
FOMOX
MDEF 24/25
Iaac

MACHINE PARADOX

THE PARTY MACHINE

NO HUMANS ALLOWED

MDEF 24/25

Andrea - Belen - Flavio - Max - Ramon

Iaac

CONCEPT

Shy machine

Operates when being closed, ceases to function when it is open and observed

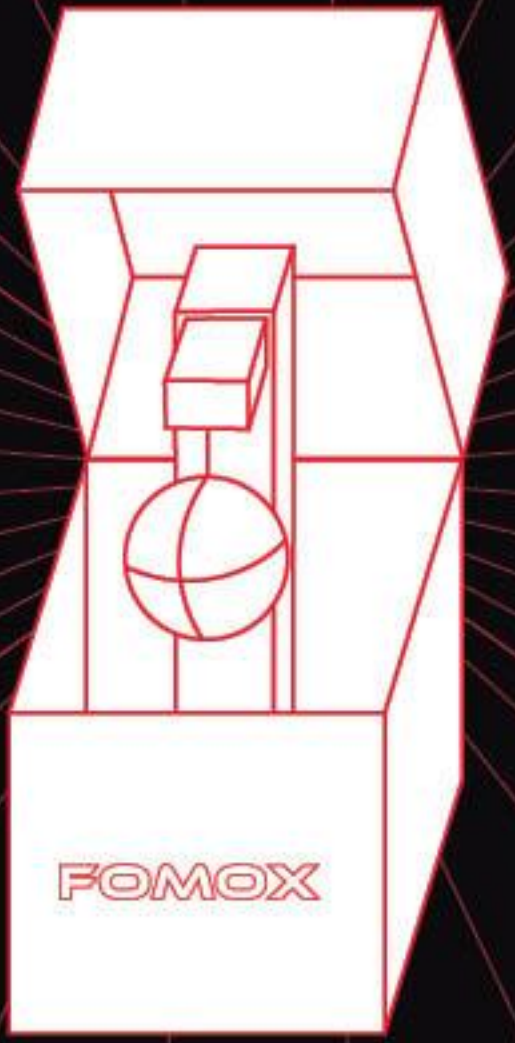
Unreachable goal

Impossibility to reach the "party" no matter how many times you try

Distraction machine

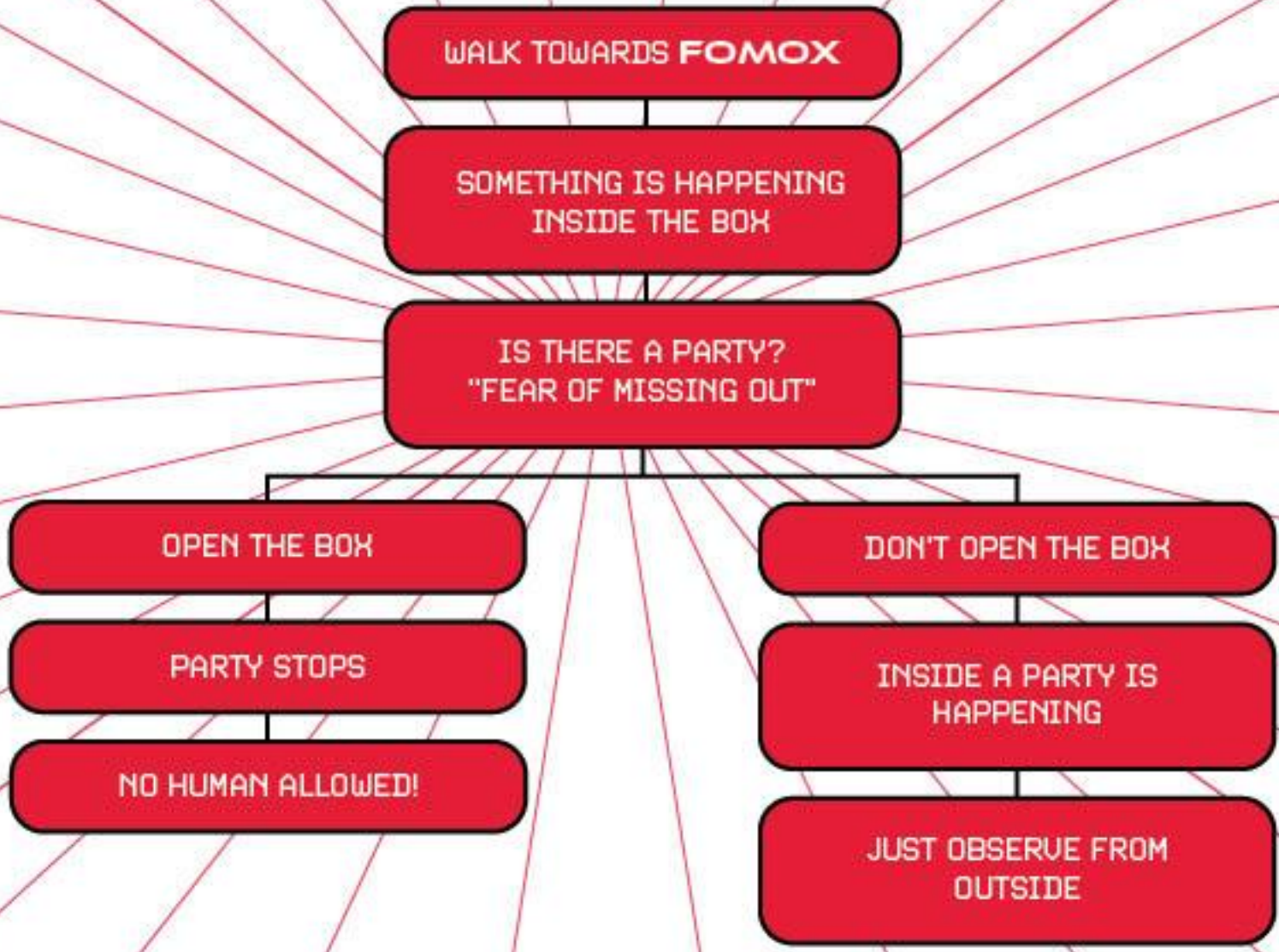
constant laser and sound from the motors

THE PARTY MACHINE



Introducing **FOMOX**

WHAT IS IT SUPPOSED TO DO OR NOT TO DO.



PARTS USED

STEPPER MOTOR

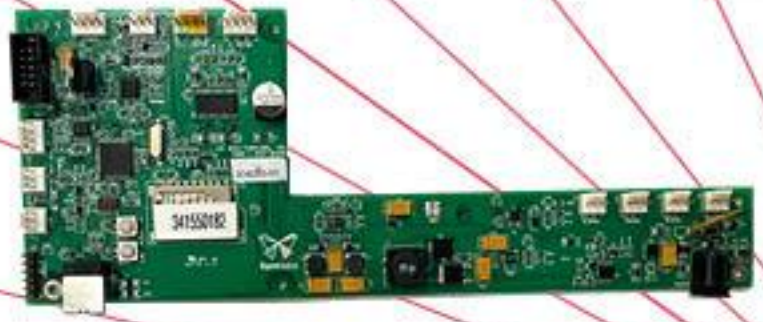
GALVO MOTOR

FORMLABS FORM 1
STRUCTURE

UV LASER

REED SENSOR

SCREEN



FORMLABS FORM 1
PCB BOARD

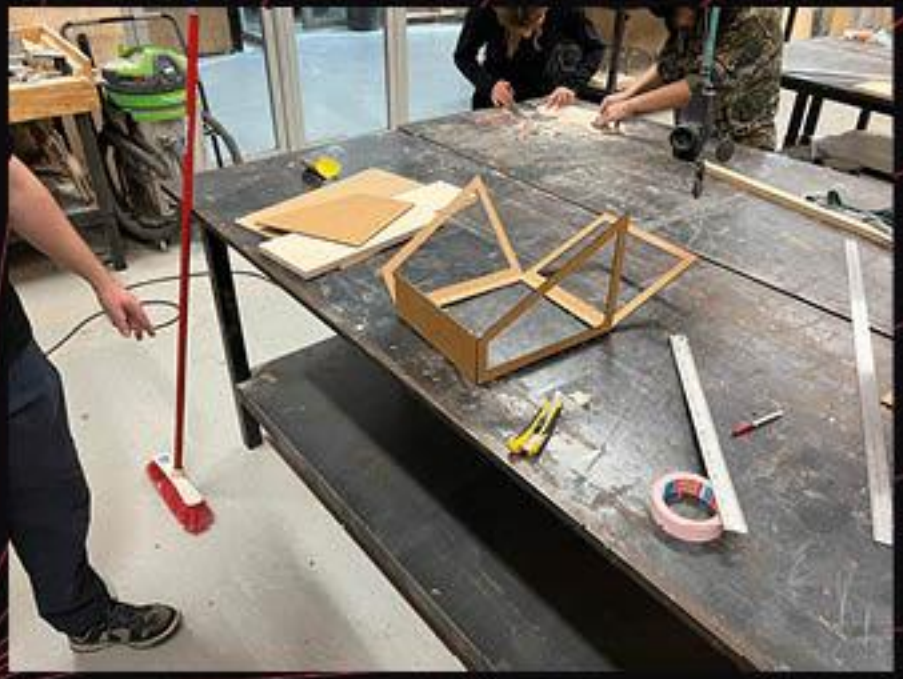
FORMLABS FORM 1
GALVO MOTORS DRIVER

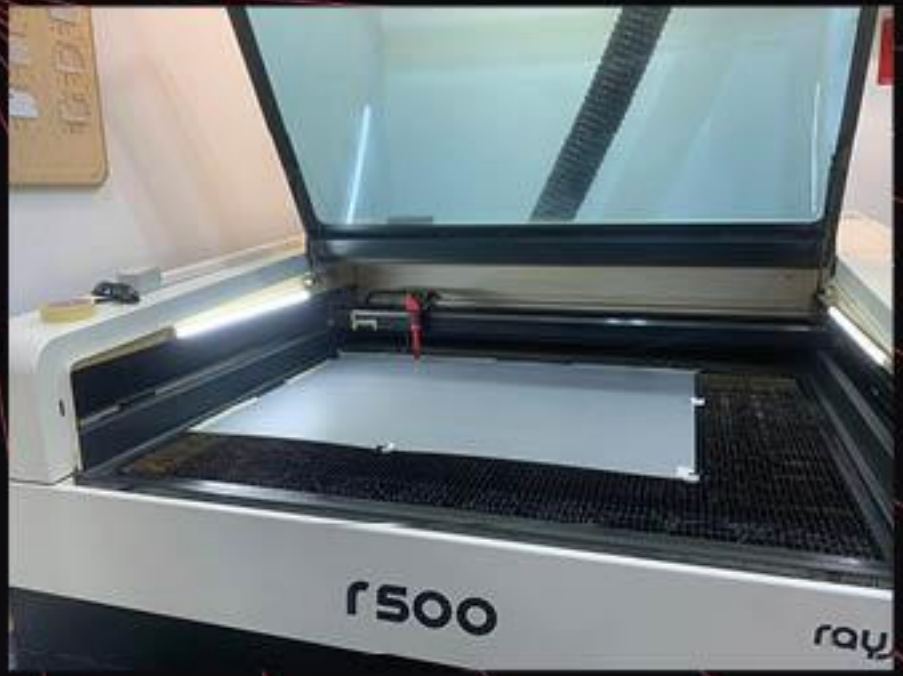
DISCO BALL

ESP 32 BOARD

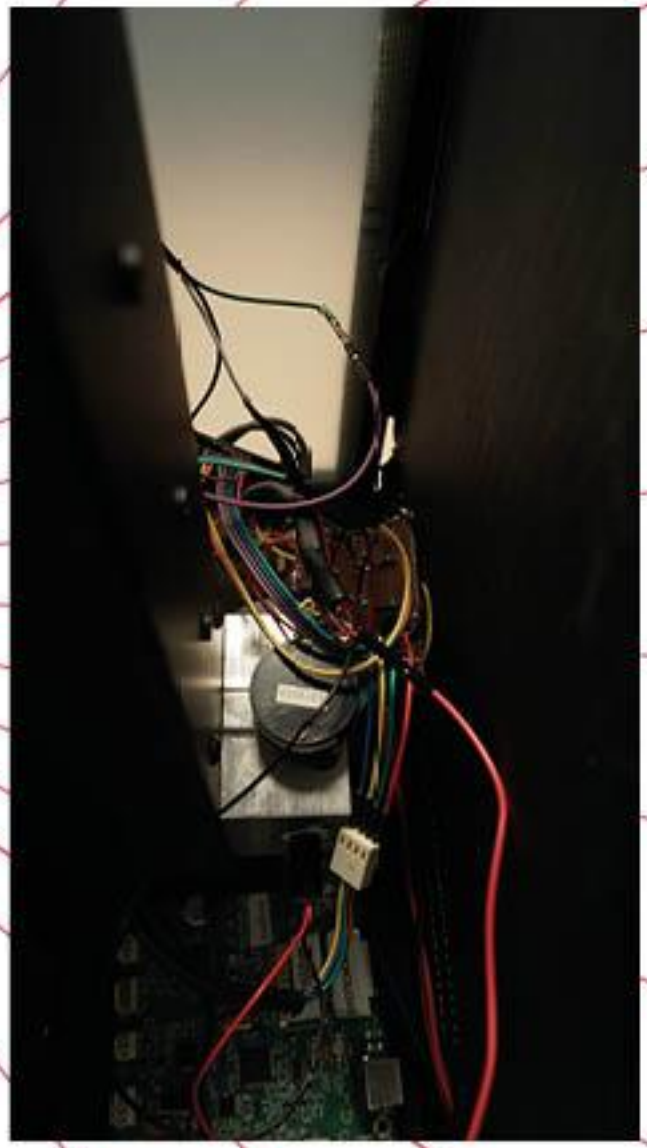
FLOW CHART


OBSERVE
STEPPER MOTOR ON
GALVO MOTOR ON
LASER ON
DISPLAY ON:
"PARTY IN PROGRESS"
OPEN THE BOX
REED SENSOR
STEPEPER
MOTOR OFF
GALVO MOTOR
OFF
LASER OFF
DISPLAY ON:
"NO HUMAN ALLOWED"
CLOSE THE BOX

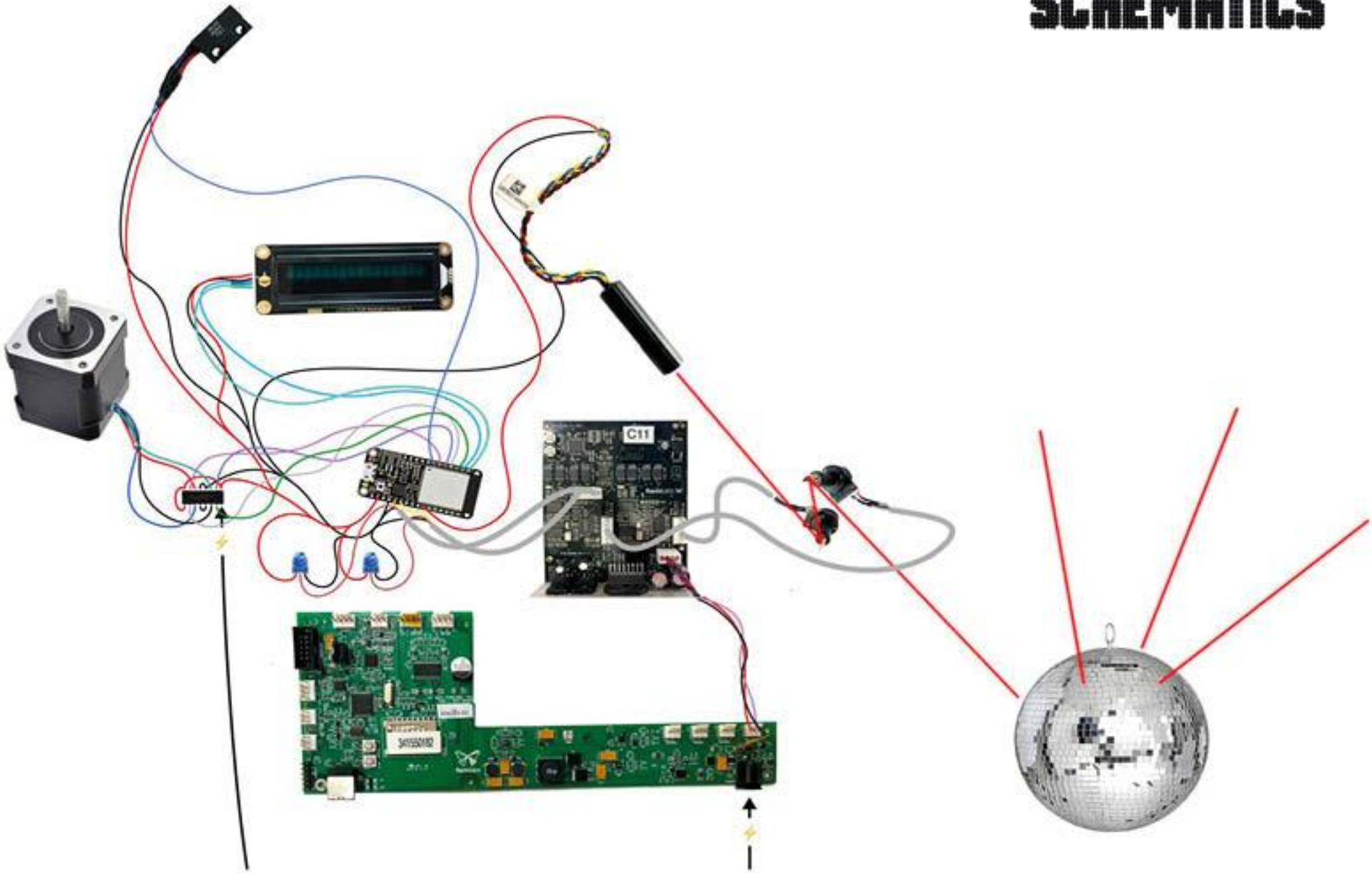



r500

FINAL PROTOTIPE



SCHEMATICS



```
// Include the Arduino Stepper Library
#include <Stepper.h>

#include "DFRobot_RGBLCD1602.h"
#include <Wire.h>

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

// Number of steps per output rotation
const int stepsPerRevolution = 200;

int steps = 20;
int position = 0;

// Create Instance of Stepper library
Stepper myStepper(stepsPerRevolution, 32, 14, 15, 33);
DFRobot_RGBLCD1602 lcd(/*[illegible]*/ 0x60, /*[illegible]*/ 16, /*[illegible]*/ 2);  //16 characters and 2 lines of show


int mag;
int lastmag;
int reed = 27;

int laser = 4;
int PosX = 0;
int PosY = 0;

int a = 4;
int b = 3;

int t = 0;

int drawPeriod = 5;
int stepperPeriod = 1;

unsigned long time_now = 0;
```

Include libraries, define the LCD screen and the Stepper motor, as well as prepare a number of variables.

```
// the setup routine runs once when you press reset:
void setup() {
  Serial.begin(115200);
  delay(750);
  myStepper.setSpeed(200);

  lcd.init();
  lcd.setRGB(colorR, colorG, colorB);

  Serial.println("I'm alive");
  pinMode(reed, INPUT_PULLUP);
  pinMode(laser, OUTPUT);
}
```

Define the pinModes, set a speed for the stepper and initialize the screen and turn on it's backlight

```
void loop() {
  time_now = millis();
  mag = analogRead(reed);
  Serial.println(position);
  if (mag > 2200 || mag < 1200) {
    lcd.clear();
    lcd.print("party in");
    lcd.setCursor(0, 1);
    lcd.print("progress...");
    digitalWrite(laser, HIGH);
    draw();
    position = position + steps;
    //reverse the direction of the [illegible] at the ends of the [illegible]
    if (position < 0 || position > 1600) {
      steps = -steps;
    }
    stepper();
  } else {
    digitalWrite(laser, LOW);
    lcd.clear();
    lcd.print("no humans");
    lcd.setCursor(0, 1);
    lcd.print("allowed!");
    delay(10);
    // while (millis() < time_now + drawPeriod) {
    //   //wait approx. [period] ms
    // }
  }
}
```

If it detects a magnet (box closed), the LCD displays "party in progress...", the laser turns on, and the stepper motor moves. If no magnet is detected (box open), the LCD shows "no humans allowed," and the laser turns off.

```
void stepper() {
  // step one revolution in one direction:
  myStepper.step(stepsPerRevolution);
  while (millis() < time_now + stepPeriod) {
    //wait approx. [period] ms
  }
}
```

The stepper function just calls the stepper to move by an increment.

```
void draw() {
  for (int i = 0; i < 400; i++) {
    Pout = 100 * sin(i * i * PI / 2);
    Pout = 100 * sin(i * i);

    Pout = map(Pout, -100, 100, 0, 200);
    Pout = map(Pout, -100, 100, 0, 200);

    dacWrite(DAC1, Pout);
    dacWrite(DAC2, Pout);

    i += 200;

    while (millis() < time_now + stepPeriod) {
      //wait approx. [period] ms
    }
  }
}
```

The draw function uses DAC to control the galvo motor with precise analog signals, creating X and Y coordinates for a Lissajous curve mapped to the DAC's visible range.

SHORT FILM


FOMOX