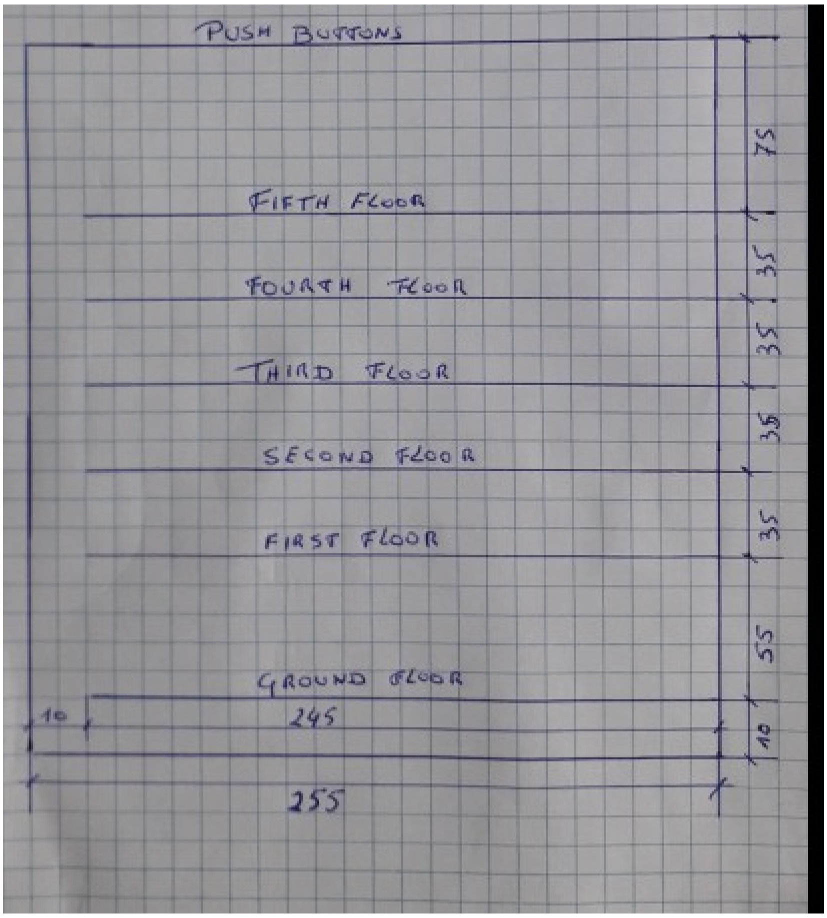
Drawings about the distance between the different LEDs, push buttons and floors



Drawing of an LED floor. You need 5 in total. Dimensions in millimetres.
Plexi plate 245 x 245 x 4
Distance between the LEDs 35mm.



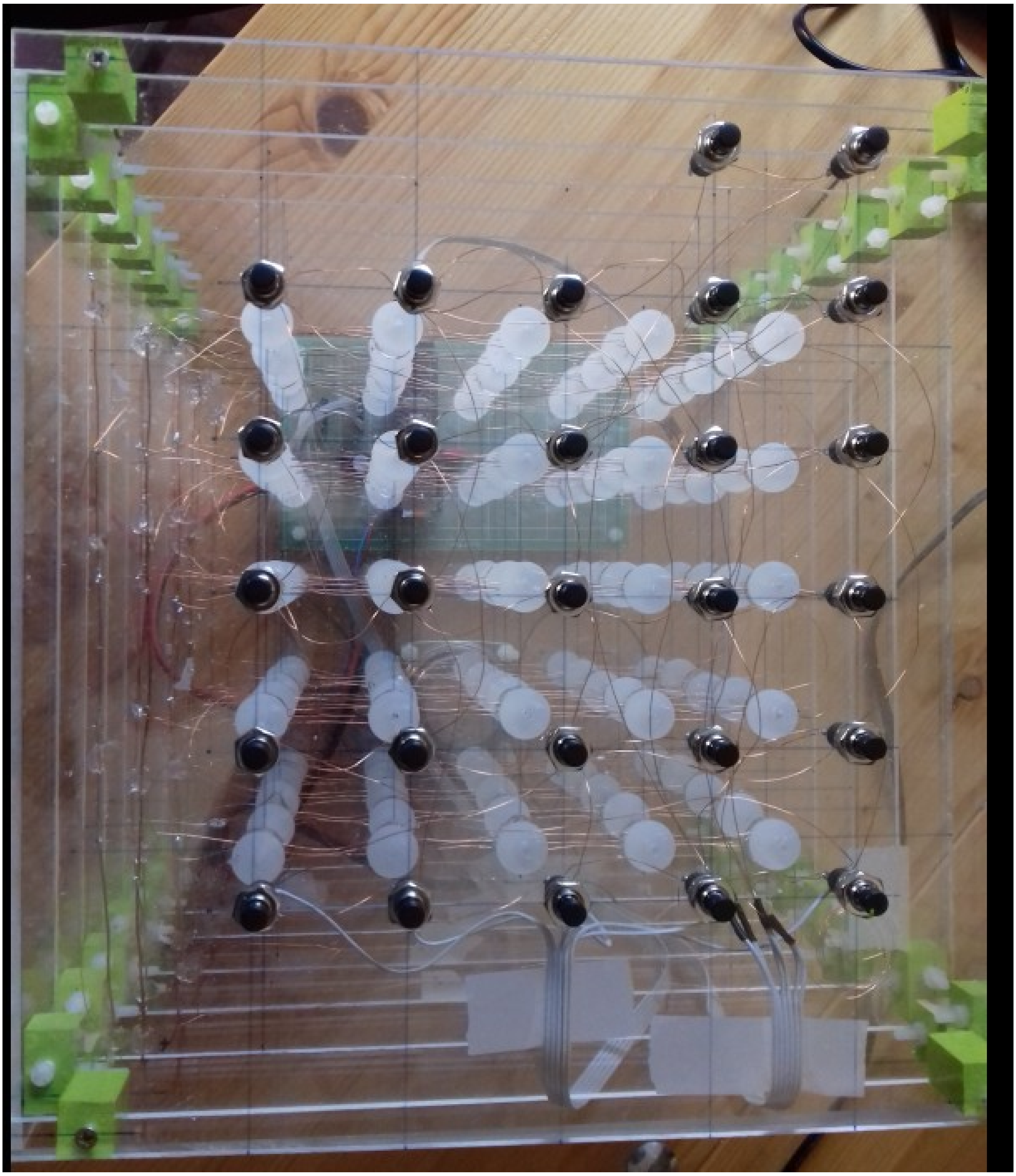
Drawing of push button floor. Since it also closes the whole at the top, this plexi plate is 10 mm longer.
Dimensions 255 x 245 x 4

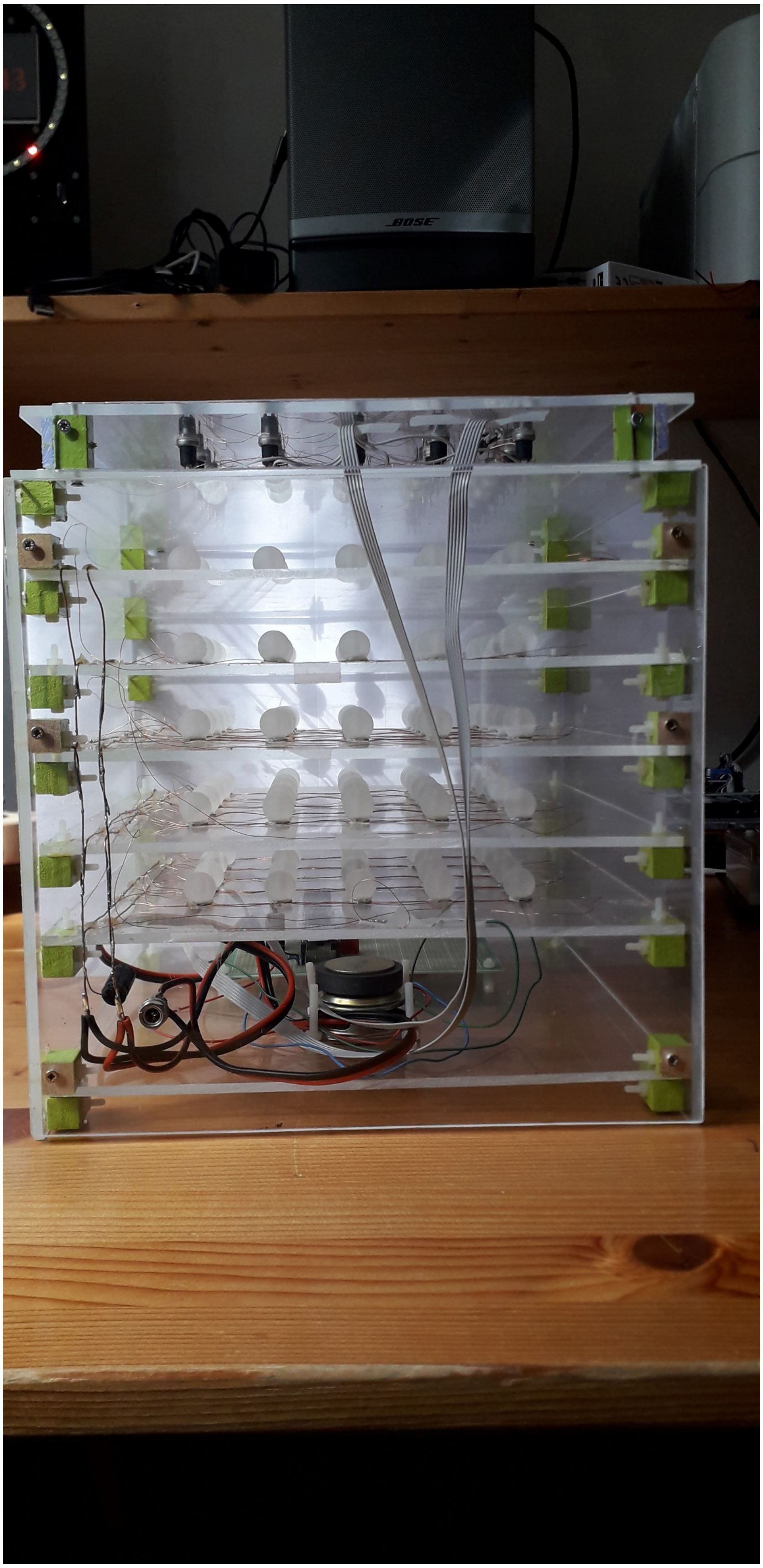


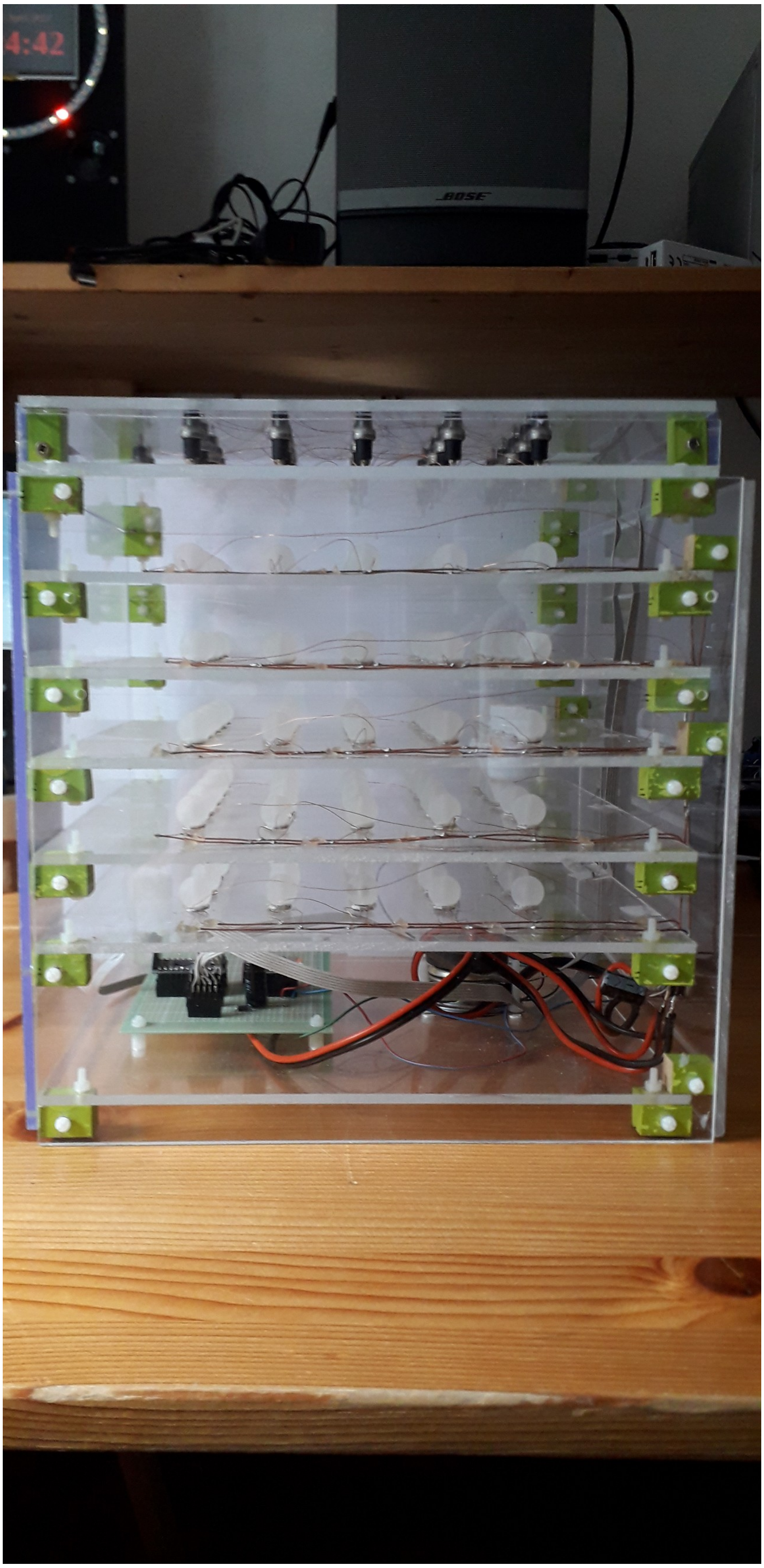
Side view of all floors combined.
Dimensions side plate (2x)
280x255x4

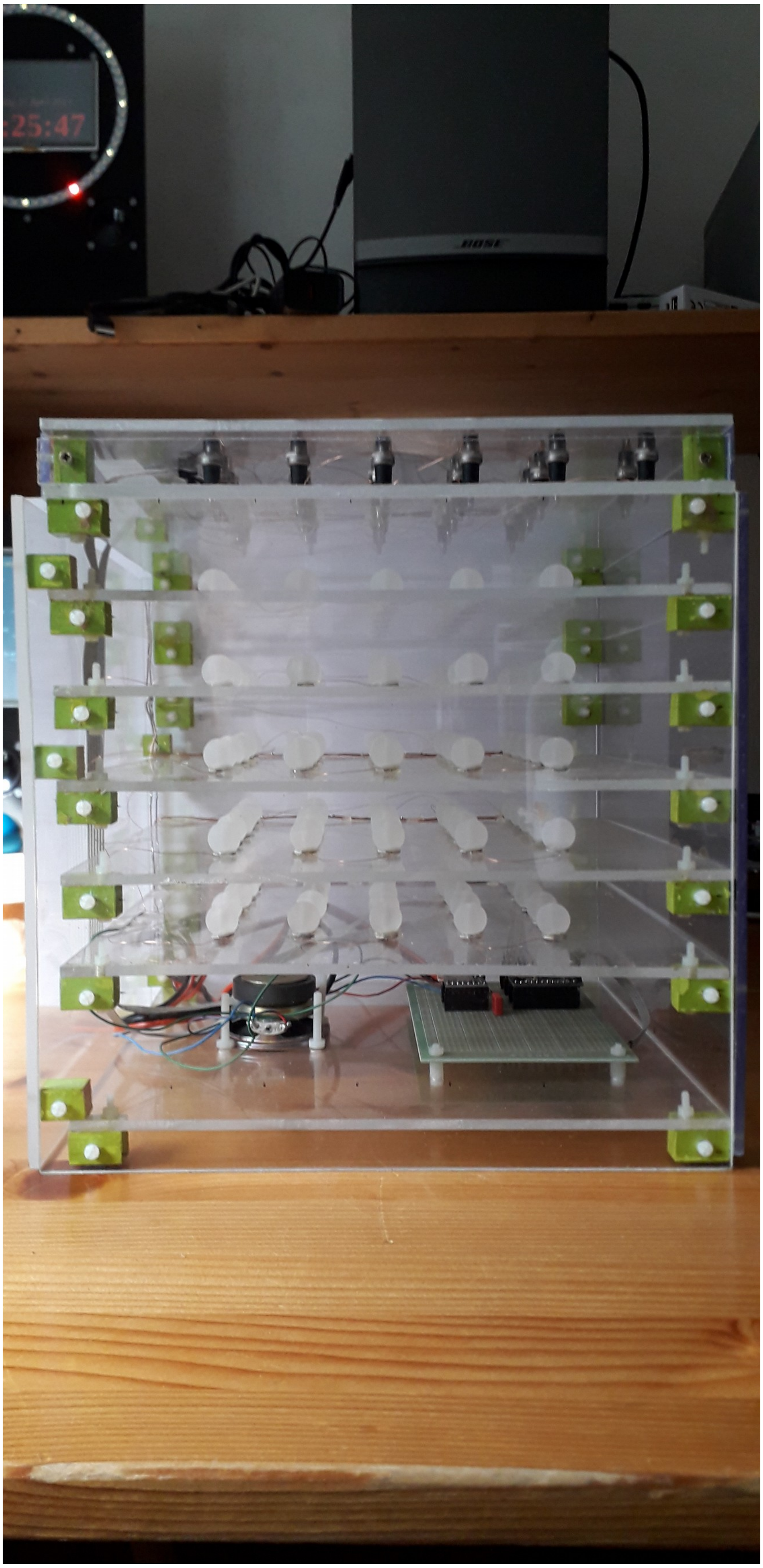
The LED floors are mounted at the front flush with the beginning of the side plate, leaving 10 mm free at the back for the wiring.
Push button floor comes on top of the side plates.

Pictures of the whole assembled.








:25:47
BOSE

Place the LEDs according to the specified distances on a Plexiglas plate.
Connect the different LEDs with each other using the copper winding wire.
The varnish at the beginning of a wire is easily removed by putting a small drop of soldering tin on the tip of the soldering iron and inserting the beginning of a copper wire.
Only this tip of the varnish melts away.
The wiring diagram can be found later in the manual.
Before gluing the LEDs to a Plexiglas plate, first check whether they are OK.

pearls,
using an 8mm wood drill, drill a 3mm deep hole in the pearl. Use a conduit hole as the center point.
Use suitable tools for this and certainly do not hold the pearl by hand while drilling.
Once the LEDs are glued and the whole has been tested again, glue the beads on the LEDs. Use transparent glue for this, as indicated for the parts. Glue also available in the Action.

Install the different floors according to the specified intervals.
The green blocks you see in the photo are painted wooden blocks of 20 x 10 x10.
Sawn from a length of 1000 x 10 x 10 that you can find in any DIY store.

Push buttons.
Place these according to the specified distances in the appropriate plexi plate. The 2 extra push buttons are placed on the front.
Wiring of the push buttons see diagrams below.

For the rest there is little to say about the assembly, if in doubt look at the photos, then it should become clear.

Programming

Load the program four_in_a_row_1.ino using the Arduino IDE in an arduino mini pro (16MHz, 5V).

When the LEDs per group of 4 start to light up, the game can begin.

Start button	on the left front
Reset button	right front

Pressing any push button above a vertical row will cause an LED to fall in that row.

Player change is automatic

Checking for 4 in a row is also done automatically.

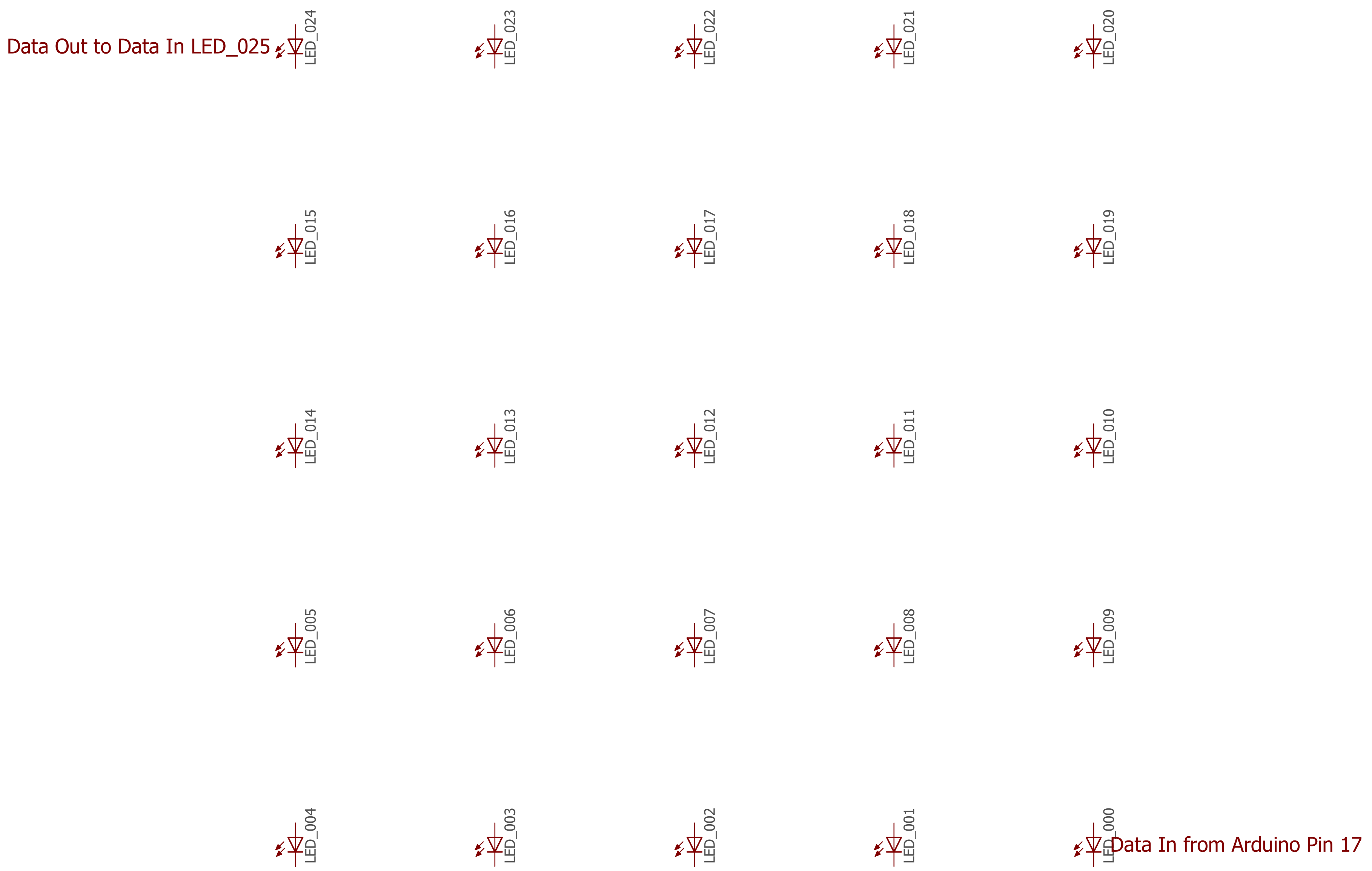
Restart game with reset button.

Have fun,

regards,
thieu-b55

Distance between LED's 35mm
in ALL directions (LEFT - RIGHT and between floors)

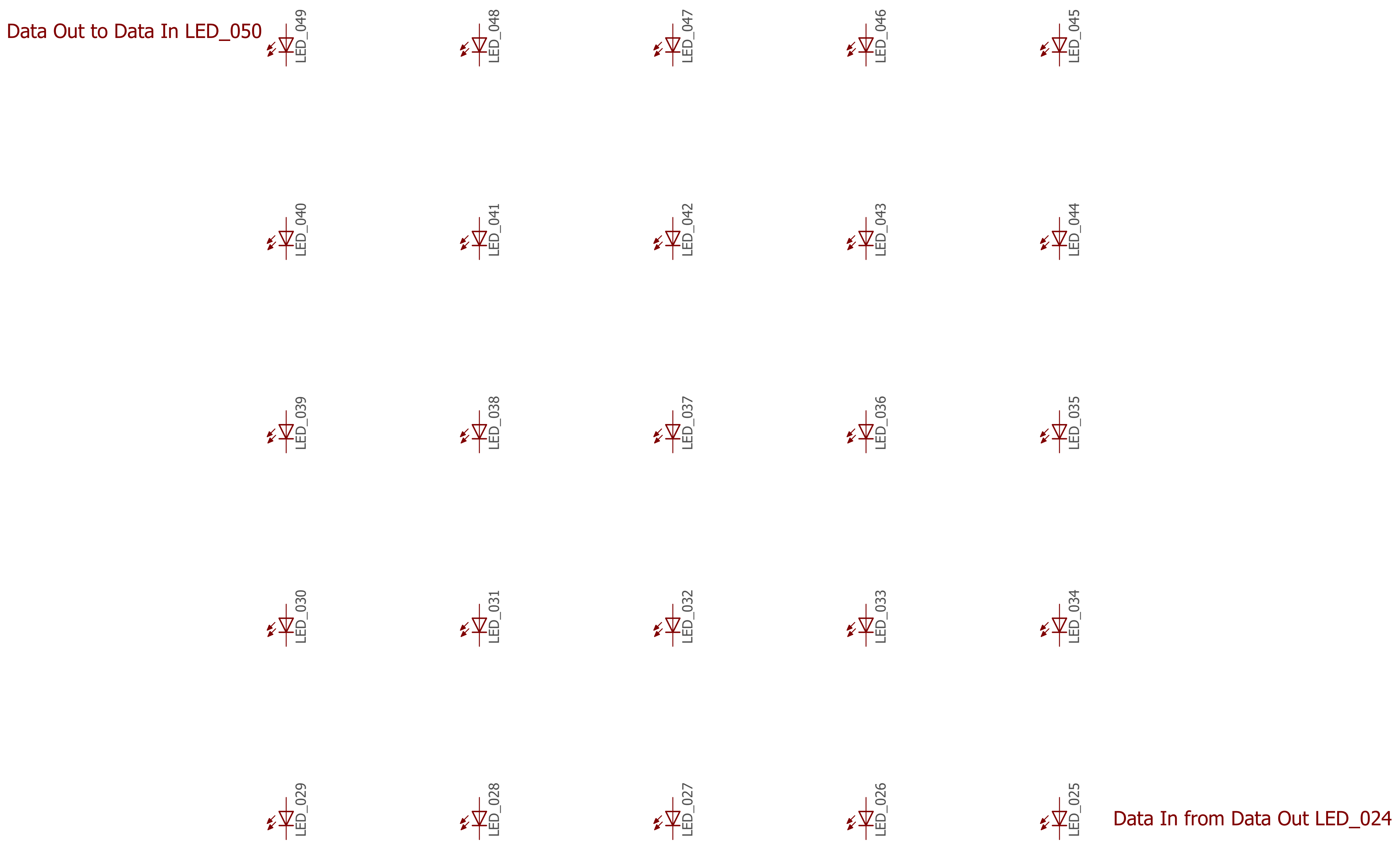
Ledstrip WS2812B total 125 Leds



Front View

LED Order

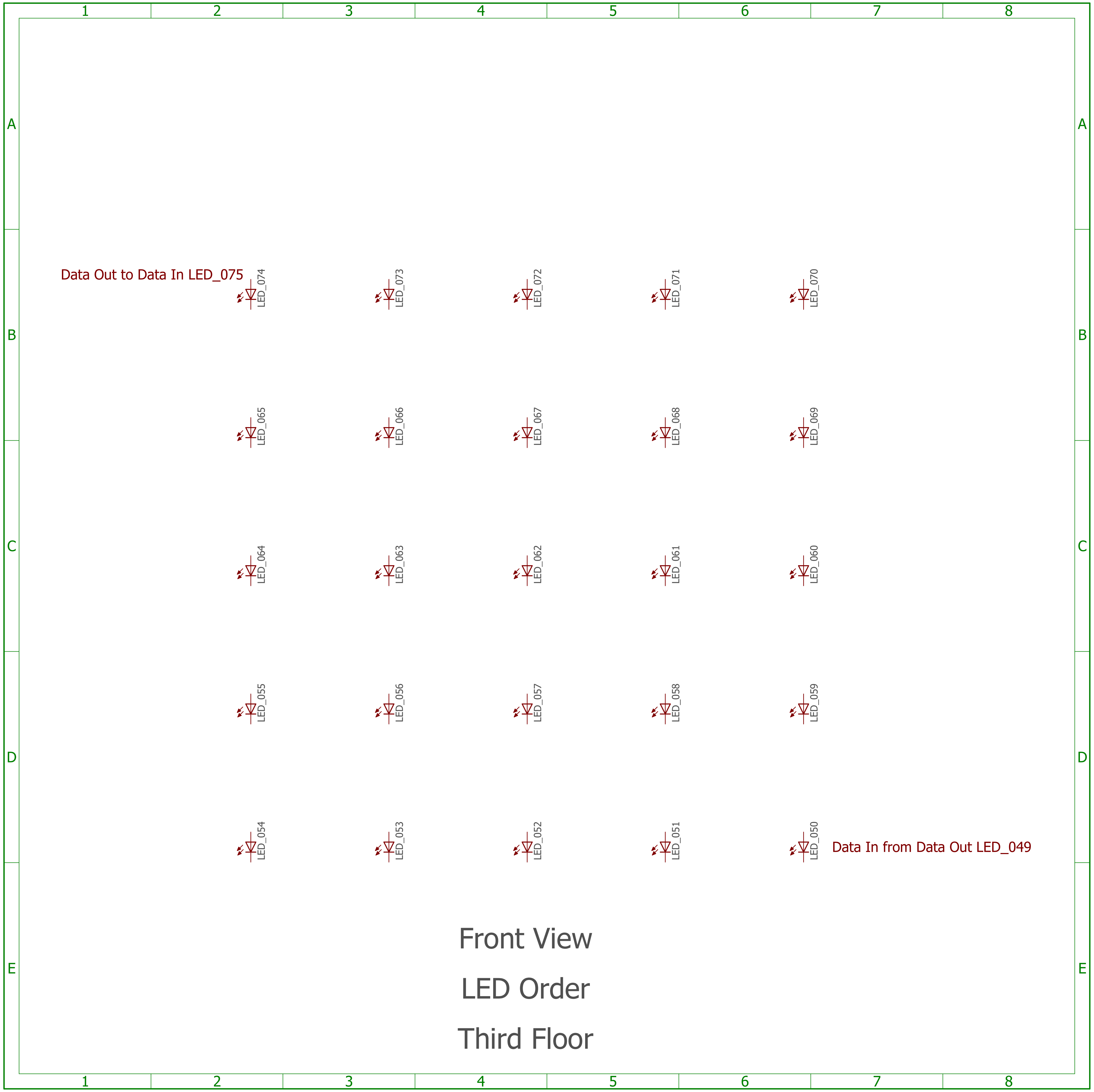
First Floor



Front View

LED Order

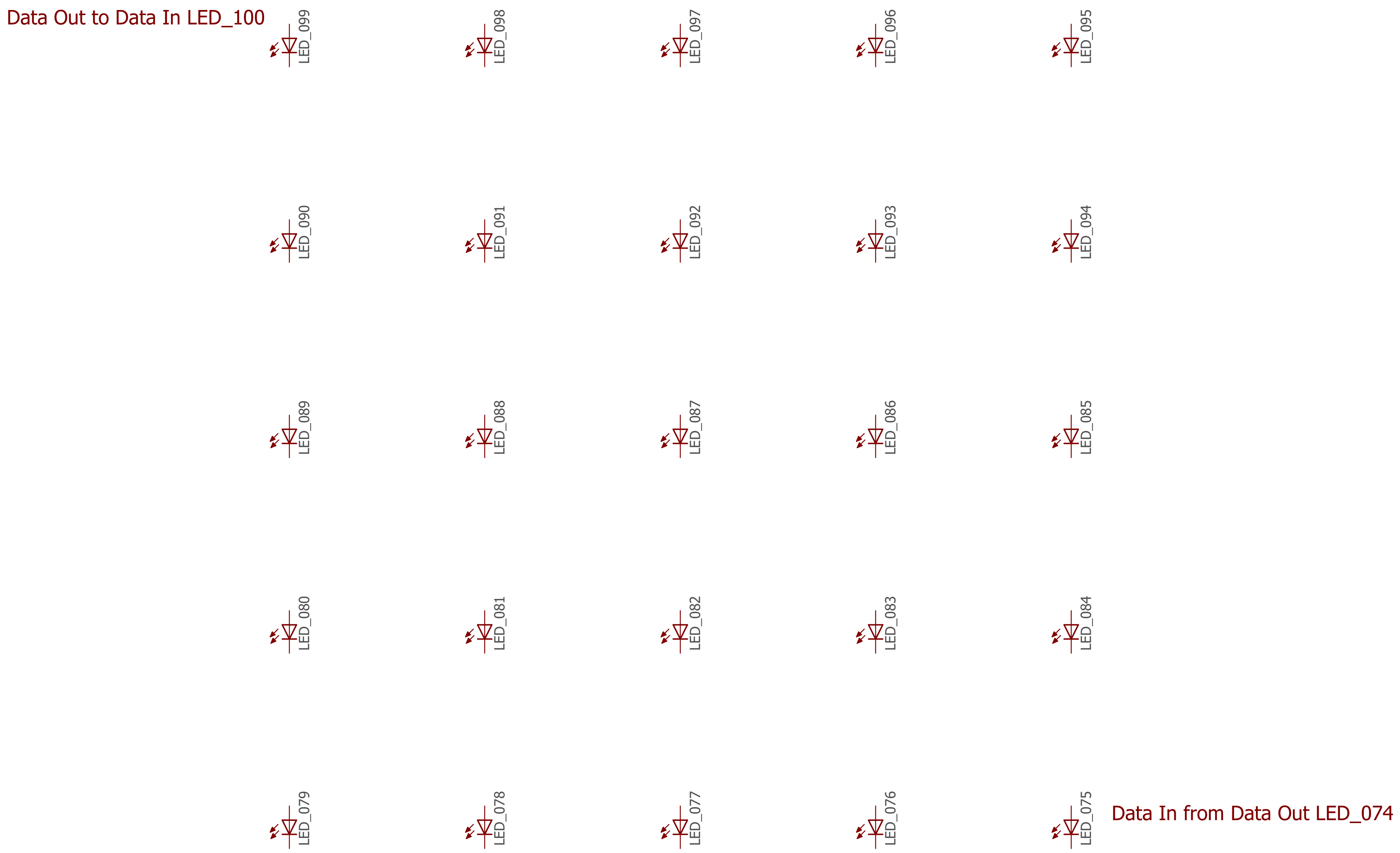
Second Floor



Front View

LED Order

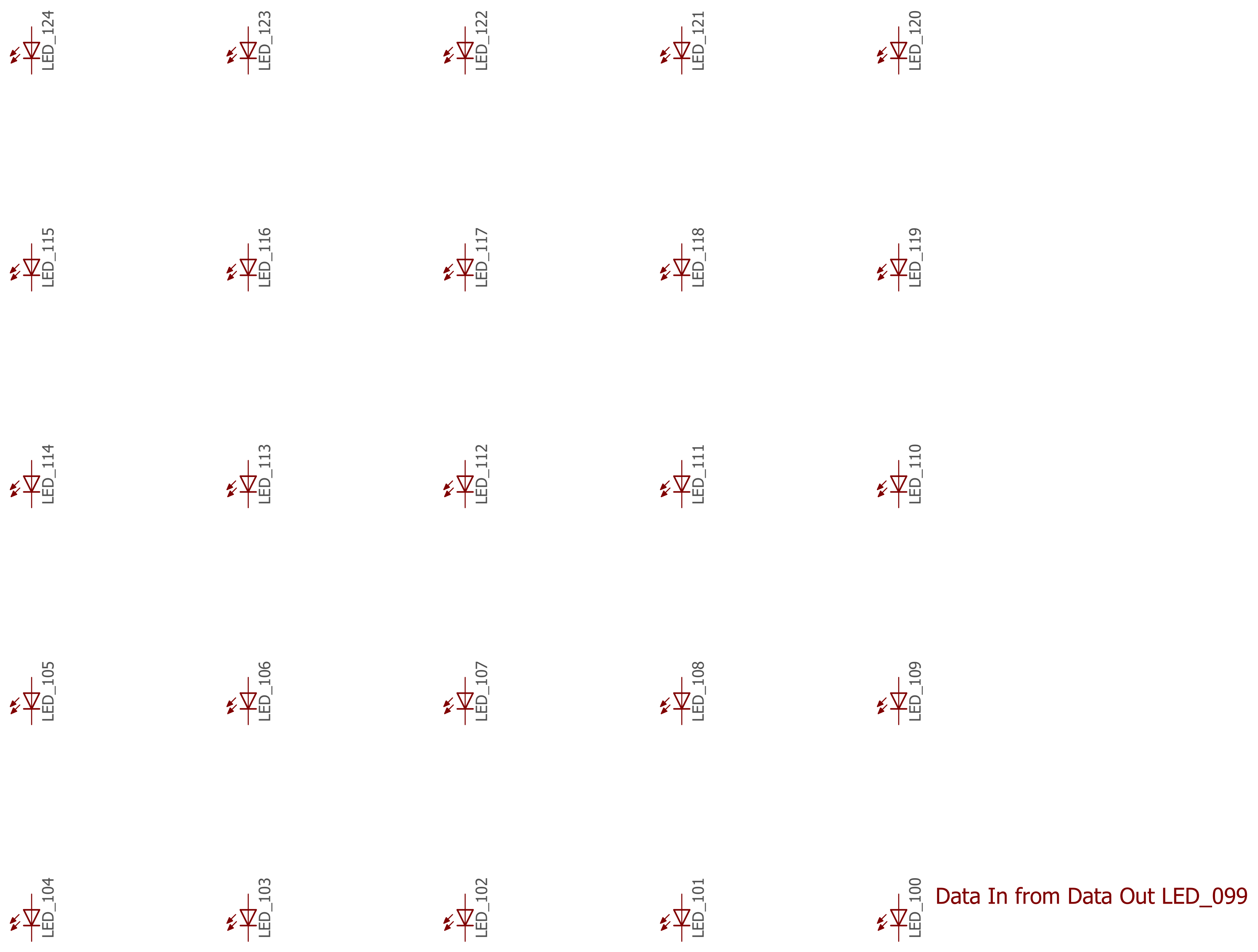
Third Floor



Front View

LED Order

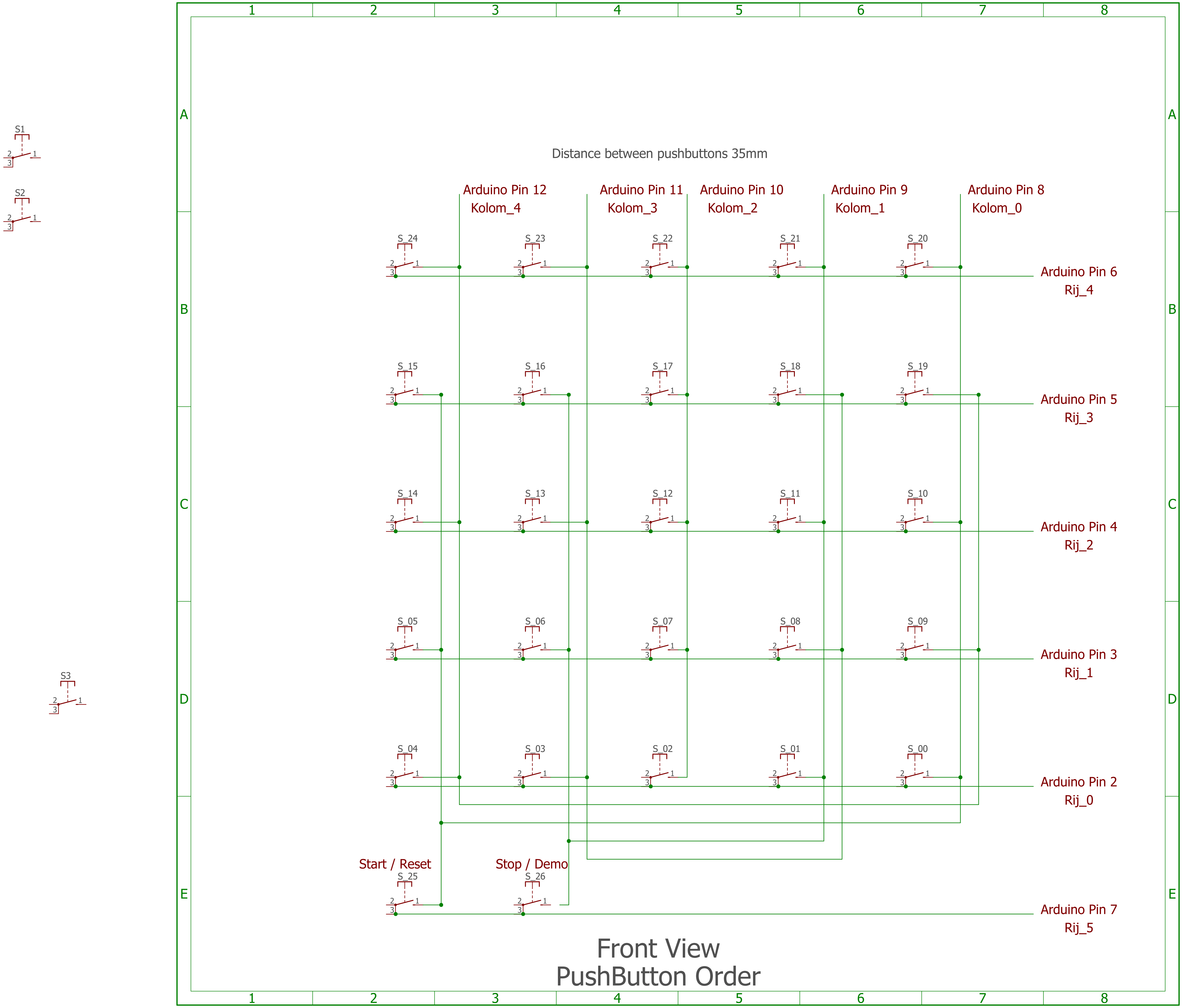
Fourth Floor



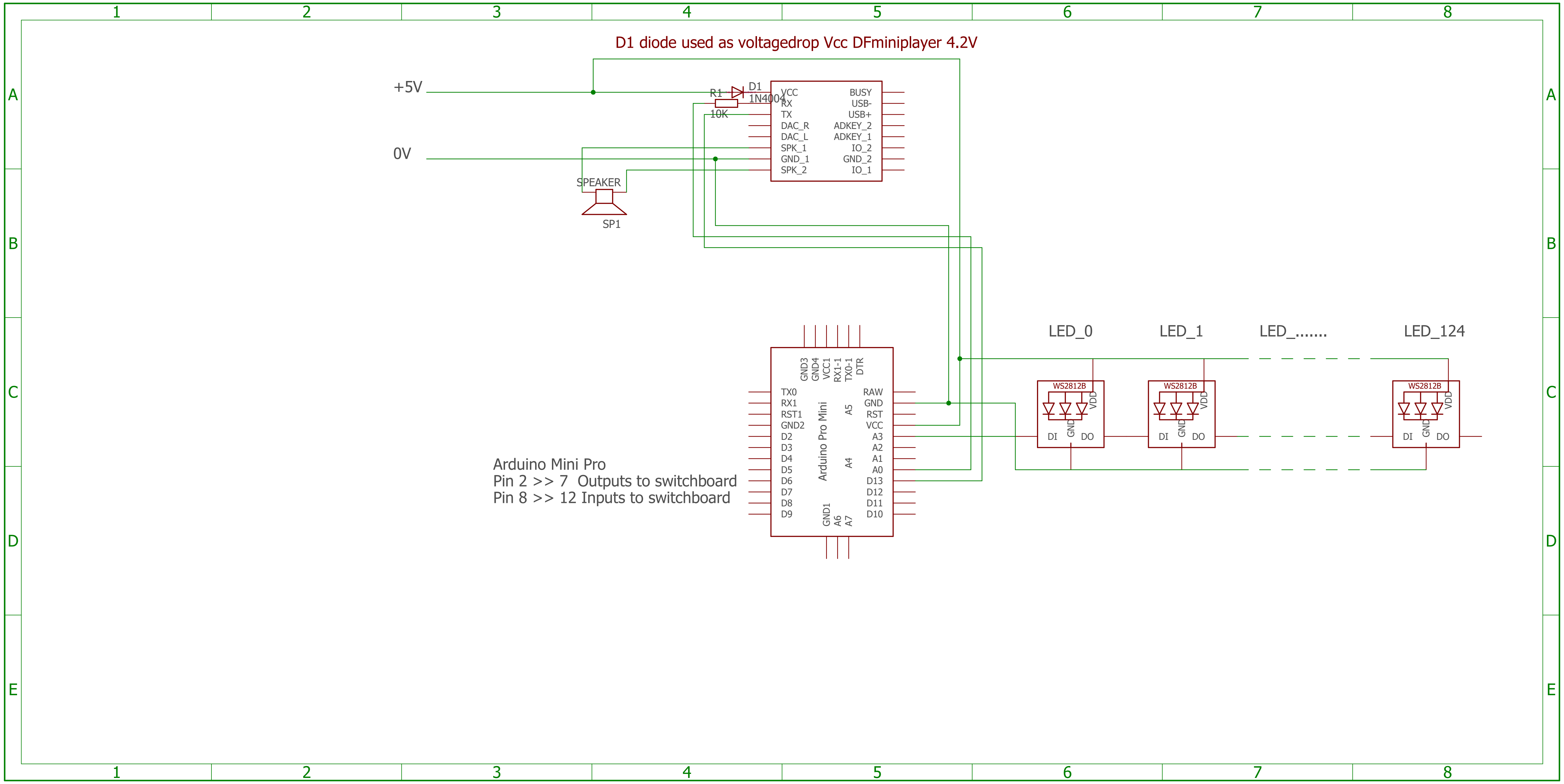
Front View

LED Order

Fifth Floor



24/03/2017 22:15 C:\EAGLE-7.6.0\Switch.sch (Sheet: 1/1)



D1 diode used as voltagedrop Vcc DFminiplayer 4.2V

Arduino Mini Pro
Pin 2 >> 7 Outputs to switchboard
Pin 8 >> 12 Inputs to switchboard

Programma

```
/*
 * 0001_Alweer een winnaar
 * 0002_5 4 3 2 are you readyyyy
 * 0003_yabbadabbadoo
 * 0004_stoomboot
 * 0005_Tot ziens
 * 0006_oh lala
 * 0007_Nieuwe ronde
 * 0008_Lage hoorn
 * 0009_langzaam_lachen
 * 0010_Ja wat is dat hier allemaal
 * 0011_Vogeltjesdans
 * 0012_tuut tuut
 * 0012_Scream_1
 * 0013_Opgepast voor de start
 *
 */
#include <avr/pgmspace.h>
#include <FastLED.h>
#include <DFPlayer_Mini_Mp3.h>
#include <SoftwareSerial.h>

#define NUM_LEDS   125
#define DATA_PIN   17
#define LED_TYPE WS2812B
#define COLOR_ORDER GRB
#define BRIGHTNESS 200
CRGB leds[NUM_LEDS];

#define RIJ_0   2
#define RIJ_1   3
#define RIJ_2   4
#define RIJ_3   5
#define RIJ_4   6
#define RIJ_5   7
#define KOLOM_0  8
#define KOLOM_1  9
#define KOLOM_2  10
#define KOLOM_3  11
#define KOLOM_4  12


PROGMEM const uint8_t tabel[] = {0, 9, 10, 19,       1, 8, 11, 18,       2, 7, 12, 17,       3, 6, 13, 16,       4, 5, 14, 15,
                  25, 34, 35, 44,      26, 33, 36, 43,      27, 32, 37, 42,      28, 31, 38, 41,      29, 30, 39, 40,
                  50, 59, 60, 69,      51, 58, 61, 68,      52, 57, 62, 67,      53, 56, 63, 66,      54, 55, 64,65,
                  75, 84, 85, 94,      76, 83, 86, 93,      77, 82, 87, 92,      78, 81, 88, 91,      79, 80, 89, 90,
                  100, 109, 110, 119,  101, 108, 111, 118,  102, 107, 112, 117,  103, 106, 113, 116,  104, 105, 114, 115,
                  120, 95, 70, 45,     121, 96, 71, 46,     122, 97, 72, 47,     123, 98, 73, 48,     124, 99, 74, 49,
                  119, 94, 69, 44,     118, 93, 68, 43,     117, 92, 67, 42,     116, 91, 66, 41,     115, 90, 65, 40,
                  110, 85, 60, 35,     111, 86, 61, 36,     112, 87, 62, 37,     113, 88, 63, 38,     114, 89, 64, 39,
                  109, 84, 59, 34,     108, 83, 58, 33,     107, 82, 57, 32,     106, 81, 56, 31,     105, 80, 55, 30,
                  100, 75, 50, 25,     101, 76, 51, 26,     102, 77, 52, 27,     103, 78, 53, 28,     104, 79, 54, 29,

                  9, 10, 19, 20,       8, 11, 18, 21,       7, 12, 17, 22,       6, 13, 16, 23,       5, 14, 15, 24,
                  34, 35, 44, 45,      33, 36, 43, 46,      32, 37, 42, 47,      31, 38, 41, 48,      30, 39, 40, 49,
                  59, 60, 69, 70,      58, 61, 68, 71,      57, 62, 67, 72,      56, 63, 66, 73,      55, 64, 65, 74,
                  84, 85, 94, 95,      83, 86, 93, 96,      82, 87, 92, 97,      81, 88, 91, 98,      80, 89, 90, 99,
                  109, 110, 119, 120,  108, 111, 118, 121,  107, 112, 117, 122,  106, 113, 116, 123,  105, 114, 115, 124,
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                  85, 60, 35, 10,      86, 61, 36, 11,      87, 62, 37, 12,      88, 63, 38, 13,      89, 64, 39, 14,
                  84, 59, 34, 9,       83, 58, 33, 8,       82, 57, 32, 7,       81, 56, 31, 6,       80, 55, 30, 5,
                  75, 50, 25, 0,       76, 51, 26, 1,       77, 52, 27, 2,       78, 53, 28, 3,       79, 54, 29, 4,

                  0, 1, 2, 3,          9, 8, 7, 6,          10, 11, 12, 13,      19, 18, 17, 16,      20, 21, 22, 23,
                  25, 26, 27, 28,      34, 33, 32, 31,      35, 36, 37, 38,      44, 43, 42, 41,      45, 46, 47, 48,
                  50, 51, 52, 53,      59, 58, 57, 56,      60, 61, 62, 63,      69, 68, 67, 66,      70, 71, 72, 73,
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                  19, 11, 7, 3,        21, 17, 13, 5,       44, 36, 32, 28,      46, 42, 38, 30,      69, 61, 57, 53,
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                    23, 42, 61, 84,      15, 38, 57, 76,      3, 32, 61, 94,       5, 38, 67, 96,
                    34, 61, 92, 123,     26, 57, 88, 115,     44, 61, 82, 103,     46, 67, 88, 105,
                    48, 67, 86, 109,     40, 63, 82, 101,     28, 57, 86, 119,     30, 63, 92, 121};

// kleur_1[0] en kleur_2[0] mogen niet hetzelfde zijn !!!!
uint8_t kleur_1[] = {0xff, 0x00, 0xff};
uint8_t kleur_2[] ={0xfe, 0xff, 0x00};
uint8_t kleurBuffer[3];
int pauze = 175;
uint16_t controle_getal_1;
uint16_t controle_getal_2;
int positie;
int gekozen;
bool kleur = 0;
bool demo = 1;
int demoPauze = 125;
int teller = 0;
bool eenmalig;
unsigned long millisVorig;
unsigned long millisVorig1;



void setup() {
  delay(2000);
  Serial.begin(115200);
  SoftwareSerial mySerial(13, 14);
  mySerial.begin(9600);
  FastLED.addLeds<NEOPIXEL, DATA_PIN>(leds, NUM_LEDS);
  FastLED.setBrightness(BRIGHTNESS);
  pinMode(RIJ_0, OUTPUT);
  pinMode(RIJ_1, OUTPUT);
  pinMode(RIJ_2, OUTPUT);
  pinMode(RIJ_3, OUTPUT);
  pinMode(RIJ_4, OUTPUT);
  pinMode(RIJ_5, OUTPUT);
  pinMode(KOLOM_0, INPUT_PULLUP);
  pinMode(KOLOM_1, INPUT_PULLUP);
  pinMode(KOLOM_2, INPUT_PULLUP);
  pinMode(KOLOM_3, INPUT_PULLUP);
  pinMode(KOLOM_4, INPUT_PULLUP);
  digitalWrite(RIJ_0, 1);
  digitalWrite(RIJ_1, 1);
  digitalWrite(RIJ_2, 1);
  digitalWrite(RIJ_3, 1);
  digitalWrite(RIJ_4, 1);
  digitalWrite(RIJ_5, 1);
  controle_getal_1 = kleur_1[0] * 4;
  controle_getal_2 = kleur_2[0] * 4;
  randomSeed(analogRead(A0));
  mp3_set_serial(mySerial);
  mp3_set_volume(20);

}

void loop() {
  eenmalig = 0;
  millisVorig1 = millis();
  while(demo == 1){
    if(((millis() - millisVorig1) > 20000) && (eenmalig == 0)){
      eenmalig = 1;
      mp3_play(11);
    }
    wisLeds();
    demo_display();
    millisVorig = millis();
    while((millis() - millisVorig) < demoPauze){
      if(digitalRead(KOLOM_0) == 0){
        delay(5);
        if(digitalRead(KOLOM_0) == 0){
          demo = 0;
          wisLeds();
          teller = 0;
          mp3_play(13);
          while(digitalRead(KOLOM_0) == 0){
            delay(1);
          }
          digitalWrite(RIJ_5, 1);
        }
      }
    }
  }

  gekozen = 0;
  while(gekozen == 0){
    positie = 99;
    digitalWrite(RIJ_0, 0);
    leesInput();
    digitalWrite(RIJ_0, 1);
    digitalWrite(RIJ_1, 0);
    leesInput();
    digitalWrite(RIJ_1, 1);
    digitalWrite(RIJ_2, 0);
    leesInput();
    digitalWrite(RIJ_2, 1);
    digitalWrite(RIJ_3, 0);
    leesInput();
    digitalWrite(RIJ_3, 1);
    digitalWrite(RIJ_4, 0);
    leesInput();
    digitalWrite(RIJ_4, 1);
    digitalWrite(RIJ_5, 0);
    leesInput();
    digitalWrite(RIJ_5, 1);
  }
}

void demo_display(){
  uint8_t demokleur[4];
  digitalWrite(RIJ_5, 0);
  demokleur[0] = random(255);
  demokleur[1] = random(25);
  demokleur[2] = random(255);
  leds[pgm_read_byte_near(tabel + teller)].setRGB(demokleur[0], demokleur[1], demokleur[2]);
  leds[pgm_read_byte_near(tabel + teller + 1)].setRGB(demokleur[0], demokleur[1], demokleur[2]);
  leds[pgm_read_byte_near(tabel + teller + 2)].setRGB(demokleur[0], demokleur[1], demokleur[2]);
  leds[pgm_read_byte_near(tabel + teller + 3)].setRGB(demokleur[0], demokleur[1], demokleur[2]);
  FastLED.show();
  teller = teller + 4;
    if(teller > 1079){
      teller = 0;
    }
}

void leesInput(){
  if(gekozen == 0){
    positie++;
    if(digitalRead(KOLOM_0) == 0){
      delay(5);
      if(digitalRead(KOLOM_0) == 0){
        plaatsKeuze();
        while(digitalRead(KOLOM_0) == 0){
        delay(1);
        }
      }
    }
  }
  if(gekozen == 0){
    positie++;
    if(digitalRead(KOLOM_1) == 0){
      delay(5);
      if(digitalRead(KOLOM_1) == 0){
        plaatsKeuze();
        while(digitalRead(KOLOM_1) == 0){
        delay(1);
        }
      }
    }
  }
  if(gekozen == 0){
    positie++;
    if(digitalRead(KOLOM_2) == 0){
      delay(5);
      if(digitalRead(KOLOM_2) == 0){
        plaatsKeuze();
        while(digitalRead(KOLOM_2) == 0){
        delay(1);
        }
      }
    }
  }
  if(gekozen == 0){
    positie++;
    if(digitalRead(KOLOM_3) == 0){
      delay(5);
      if(digitalRead(KOLOM_3) == 0){
        plaatsKeuze();
        while(digitalRead(KOLOM_3) == 0){
        delay(1);
        }
      }
    }
  }
  if(gekozen == 0){
    positie++;
    if(digitalRead(KOLOM_4) == 0){
      delay(5);
      if(digitalRead(KOLOM_4) == 0){
        plaatsKeuze();
        while(digitalRead(KOLOM_4) == 0){
        delay(1);
        }
      }
    }
  }
}

void plaatsKeuze(){
  if(positie < 125){
    if(leds[positie].r == 0){
      if(kleur == LOW){
        leds[positie].setRGB(kleur_1[0], kleur_1[1], kleur_1[2]);
      }
      if(kleur == HIGH){
        leds[positie].setRGB(kleur_2[0], kleur_2[1], kleur_2[2]);
      }
      FastLED.show();
      if(leds[positie - 25].r == 0){
        leds[positie - 25].setRGB(leds[positie].r, leds[positie].g, leds[positie].b);
        leds[positie].setRGB(0, 0, 0);
        delay(pauze);
        FastLED.show();
        if(leds[positie - 50].r == 0){
          leds[positie - 50].setRGB(leds[positie - 25].r, leds[positie - 25].g, leds[positie - 25].b);
          leds[positie - 25].setRGB(0, 0, 0);
          delay(pauze);
          FastLED.show();
          if(leds[positie - 75].r == 0){
            leds[positie - 75].setRGB(leds[positie - 50].r, leds[positie - 50].g, leds[positie - 50].b);
            leds[positie - 50].setRGB(0, 0, 0);
            delay(pauze);
            FastLED.show();
            if(leds[positie - 100].r == 0){
              leds[positie - 100].setRGB(leds[positie - 75].r, leds[positie - 75].g, leds[positie - 75].b);
              leds[positie - 75].setRGB(0, 0, 0);
              delay(pauze);
              FastLED.show();
            }
          }
        }
      }
      gekozen = 1;
      kleur = kleur ^ 1;
      vier_op_een_rij();
    }
    else{
      mp3_play(10);
      kleurBuffer[0] = leds[positie].r;
      kleurBuffer[1] = leds[positie].g;
      kleurBuffer[2] = leds[positie].b;
      for(int x = 0; x < 5; x++){
        leds[positie] = CRGB::Black;
        FastLED.show();
        delay(500);
        leds[positie] = CRGB::Red;
        FastLED.show();
        delay(500);
      }
      leds[positie] = CRGB::Black;
      FastLED.show();
      delay(500);
      leds[positie].setRGB(kleurBuffer[0], kleurBuffer[1], kleurBuffer[2]);
      FastLED.show();
    }
  }
  else if(positie == 125){
    mp3_play(6);
    wisLeds();
    teller = 0;
  }
  else if(positie == 126){
    mp3_play(5);
    gekozen = 1;
    wisLeds();
    demo = 1;
    teller = 0;
  }
}

void vier_op_een_rij(){
  uint8_t led1;
  uint8_t led2;
  uint8_t led3;
  uint8_t led4;
  uint8_t rbuf[4];
  uint8_t gbuf[4];
  uint8_t bbuf[4];
  int tt = 0;
  int punt = 0;
  uint16_t som;
  while((tt < 1192) && (punt == 0)){
    led1 = pgm_read_byte_near(tabel + tt);
    led2 = pgm_read_byte_near(tabel + tt + 1);
    led3 = pgm_read_byte_near(tabel + tt + 2);
    led4 = pgm_read_byte_near(tabel + tt + 3);
    uint8_t k = leds[led1].r;
    uint8_t l = leds[led2].r;
    uint8_t m = leds[led3].r;
    uint8_t n = leds[led4].r;
    som = k + l + m + n;
    if((som == controle_getal_1) || (som == controle_getal_2)){
      punt = 1;
    }
    tt = tt + 4;
  }
  if(punt == 1){
    mp3_play(1);
    punt = 0;
    rbuf[0] = leds[led1].r;
    gbuf[0] = leds[led1].g;
    bbuf[0] = leds[led1].b;
    rbuf[1] = leds[led2].r;
    gbuf[1] = leds[led2].g;
    bbuf[1] = leds[led2].b;
    rbuf[2] = leds[led3].r;
    gbuf[2] = leds[led3].g;
    bbuf[2] = leds[led3].b;
    rbuf[3] = leds[led4].r;
    gbuf[3] = leds[led4].g;
    bbuf[3] = leds[led4].b;
    for(int x = 0; x < 5; x++){
      leds[led1] = CRGB::Blue;
      leds[led2] = CRGB::Blue;
      leds[led3] = CRGB::Blue;
      leds[led4] = CRGB::Blue;
      FastLED.show();
      delay(500);
      leds[led1].setRGB(rbuf[0], gbuf[0], bbuf[0]);
      leds[led2].setRGB(rbuf[1], gbuf[1], bbuf[1]);
      leds[led3].setRGB(rbuf[2], gbuf[2], bbuf[2]);
      leds[led4].setRGB(rbuf[3], gbuf[3], bbuf[3]);
      FastLED.show();
      delay(500);
    }
    wisLeds();
    mp3_play(4);
  }
}

void wisLeds(){
  for(int wis = 0; wis < NUM_LEDS; wis++){
    leds[wis] = CRGB::Black;
  }
  FastLED.show();
  kleur = 0;
}
```