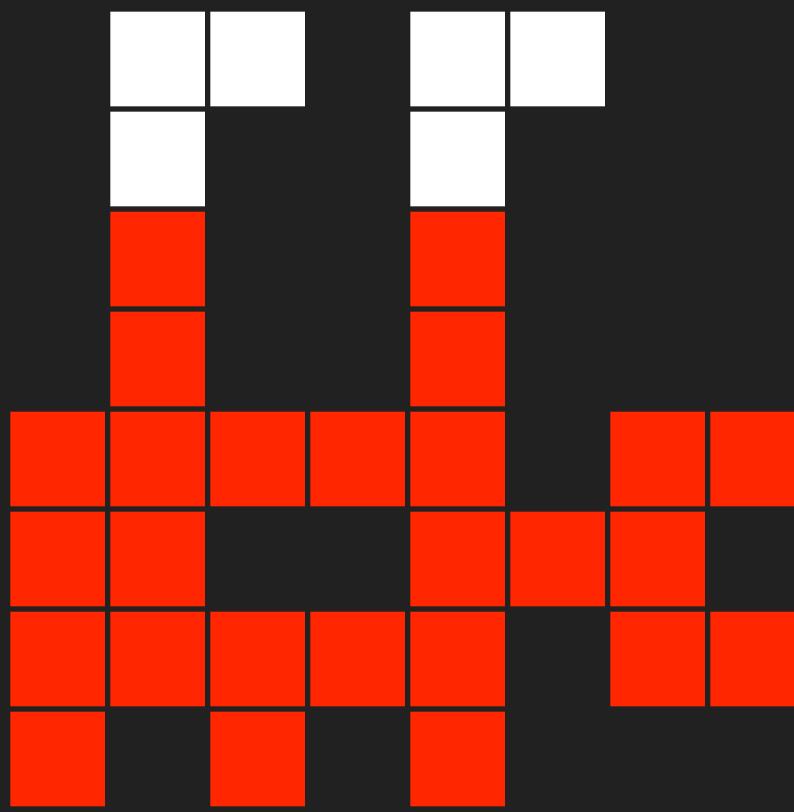


monsters,
mailboxes
and other non-sense



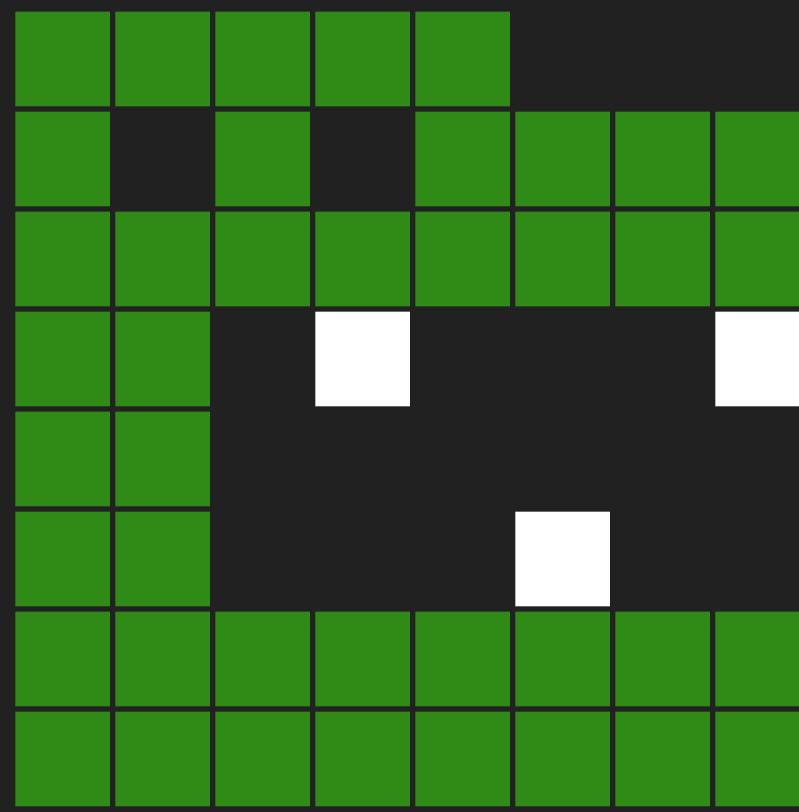
a new home







10 meter



the house
of the future



KlikAan KlikUit®

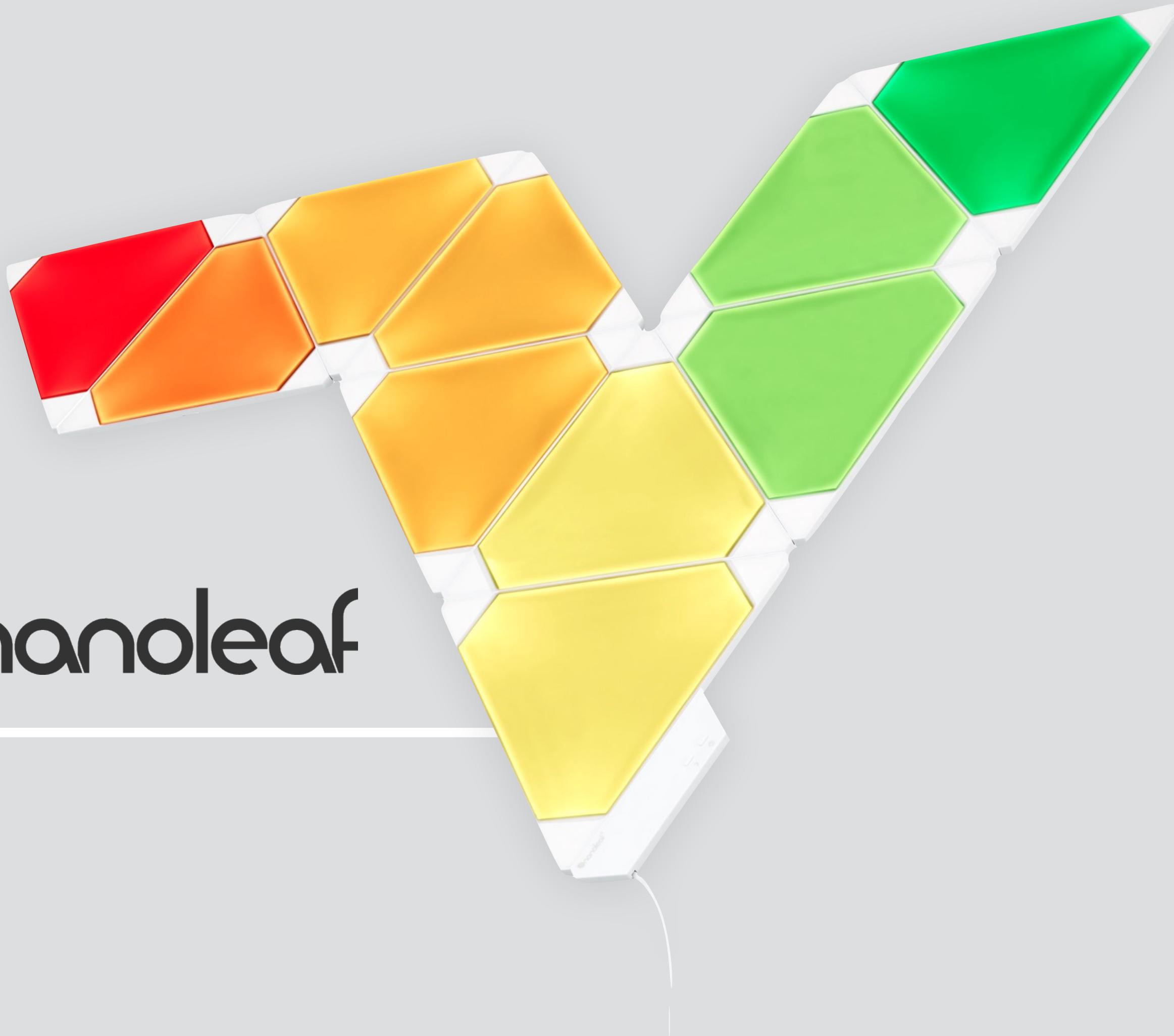
433MHz





Z WAVE



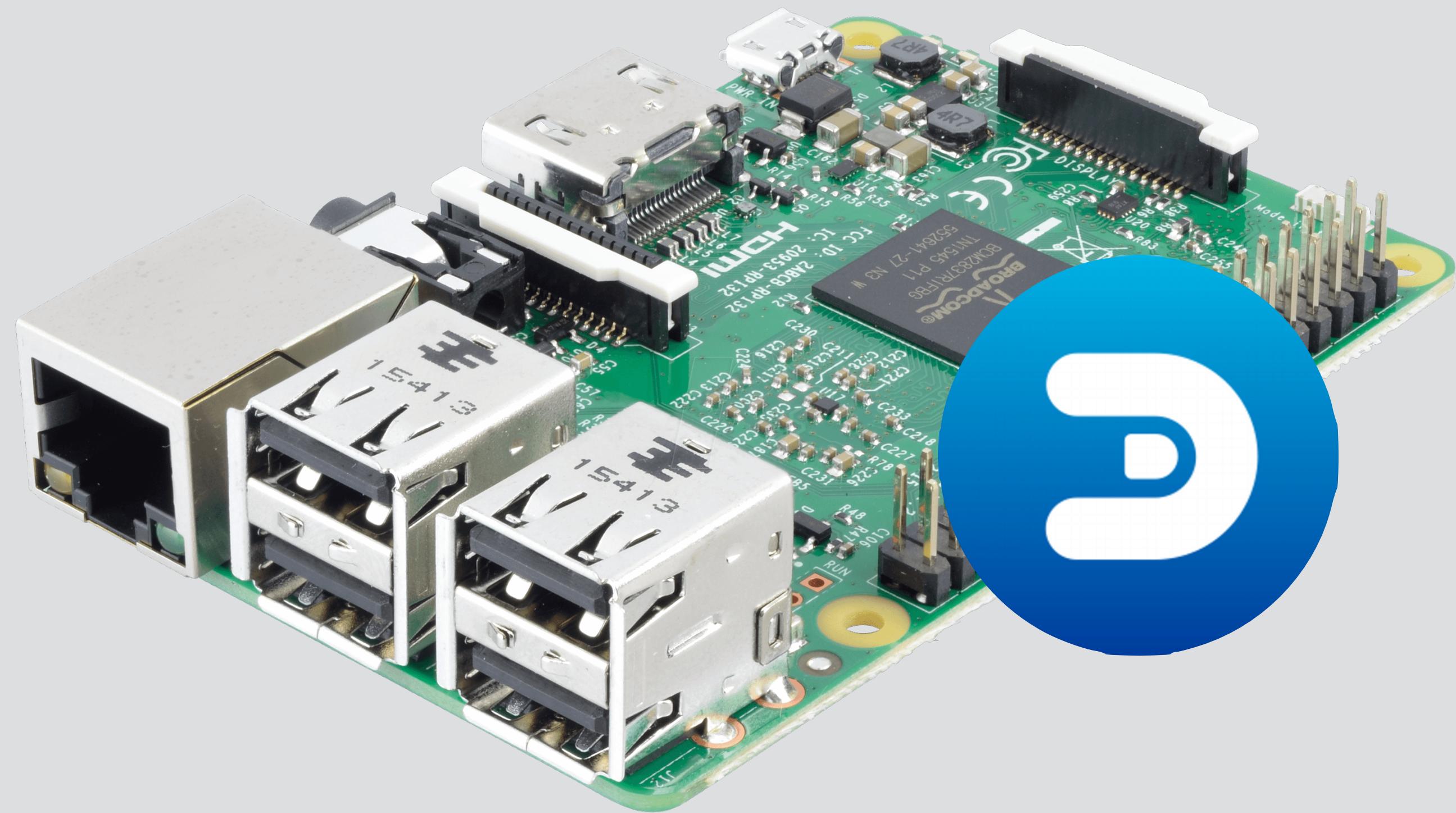




SONOS



IoT is actually incredibly boring



raspberry pi with domoticz

Domoticz V3.7165

2017-04-05 12:45:09 ☀ 07:00 ▼ 20:16

Room: All

Learn Light/Switch ▶

Brievenbus Closed

Last Seen: 2017-04-05 10:44:29
Type: Lighting 2, AC, Contact

Log Edit Notifications

Deurbel voor

Last Seen: 2017-03-28 18:32:43
Type: Chime, SelectPlus, Doorbell

Log Edit Notifications

Keuken Off

Last Seen: 2017-04-04 23:13:34
Type: Lighting 2, AC, On/Off

Log Edit Timers Notifications

Rookmelder 1 Normal

Last Seen: 2016-12-06 18:03:33
Type: Security, KD101 smoke detector, Smoke Detector

Log Edit Timers Reset Notifications

Rookmelder 2 Normal

Last Seen: 2016-12-24 20:10:25
Type: Security, KD101 smoke detector, Smoke Detector

Log Edit Timers Reset Notifications

Ventilator Off

Last Seen: 2017-01-04 13:14:42
Type: Lighting 1, ARC, On/Off

Log Edit Timers Notifications

Kantoor Lichtstrip Off

Last Seen: 2017-04-05 12:43:09
Type: Lighting 2, AC, On/Off

Log Edit Timers Notifications

Kerstster Off

Last Seen: 2017-04-03 23:23:14
Type: Lighting 1, ARC, On/Off

Log Edit Timers Notifications

Bewegingssensor Off

Last Seen: 2017-04-05 11:10:14
Type: Lighting 2, AC, Motion Sensor

Log Edit Notifications

Kippenverwarming Off

Last Seen: 2017-03-25 13:13:57
Type: Lighting 2, AC, On/Off

Log Edit Timers Notifications

Pixel On

Last Seen: 2017-03-28 08:03:52
Type: Lighting 1, X10, On/Off

Log Edit Timers Notifications

PowerOff On

Last Seen: 2017-04-05 12:43:10
Type: Lighting 2, AC, On/Off

Log Edit Timers Notifications

Film & series Off

Last Seen: 2017-03-27 22:59:34
Type: Lighting 2, AC, On/Off

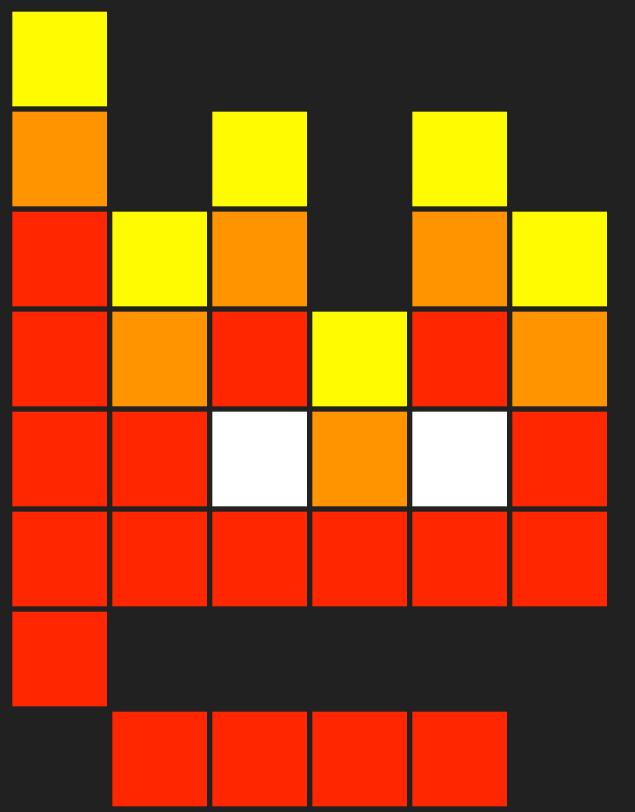
Log Edit Timers Notifications

Music Off

Last Seen: 2017-04-05 12:43:11
Type: Lighting 2, AC, On/Off

Log Edit Timers Notifications





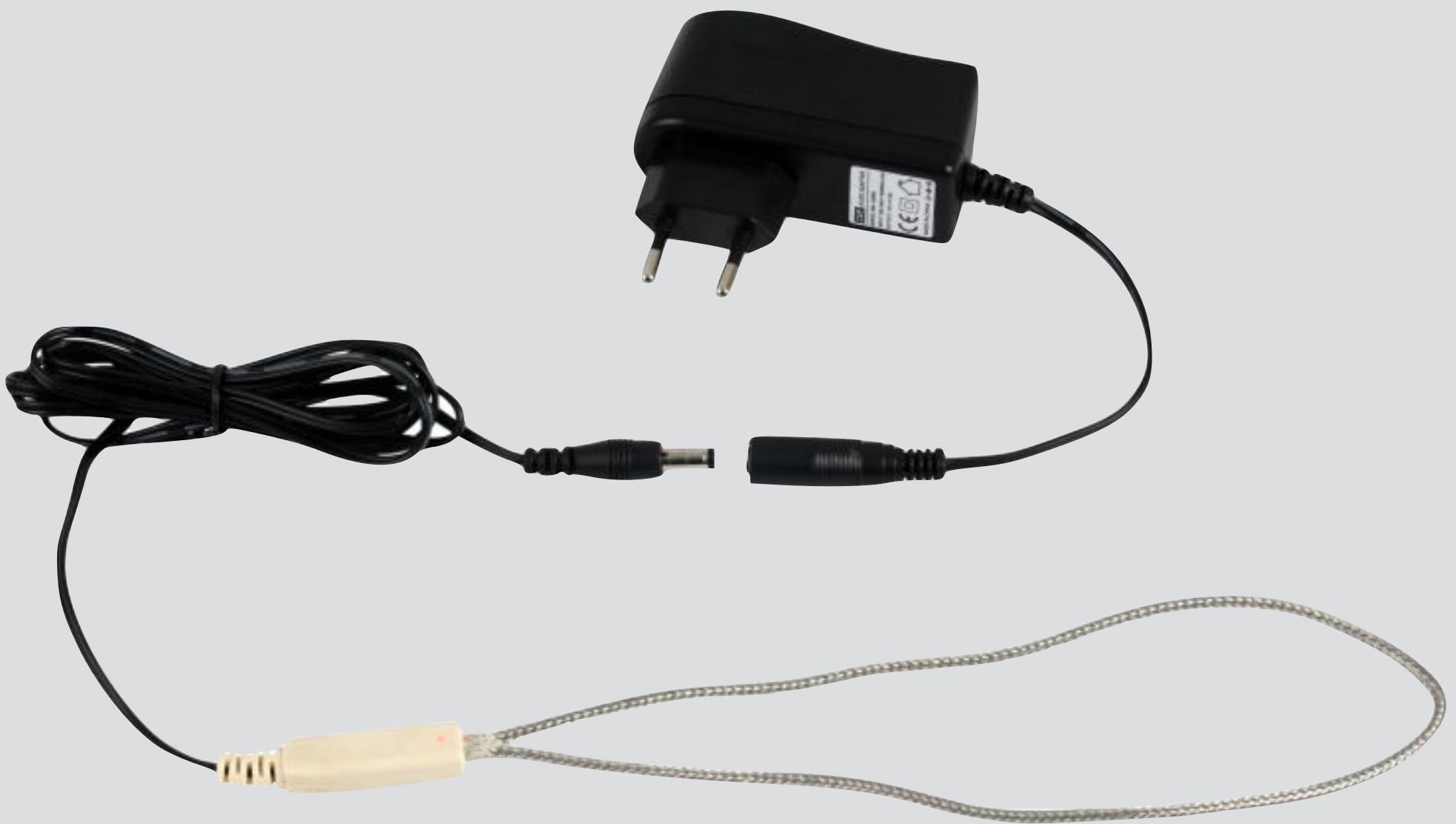
chicken thermostat



brrrr!



kippenwaterdrinkbak
(chicken water trough)



kippenwaterdrinkbakverwarmselement
(chicken water trough heater)



kippenwaterdrinkbakverwarmingselementschakelaar
(chicken water trough heater switch)



kippenwaterdrinkbakverwarmingselementschakelaarthermometer
(chicken water trough heater switch thermometer)

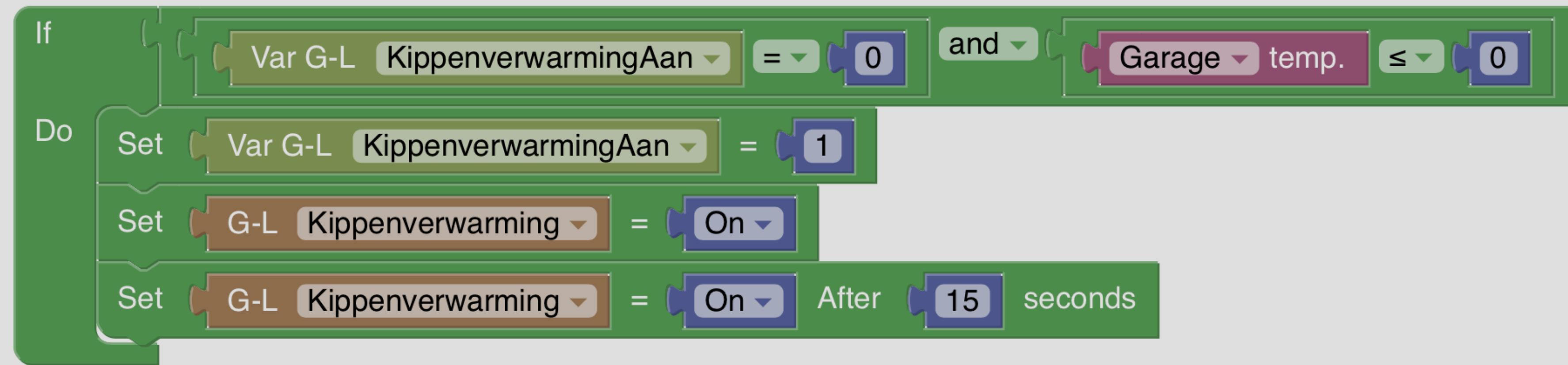




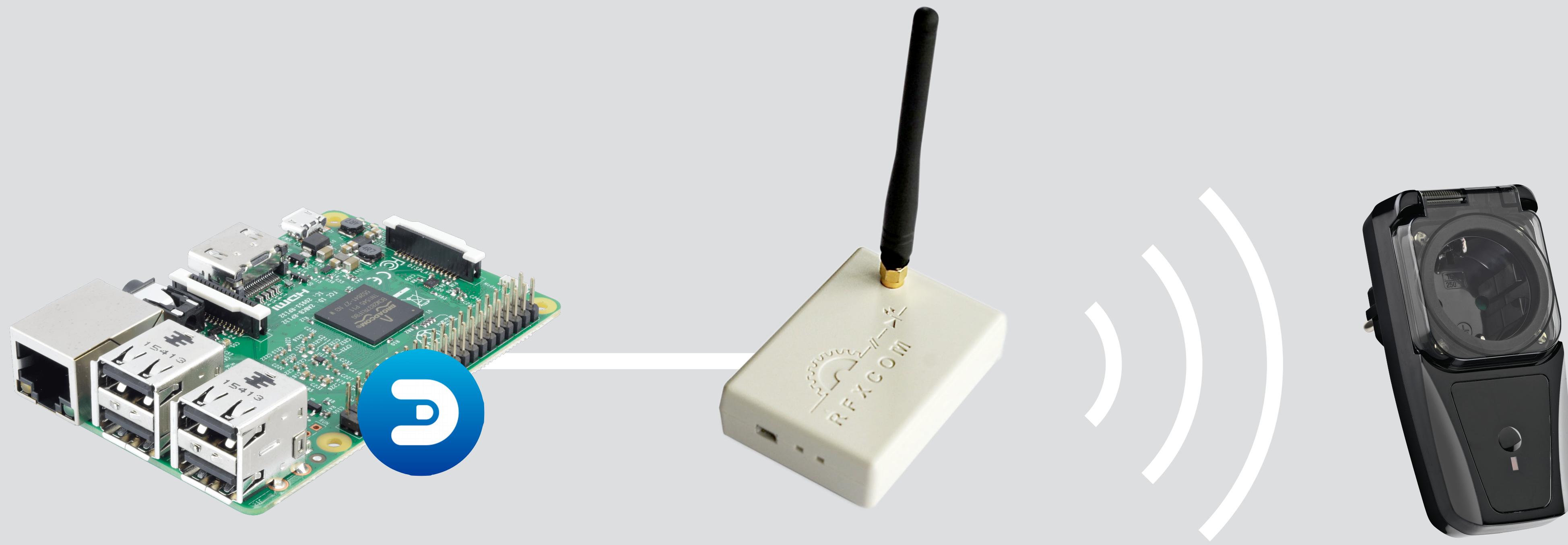
rfxcom



every 30 seconds a “ping” with the temperature



temperature below zero, turn on the heater



turn klikaanklikuit switch on

12:30



PUSHOVER

Kippen
Het is boven het
vriespunt water-
bakverwarming uit-
gezet

Delete

The “S” in IoT stands for security

Domoticz V3.7165

Dashboard | Switches | Scenes | Temperature | Weather | Utility | Setup

Used

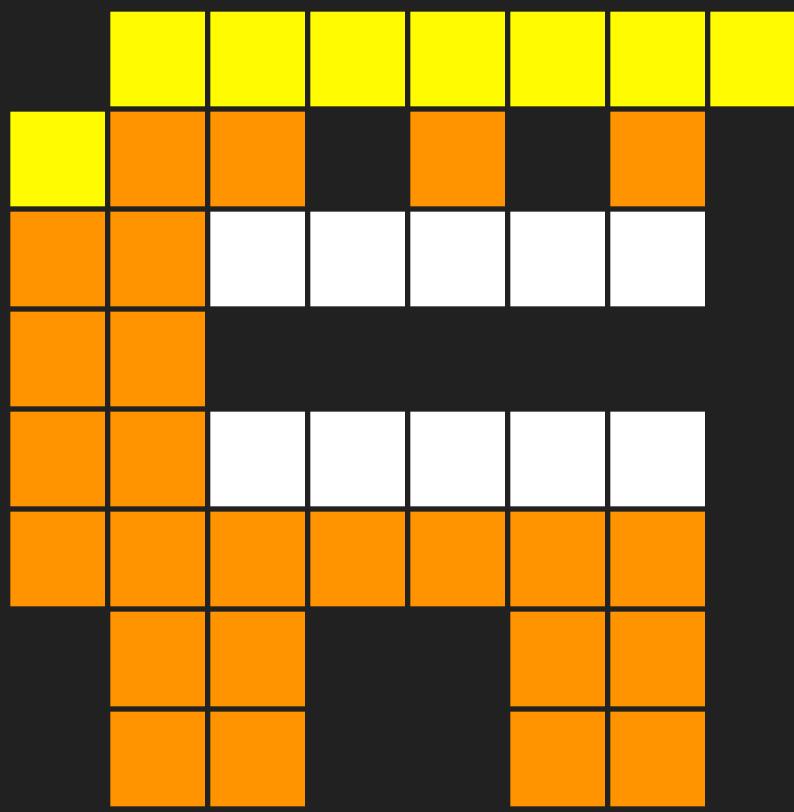
All Devices

Not Used

Show 25 entries

Search : rfx

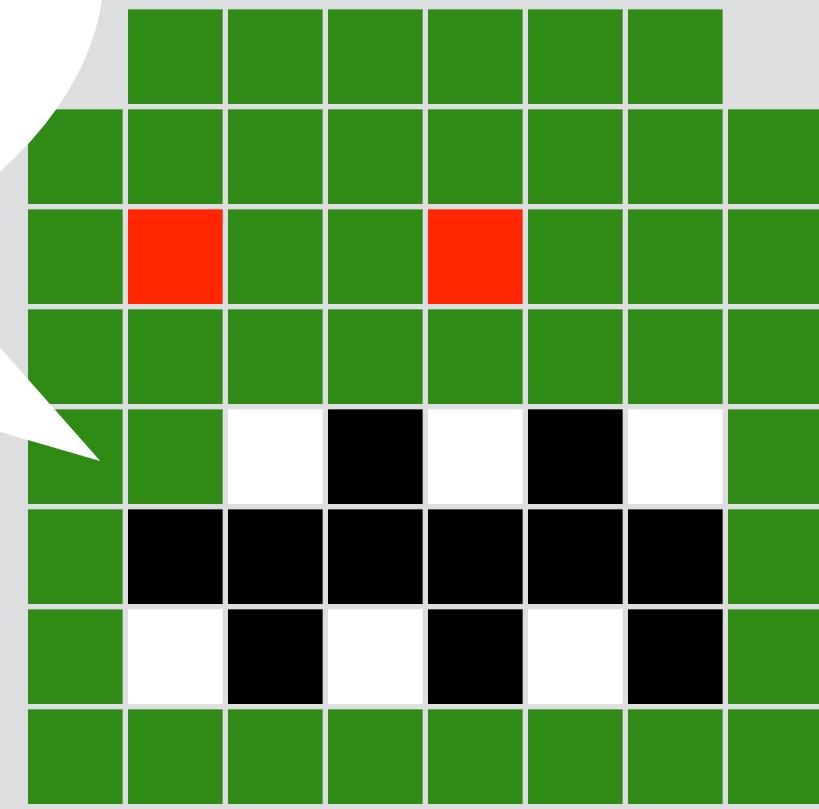
	Idx	Hardware	ID	Unit	Name	Type	SubType	Data				Last Seen
	180	RFXCOM	00FF	15	Unknown	Chime	ByronSX	On	4	-		2017-04-08 08:05:54
	204	RFXCOM	4F00	0	Unknown	UV	UVN800	0.0 UVI	4	100		2017-04-07 22:26:46
	233	RFXCOM	0000	0	Unknown	Chime	ByronSX	On	4	-		2017-04-07 17:16:25
	196	RFXCOM	8D00	0	Unknown	Wind	WGR800	315.00;NW;19;6;0.0;-2.3	4	100		2017-04-07 14:55:15
	372	RFXCOM	505F04	0	Unknown	Security	X10 security motion	Motion	4	100		2017-04-07 13:29:23
	371	RFXCOM	0024	0	Unknown	Chime	ByronSX	On	4	-		2017-04-07 08:34:27
	369	RFXCOM	03F3	10	Unknown	Chime	SelectPlus	On	4	-		2017-04-06 11:04:01
	370	RFXCOM	013D	39	Unknown	Chime	SelectPlus	On	5	-		2017-04-06 11:04:01
	365	RFXCOM	01D9	195	Unknown	Chime	SelectPlus	On	5	-		2017-04-06 11:04:00
	366	RFXCOM	006C	14	Unknown	Chime	SelectPlus	On	5	-		2017-04-06 11:04:00
	367	RFXCOM	0361	225	Unknown	Chime	SelectPlus	On	5	-		2017-04-06 11:04:00



the fiery
witches kettle

Do-it-yourself IoT

BRAINS



(or microcontrollers)

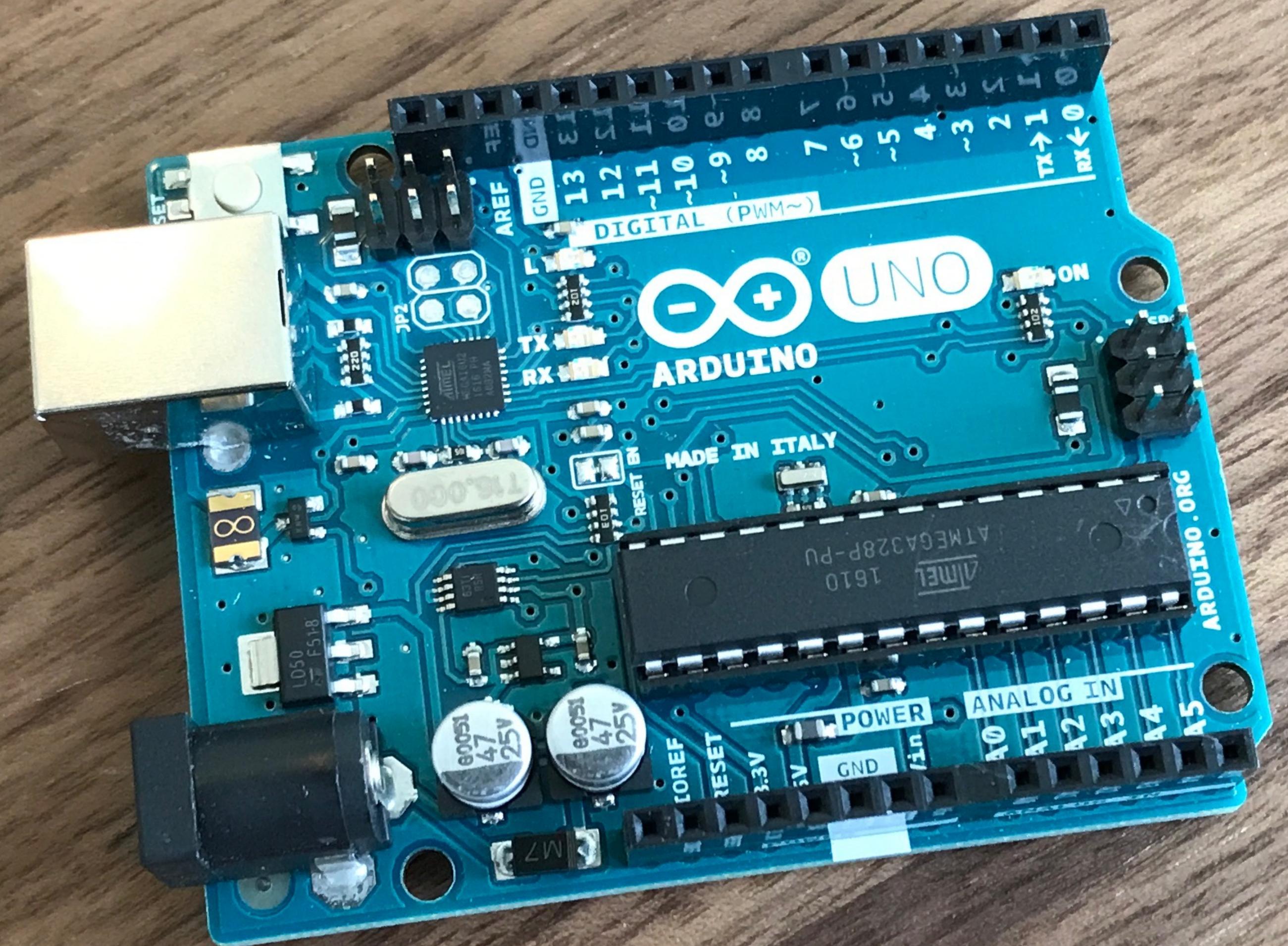
Arduino Uno

ATmega238

16 Mhz

2 KB RAM

32 KB Flash



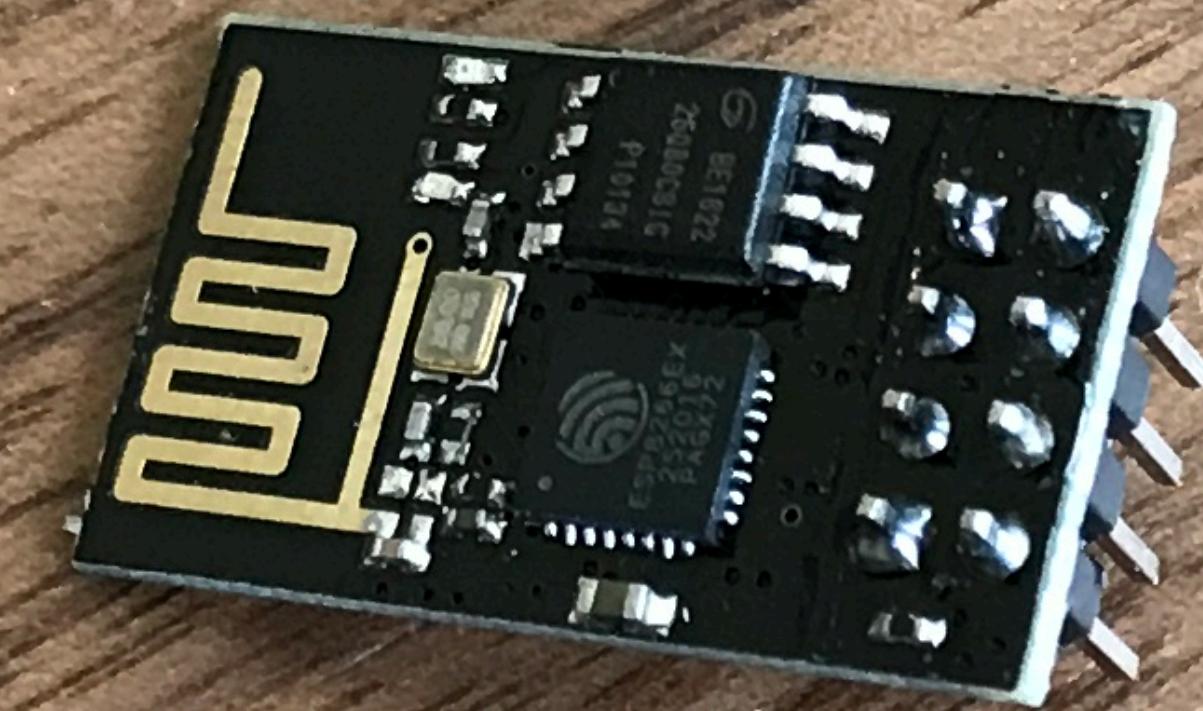
ESP-01

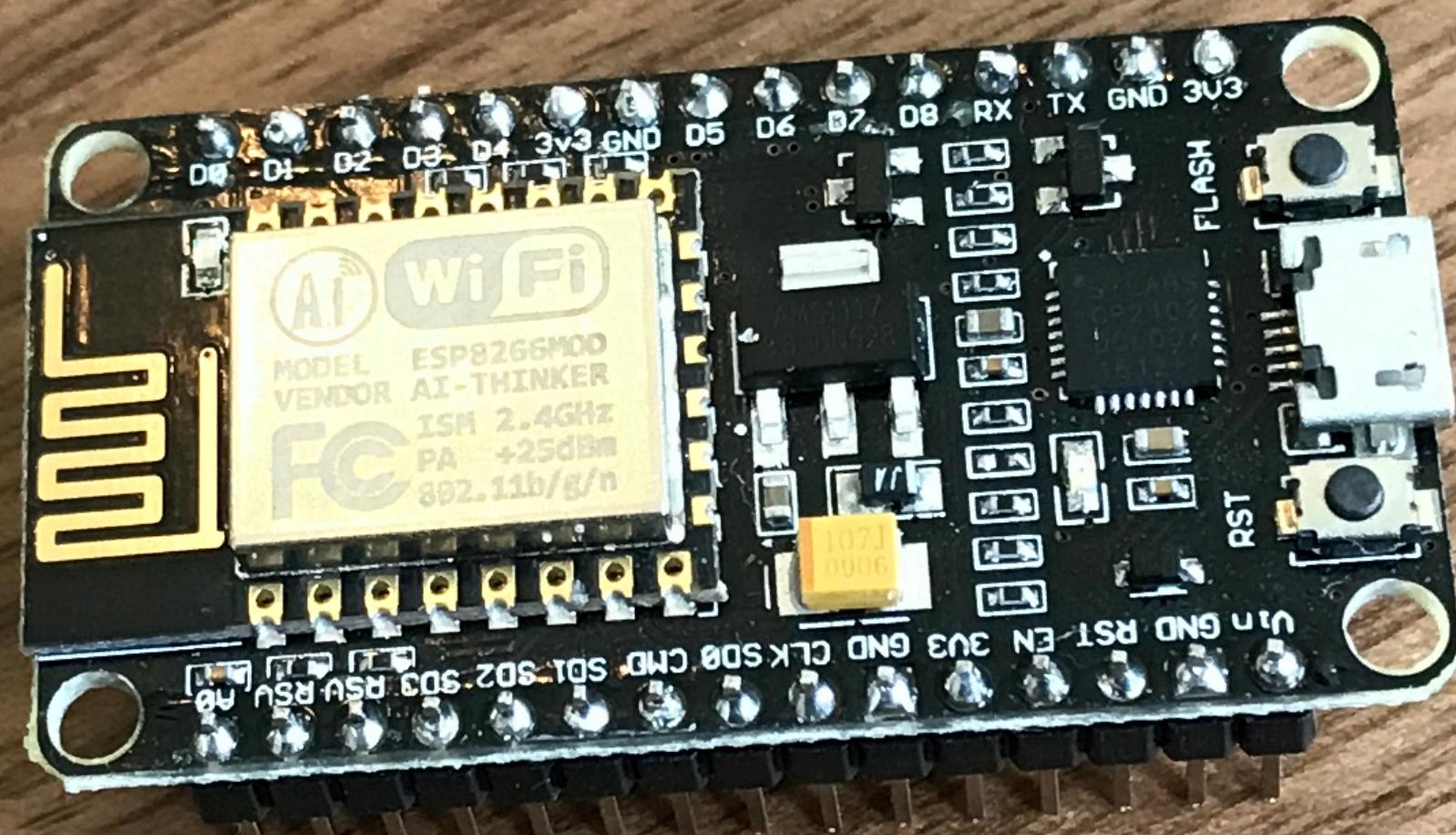
ESP 8266

80 Mhz

128 KB RAM

512 KB Flash





NodeMCU

ESP 8266

80 Mhz

128 KB RAM

4 MB Flash

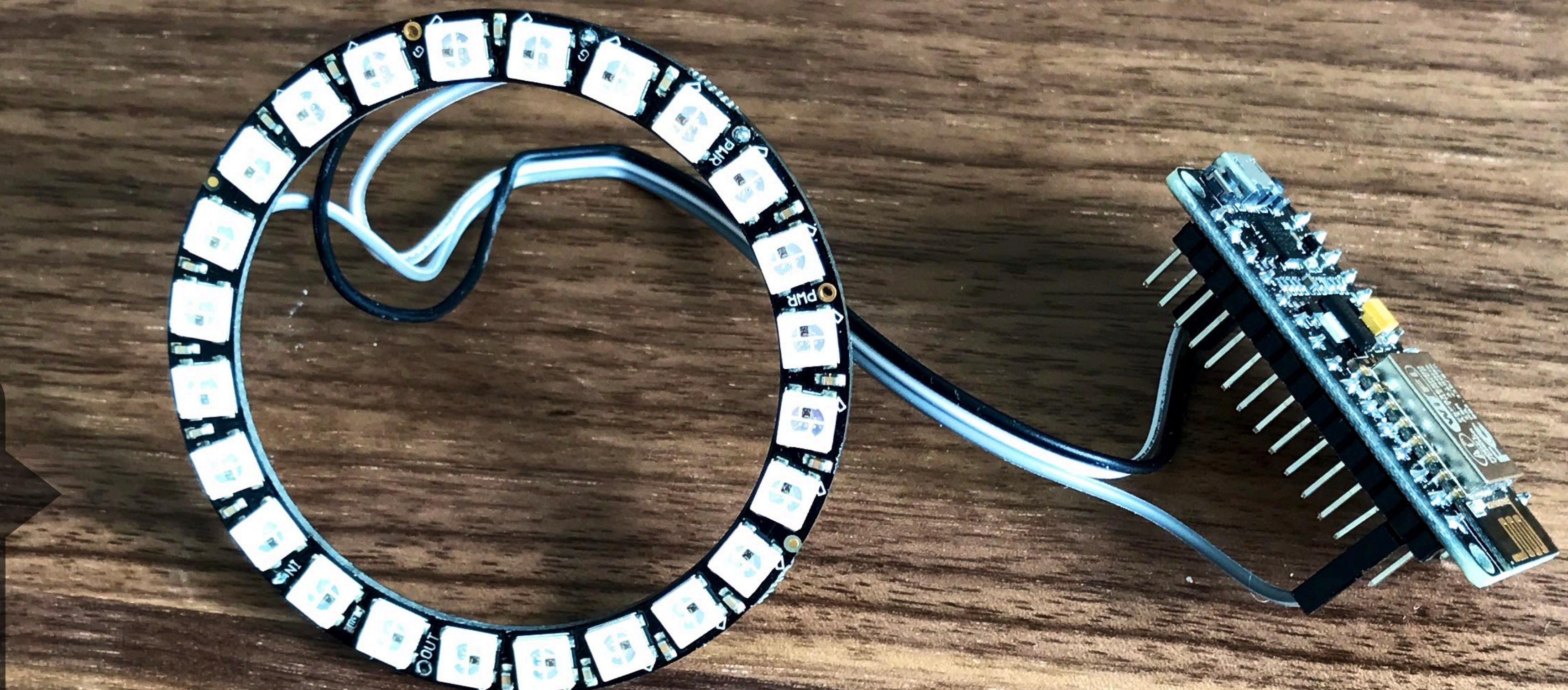




NodeMCU

Neopixel

24 serial
connected
WS2812 RGB
LEDs



```
#include <Adafruit_NeoPixel.h>

#define PIN      D1
#define PIXELS  24

Adafruit_NeoPixel strip = Adafruit_NeoPixel(PIXELS, PIN, NEO_GRB + NEO_KHZ800);

void setup(void) {
    strip.begin();
    strip.setBrightness(255);

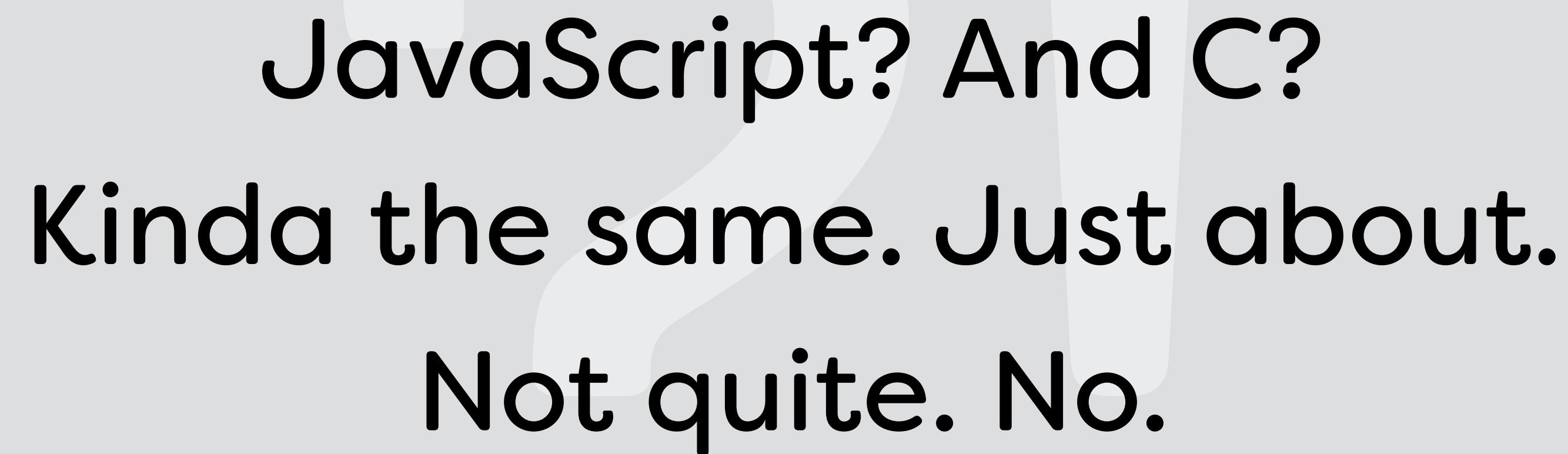
    strip.setPixelColor(0, strip.Color(0, 0, 255));
    strip.show();
}

void loop(void) {
}
```

```
int i = 0;

void setup(void) {
    strip.begin();
    strip.setBrightness(255);
}

void loop(void) {
    i = (i + 1) % PIXELS;
    strip.setPixelColor(i % PIXELS, strip.Color(0, 0, 0));
    strip.setPixelColor((i + 1) % PIXELS, strip.Color(0, 0, 63));
    strip.setPixelColor((i + 2) % PIXELS, strip.Color(0, 0, 127));
    strip.setPixelColor((i + 3) % PIXELS, strip.Color(0, 0, 195));
    strip.setPixelColor((i + 4) % PIXELS, strip.Color(0, 0, 255));
    strip.show();
    delay(8);
}
```



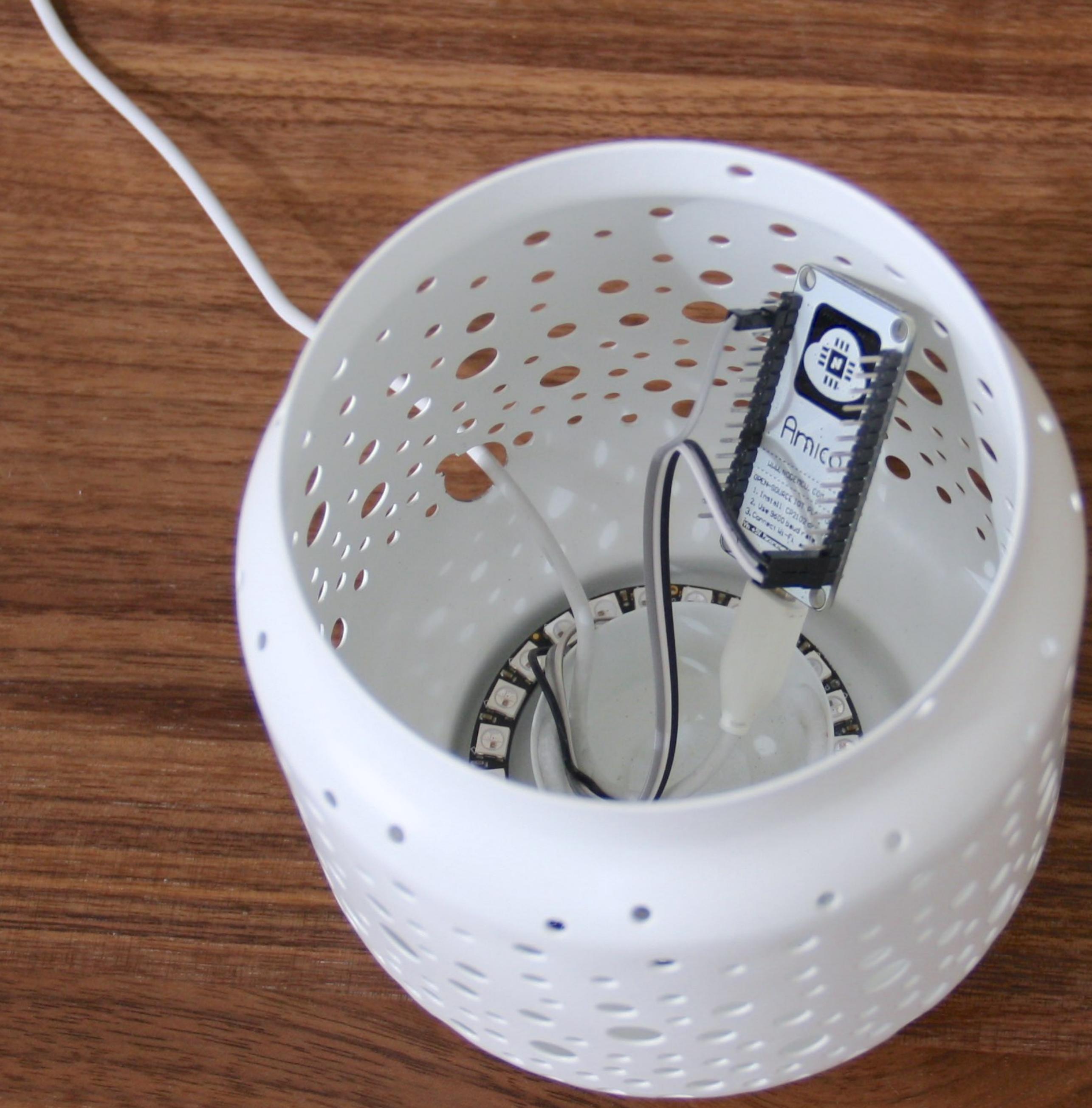
JavaScript? And C?

Kinda the same. Just about.

Not quite. No.



IKEA
SOMMAR 2017
lantern









WiFi must be very complicated...

```
const char* ssid = ".....";
const char* password = ".....";

ESP8266WebServer server(80);

void setup(void) {
    WiFi.begin(ssid, password);
    while (WiFi.status() != WL_CONNECTED) delay(500);

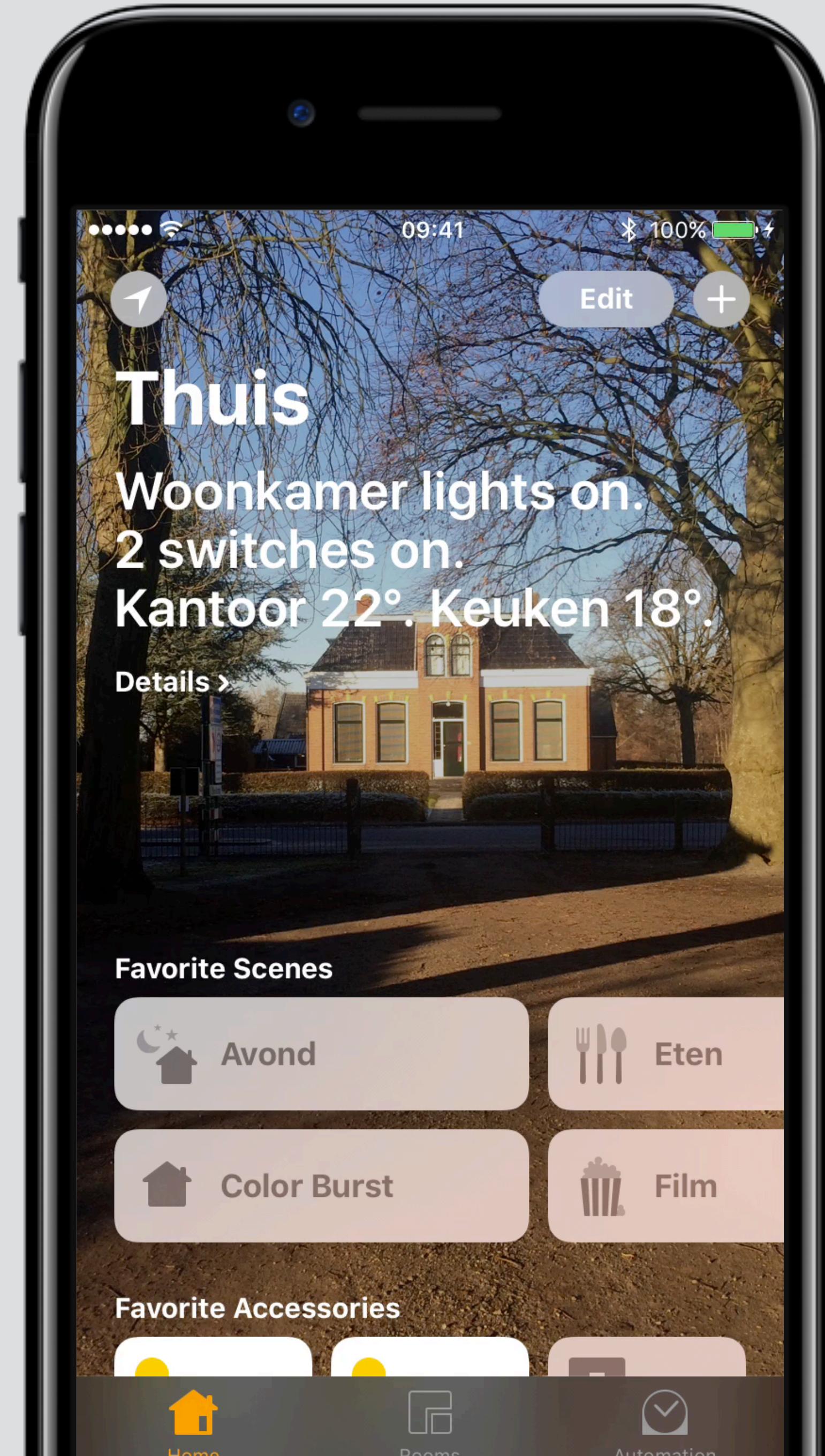
    server.on("/on", [](){ server.send(200, "text/plain", "on"); });
    server.on("/off", [](){ server.send(200, "text/plain", "off"); });
    server.begin();
}

void loop(void) {
    server.handleClient();
}
```

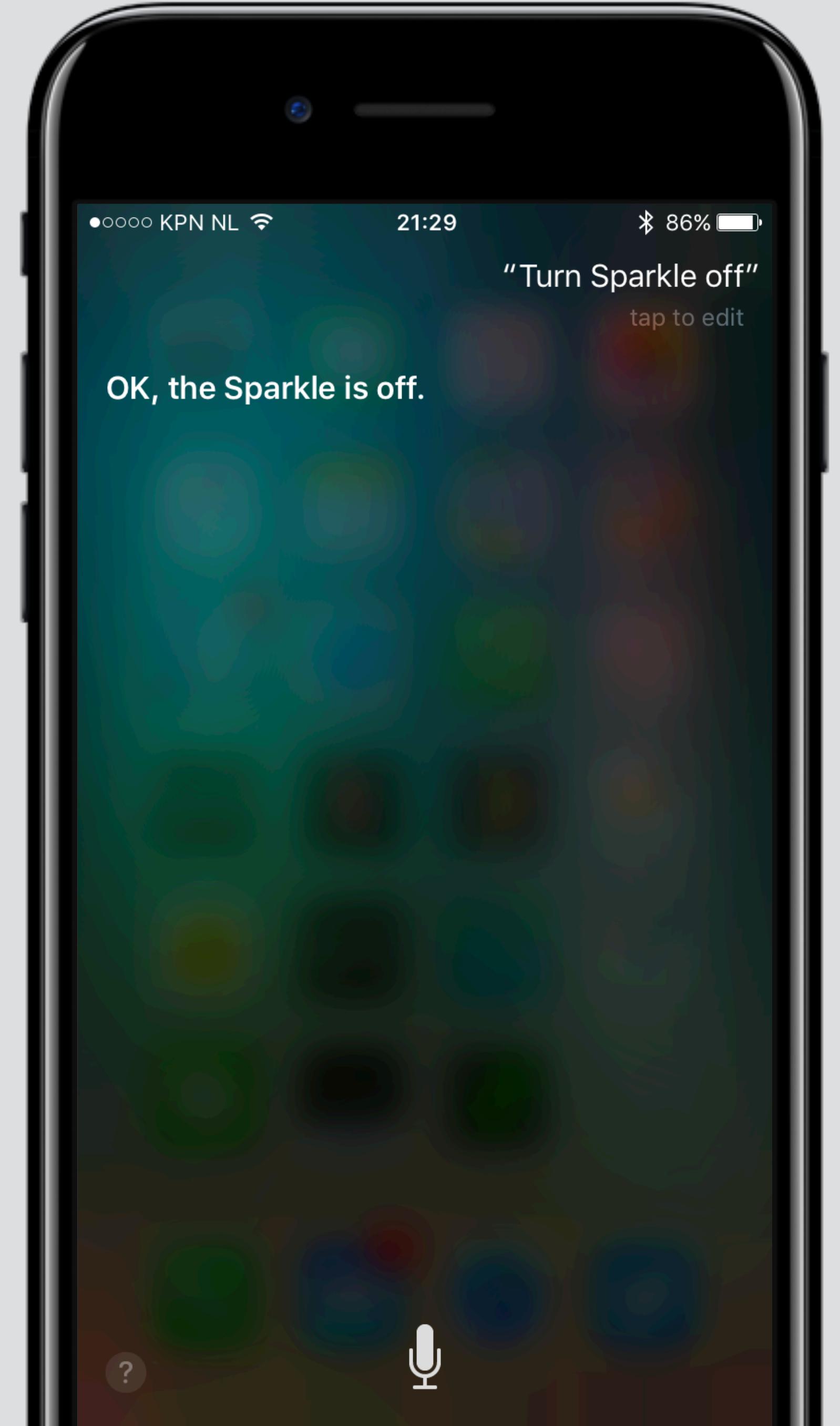
`http://sparkle.local/api?command=power&status`
`command=power&on`
`command=power&off`

`command=brightness&status`
`command=brightness&set=50`

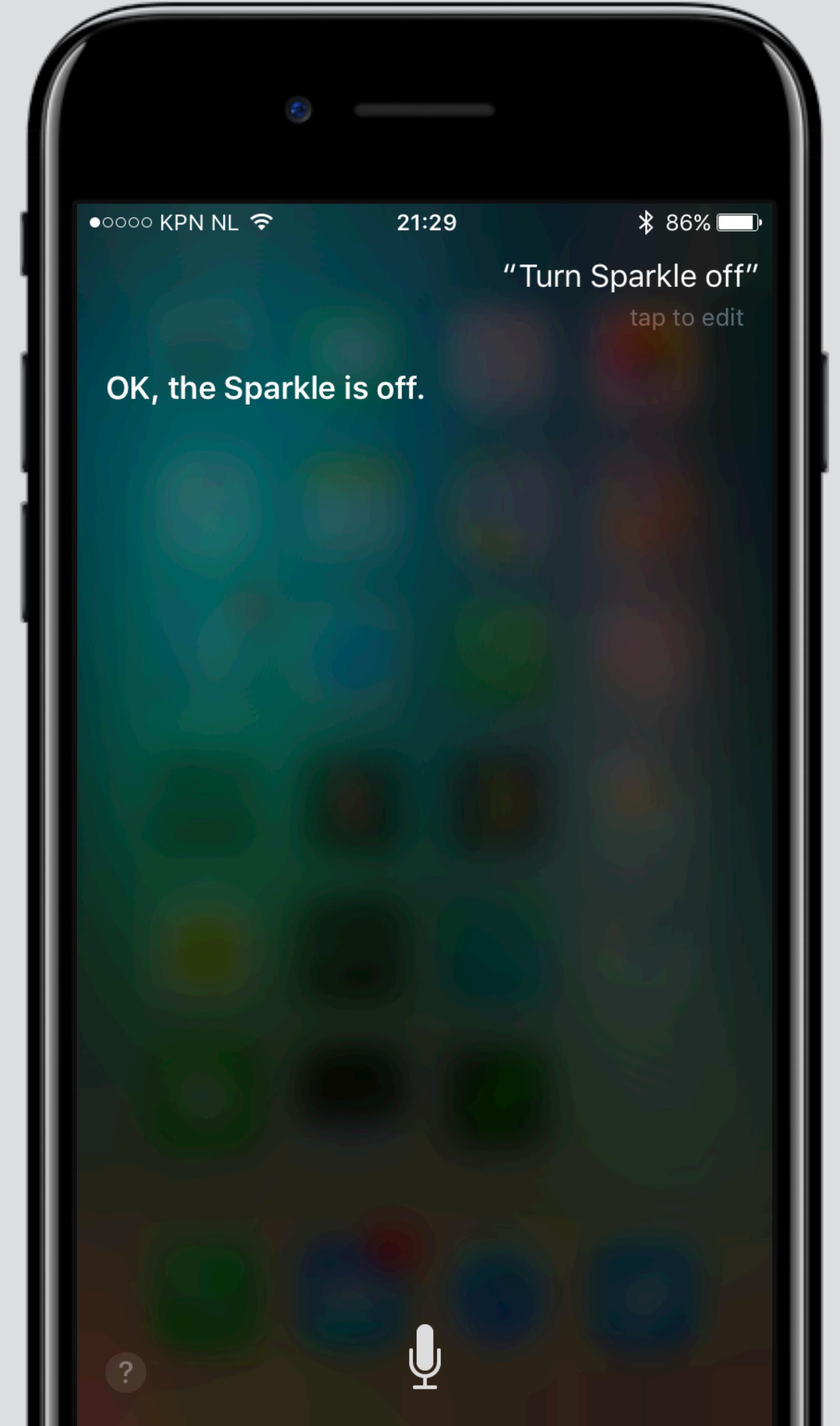
`command=color&status`
`command=color&set=f34d0d`



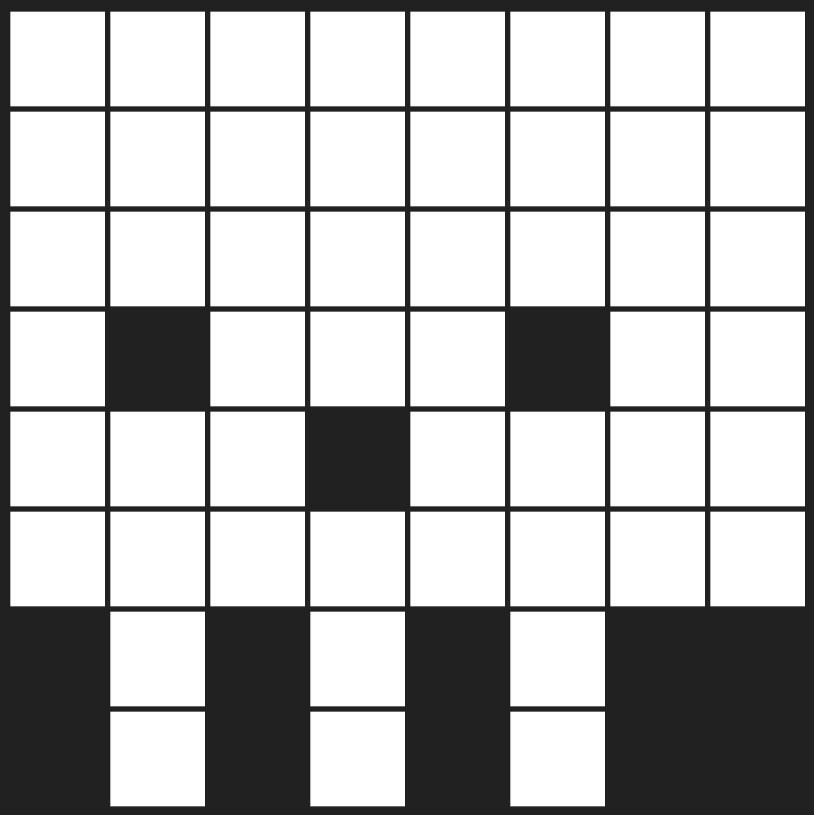
homebridge
homebridge-better-http-rgb



siri



siri



pixel monsters

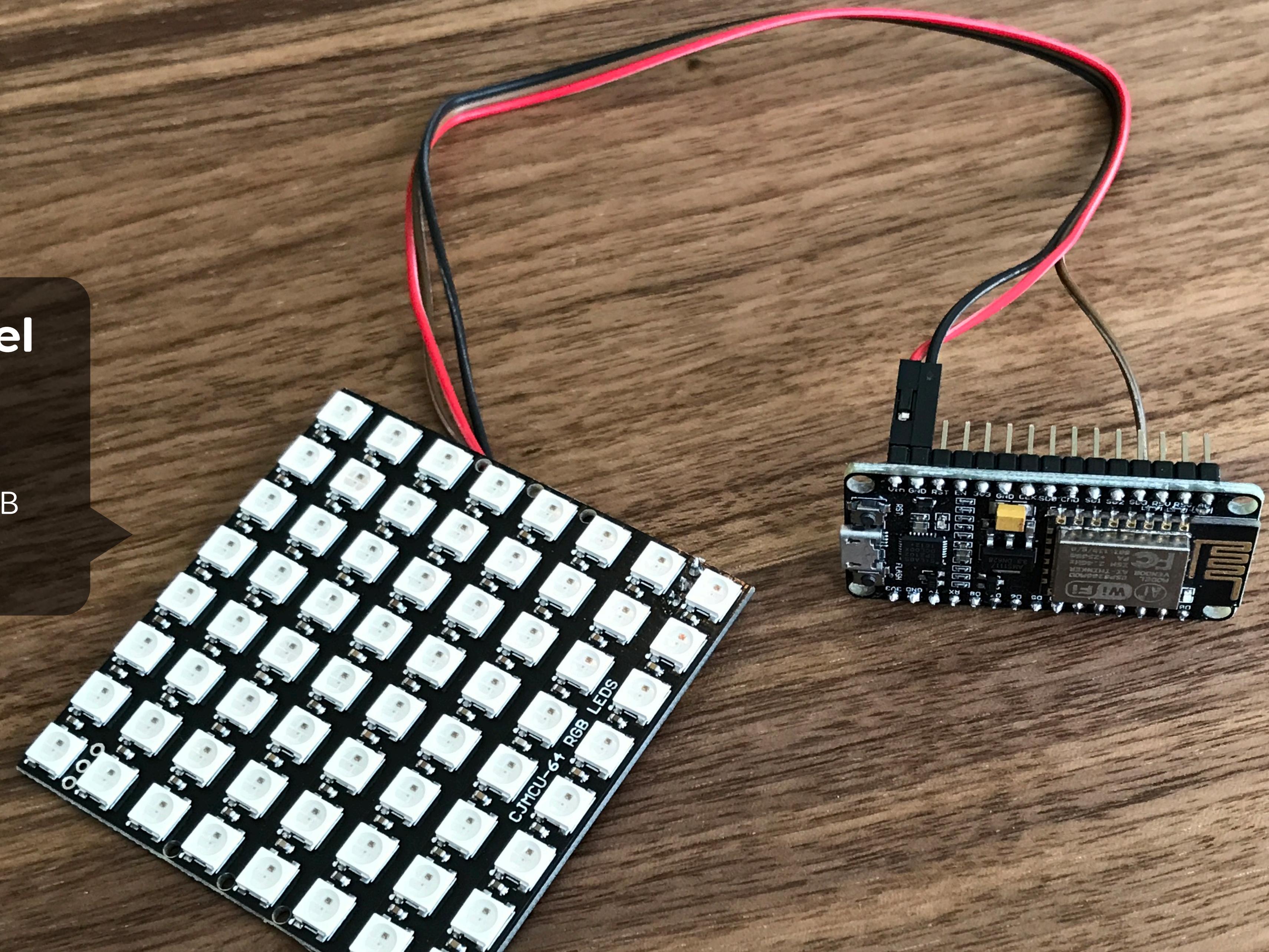
Prolight
12W ceiling lamp

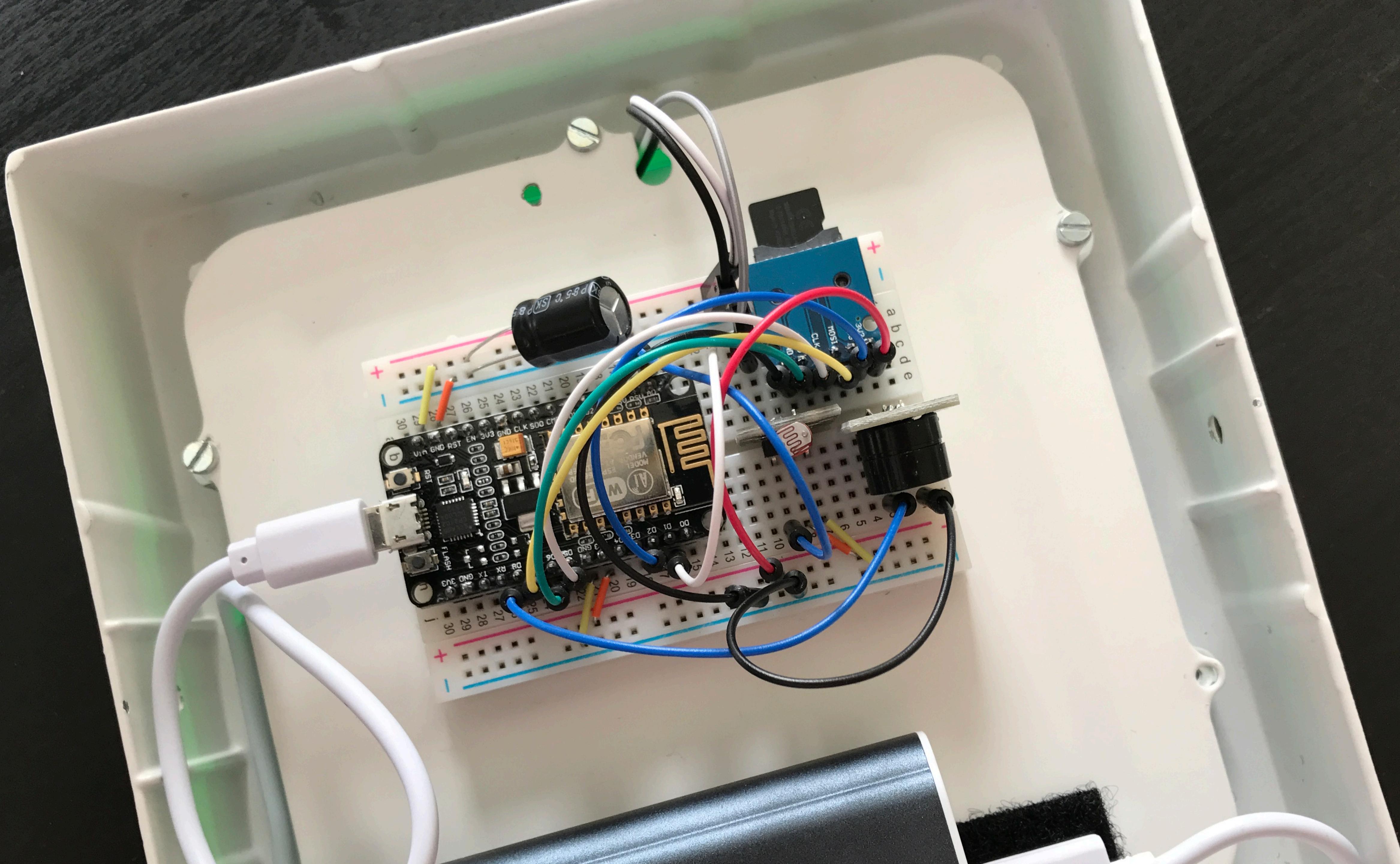


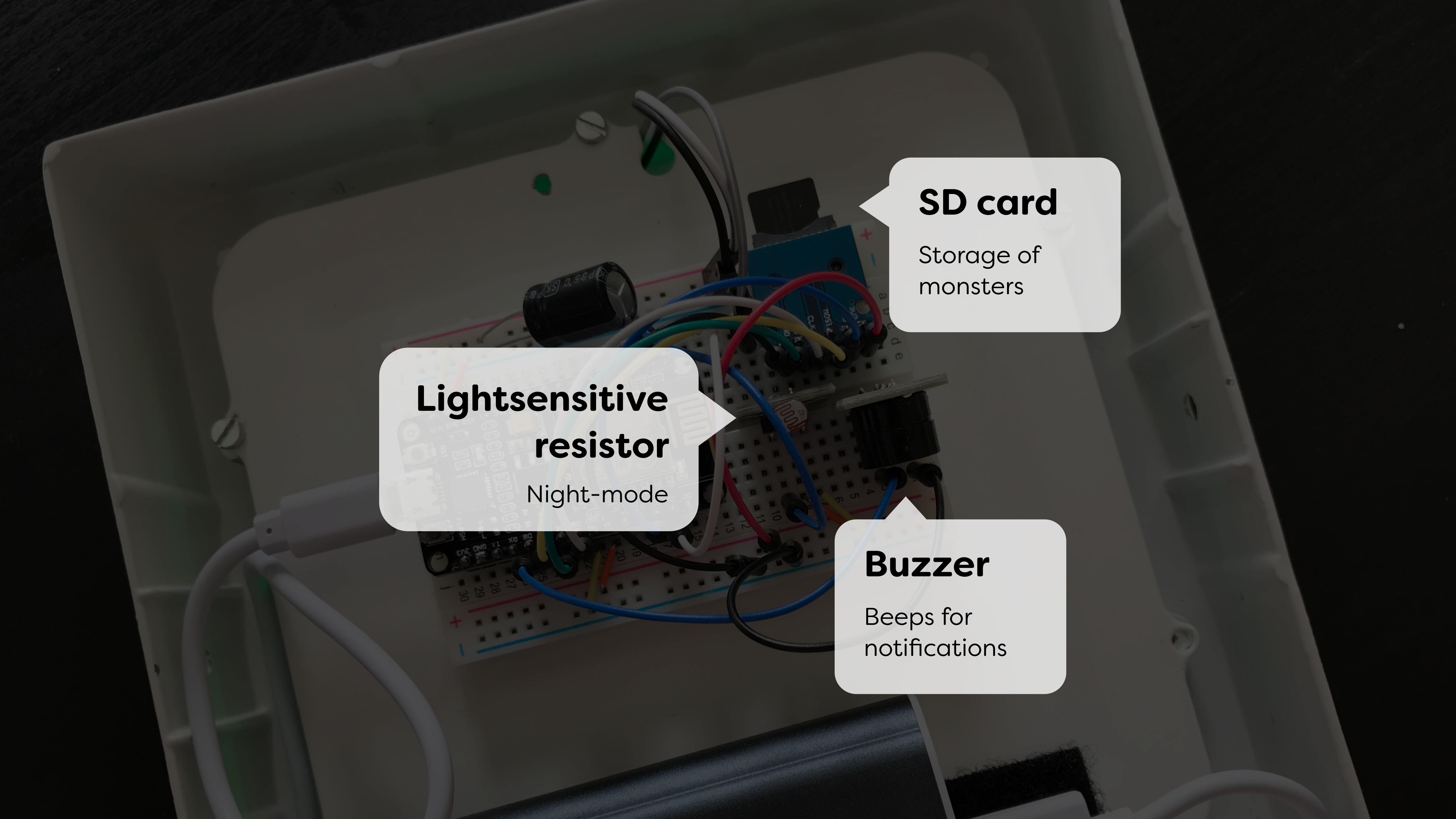


Neopixel

64 serial
connected
WS2812 RGB
LEDs







Lightsensitive resistor

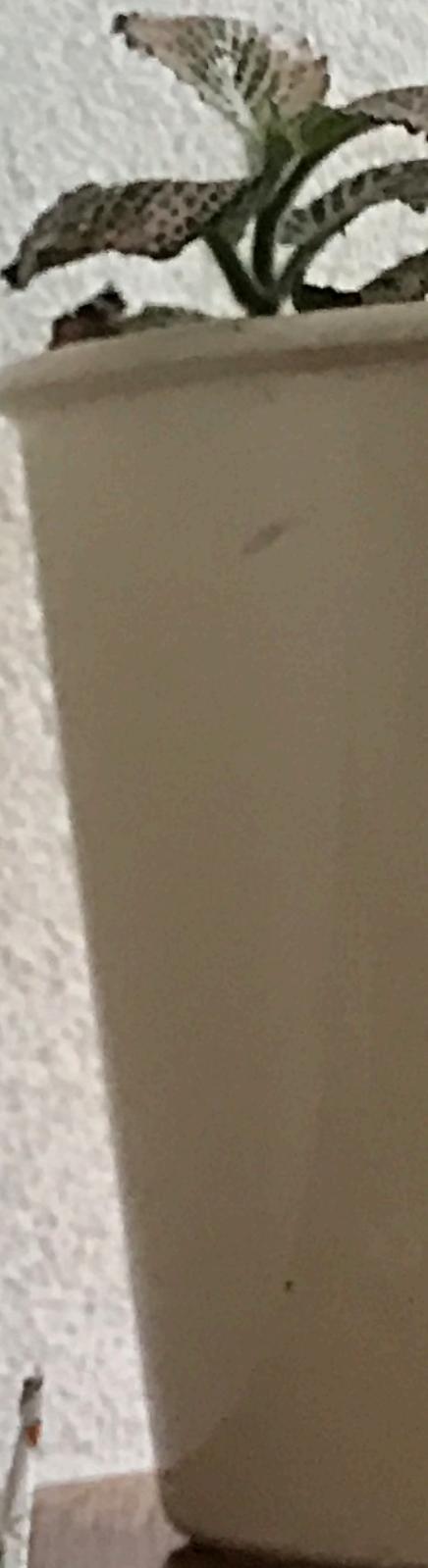
Night-mode

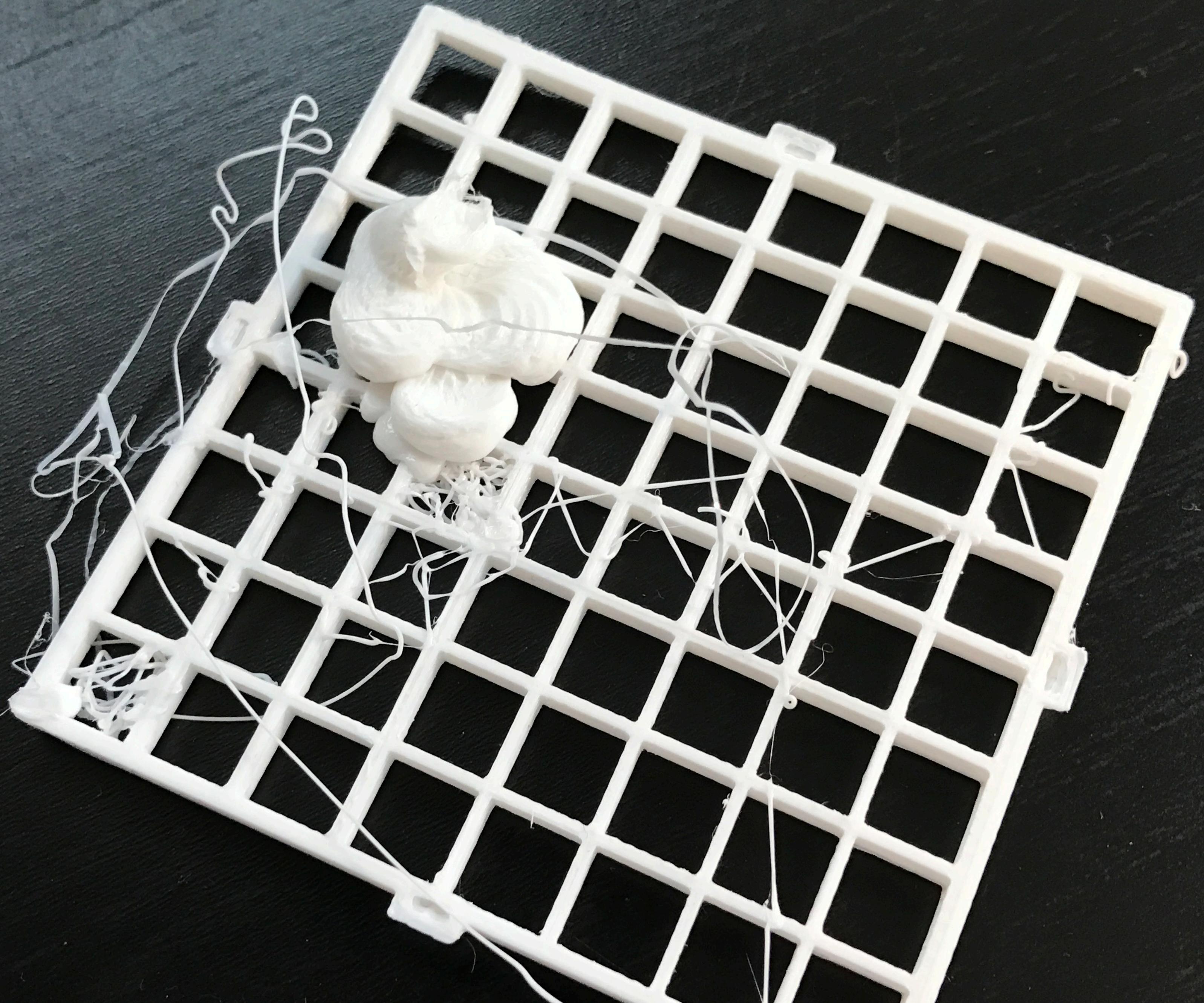
Buzzer

Beeps for
notifications

SD card

Storage of
monsters

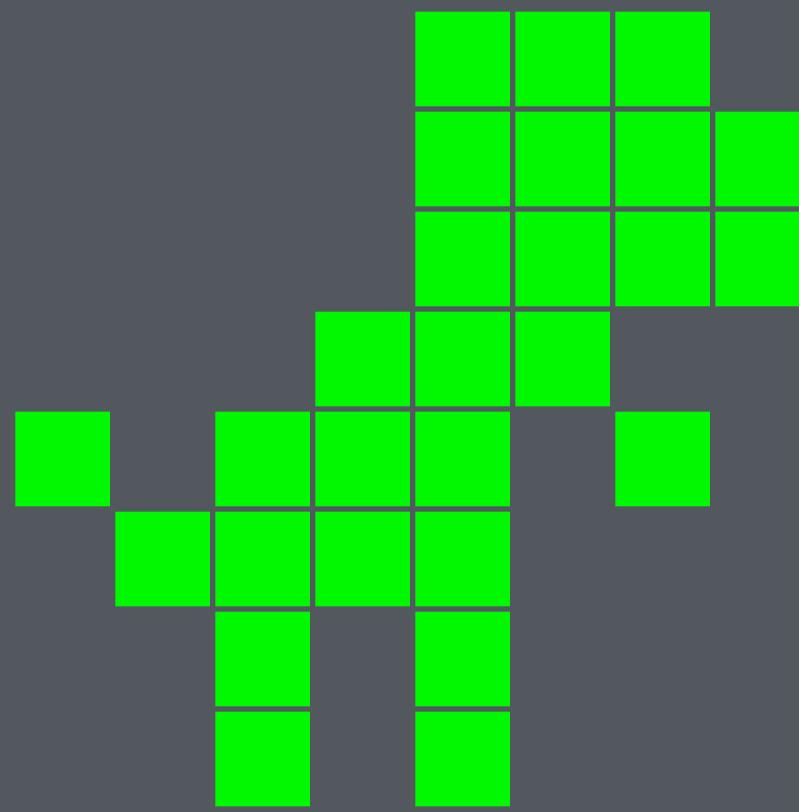








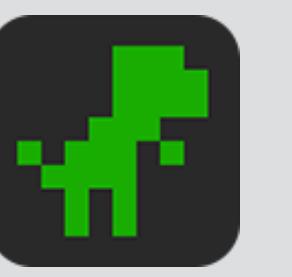
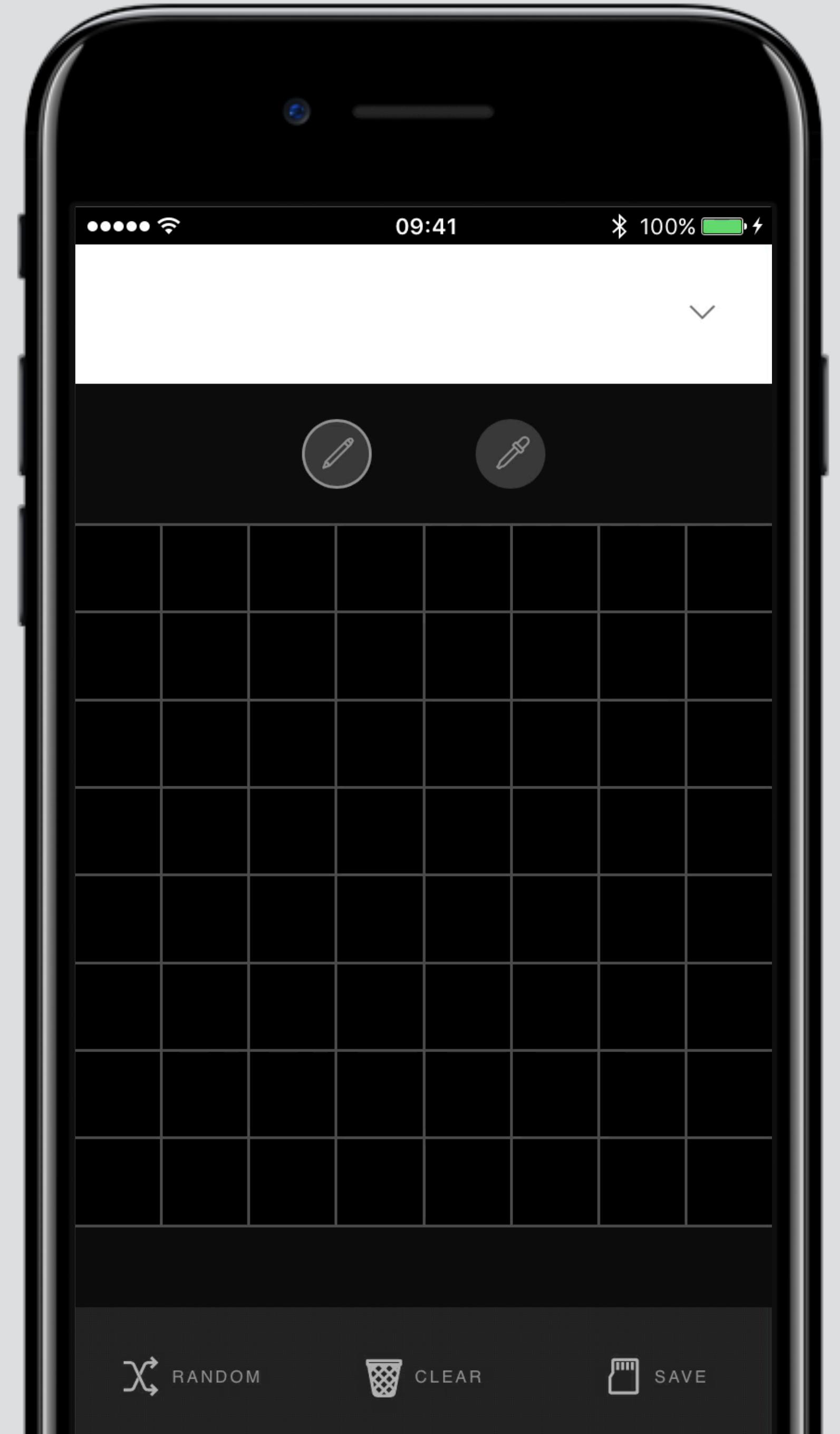
SONOS



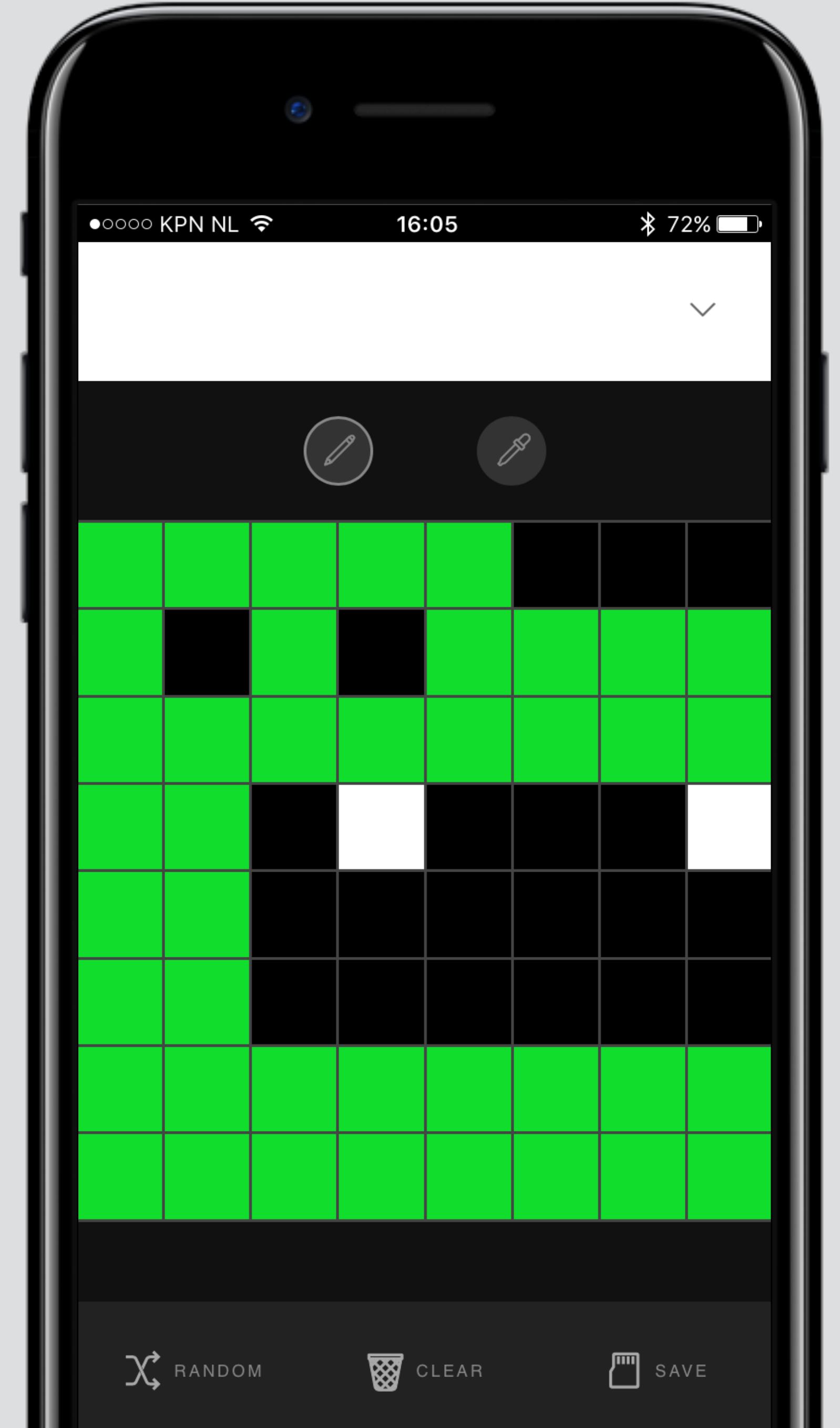
progressive
web app

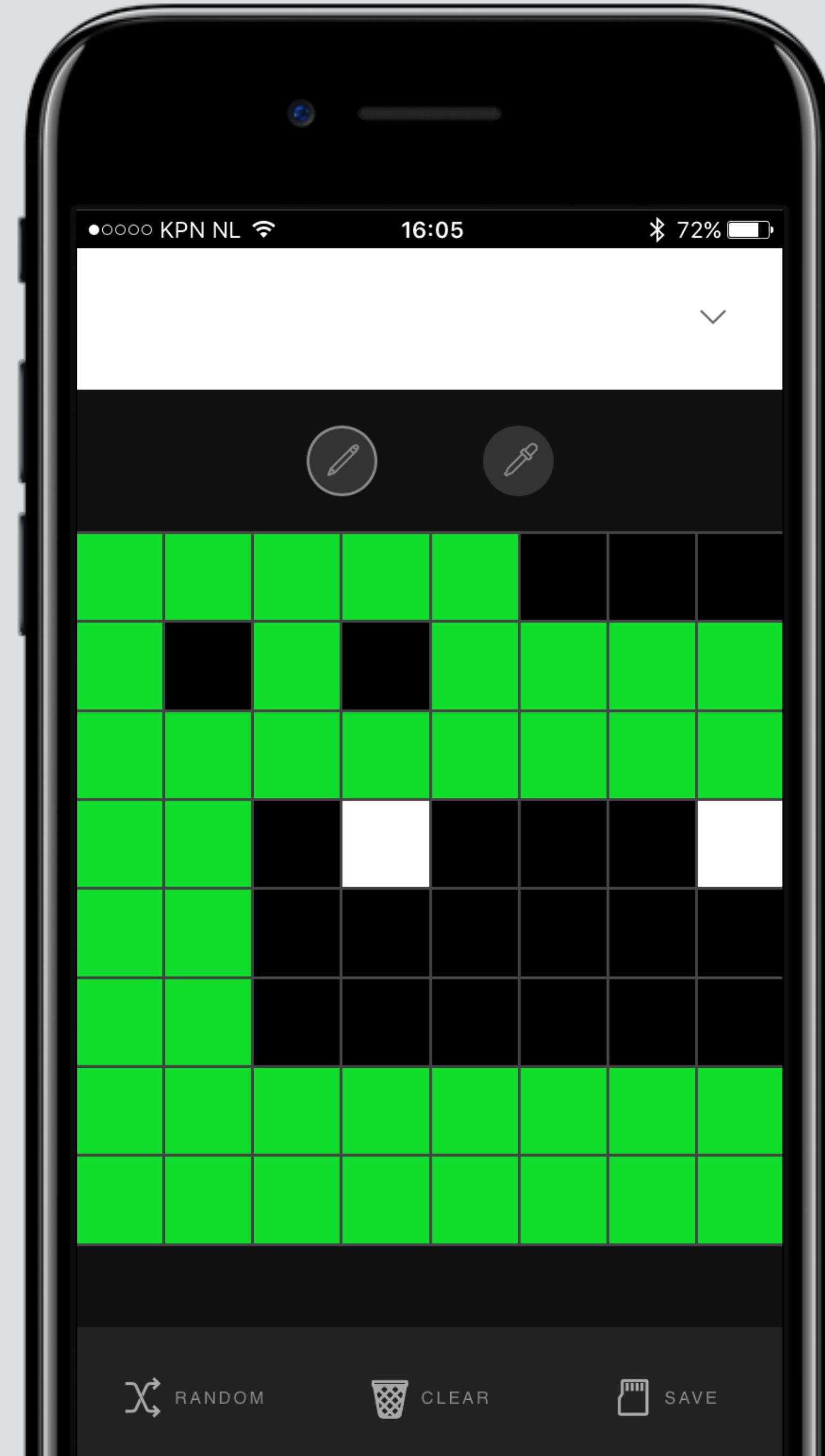


<http://pixel.local>



<http://pixel.local>



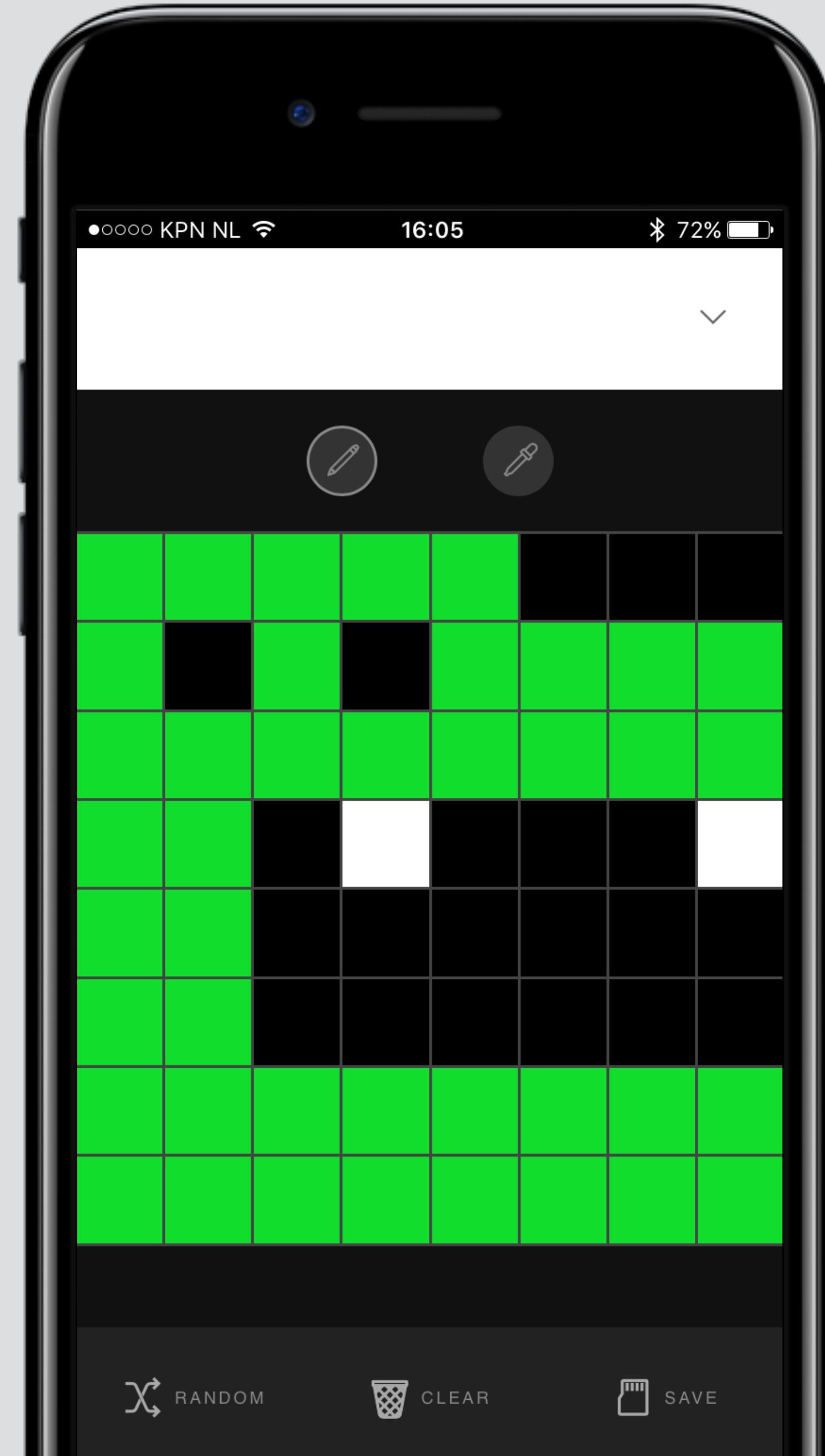


```
editor.addEventListener('touchstart', handleTouch);
editor.addEventListener('touchmove', handleTouch);

function handleTouch(e) {
    for (var i = 0; i < e.changedTouches.length; i++) {
        let elem = document.elementFromPoint(
            e.changedTouches[i].pageX,
            e.changedTouches[i].pageY
        );

        if (elem.tagName && elem.tagName == 'TD' &&
            editor.contains(elem))
        {
            drawPixel(elem);
        }
    }
}

e.preventDefault();
}
```

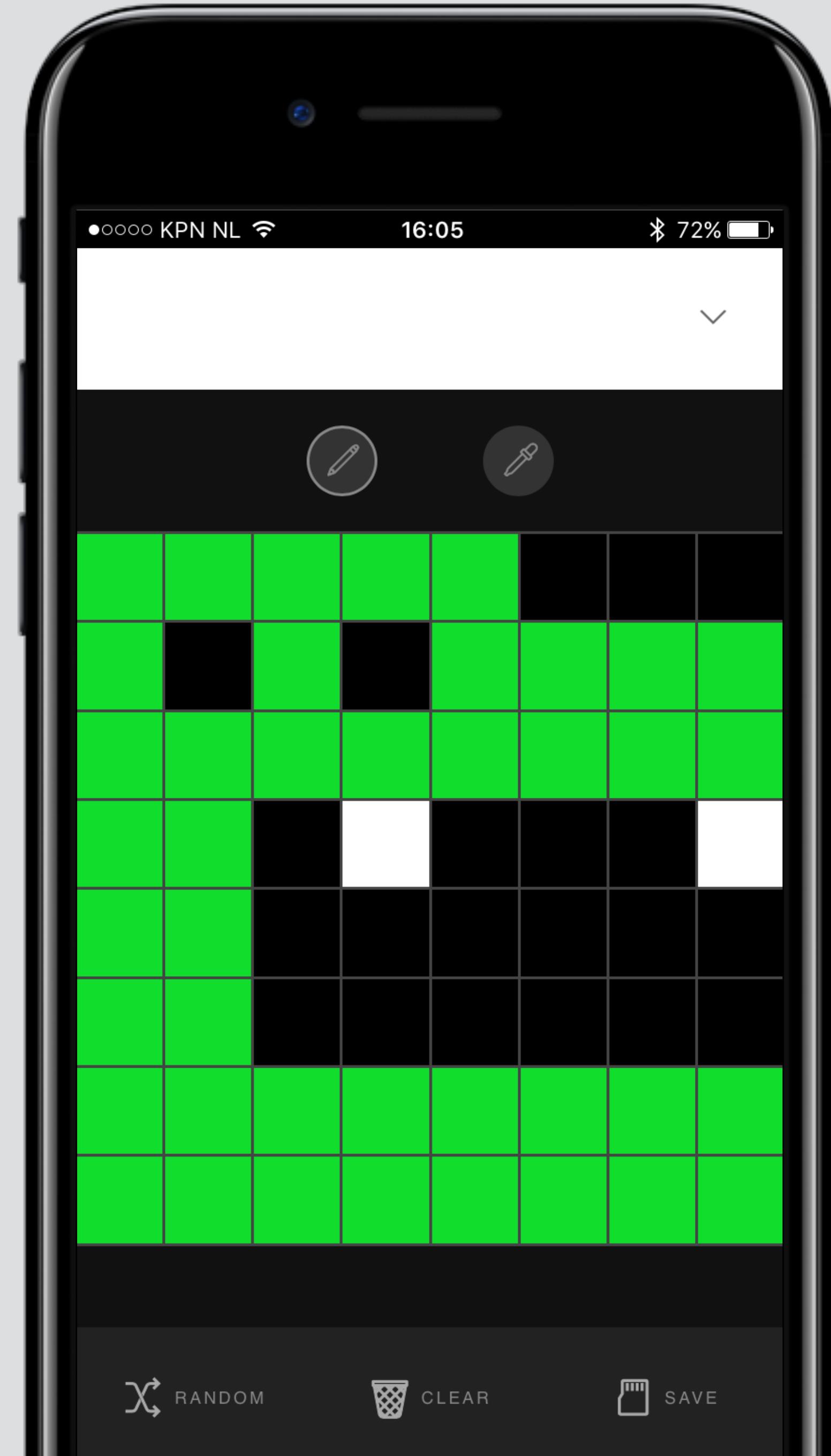


```
editor.addEventListener('touchstart', handleTouch);
editor.addEventListener('touchmove', handleTouch);

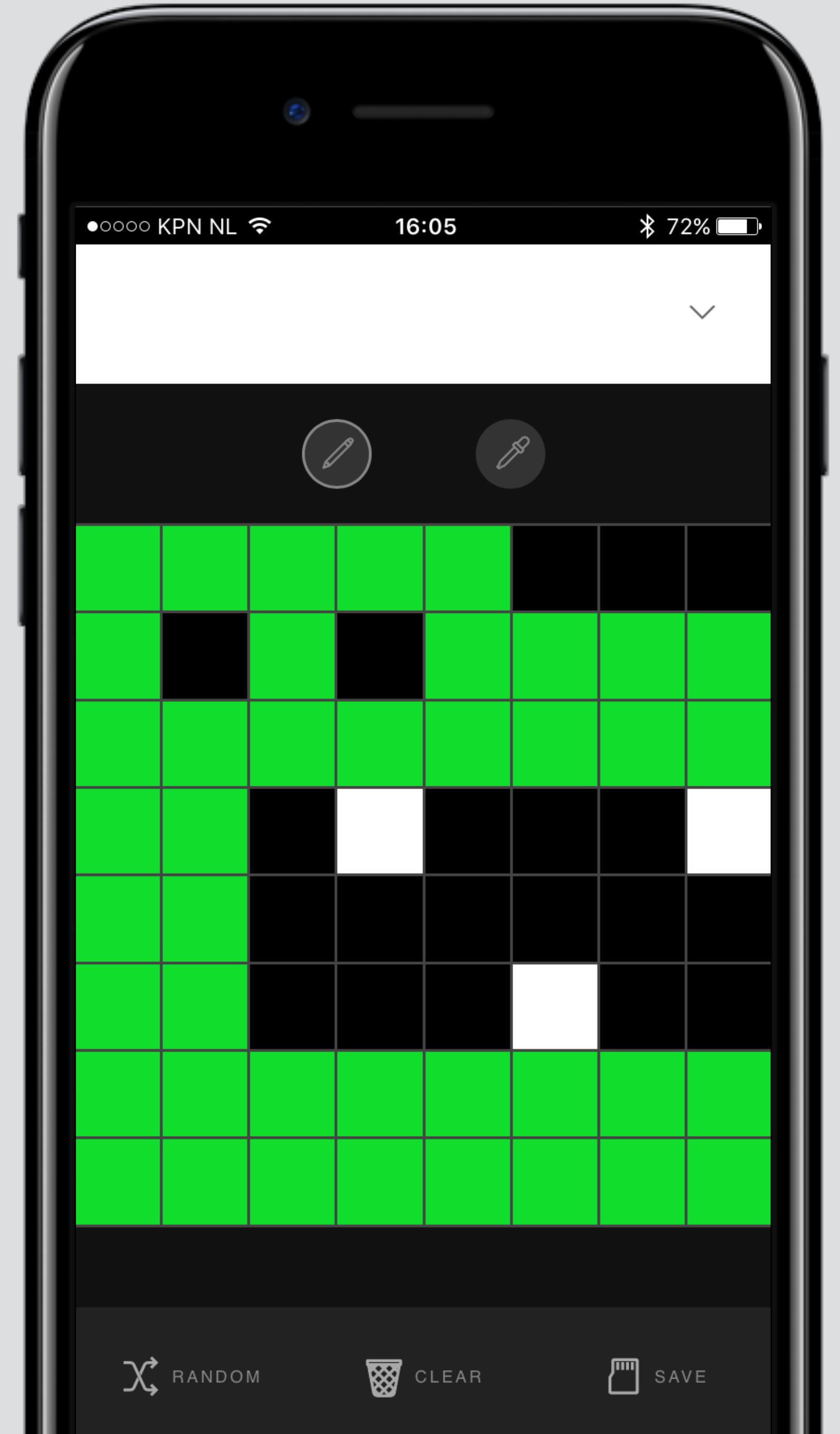
function handleTouch(e) {
    for (var i = 0; i < e.changedTouches.length; i++) {
        let elem = document.elementFromPoint(
            e.changedTouches[i].pageX,
            e.changedTouches[i].pageY
        );

        if (elem.tagName && elem.tagName == 'TD' &&
            editor.contains(elem))
        {
            drawPixel(elem);
        }
    }

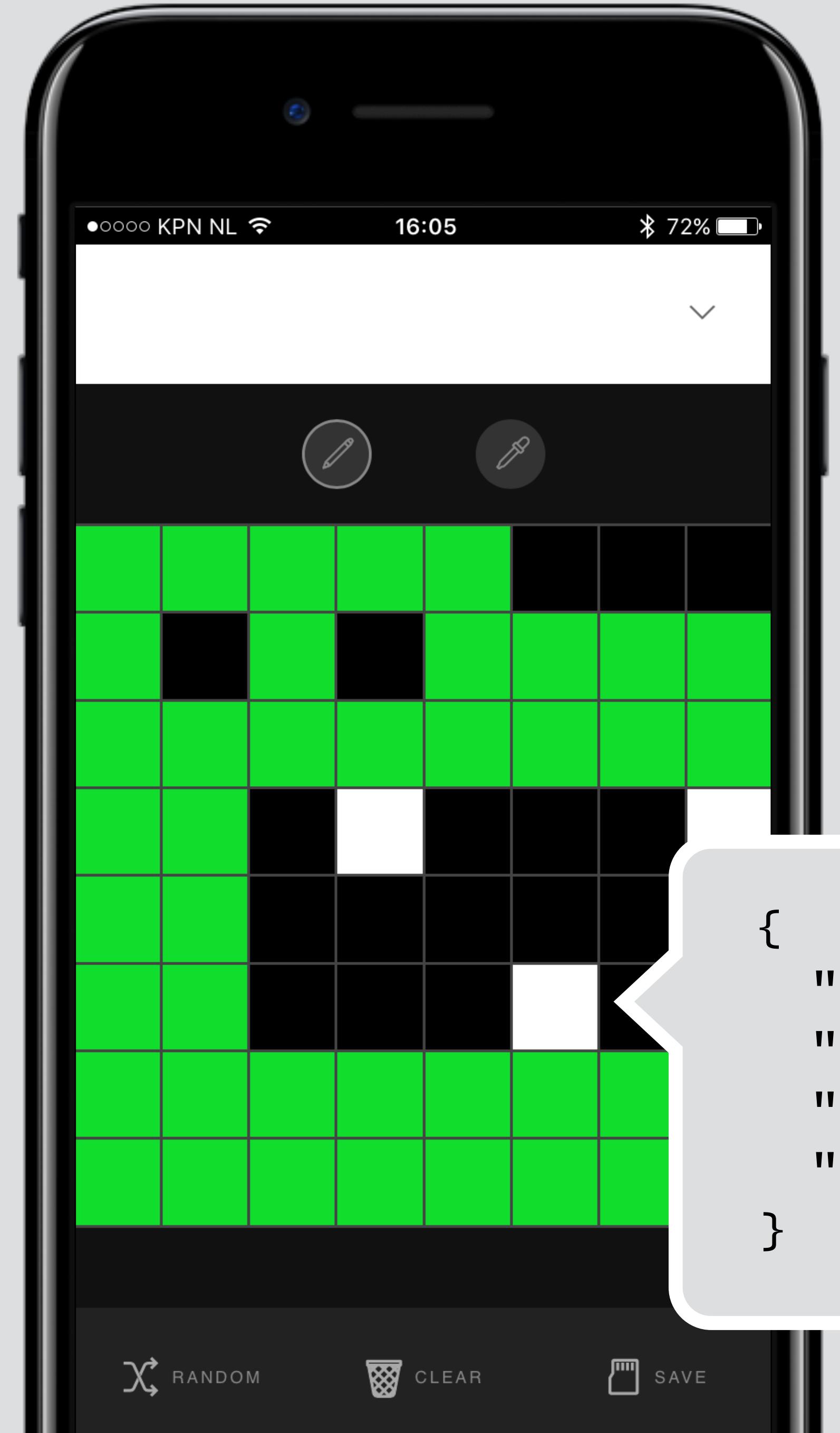
    e.preventDefault();
}
```



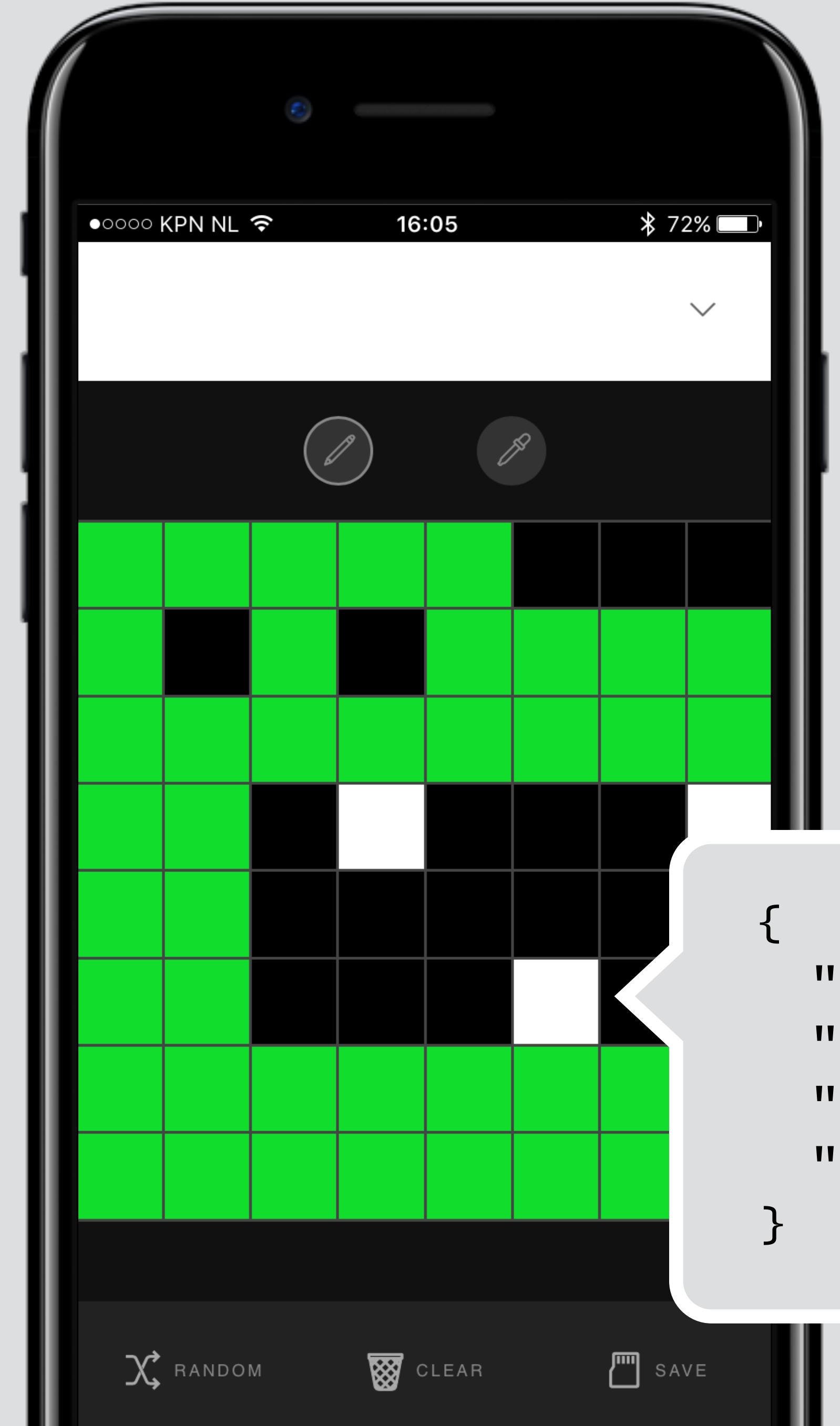
```
let socket = new WebSocket(  
    "ws://" + window.location.host + "/ws"  
);  
  
function drawPixel(elem) {  
    if (elem.dataset.color != currentColor) {  
        elem.dataset.color = currentColor;  
        elem.style.backgroundColor = '#' + currentColor;  
  
        socket.send(JSON.stringify({  
            command: "draw",  
            x: elem.dataset.x,  
            y: elem.dataset.y,  
            color: currentColor  
        }));  
    }  
}
```



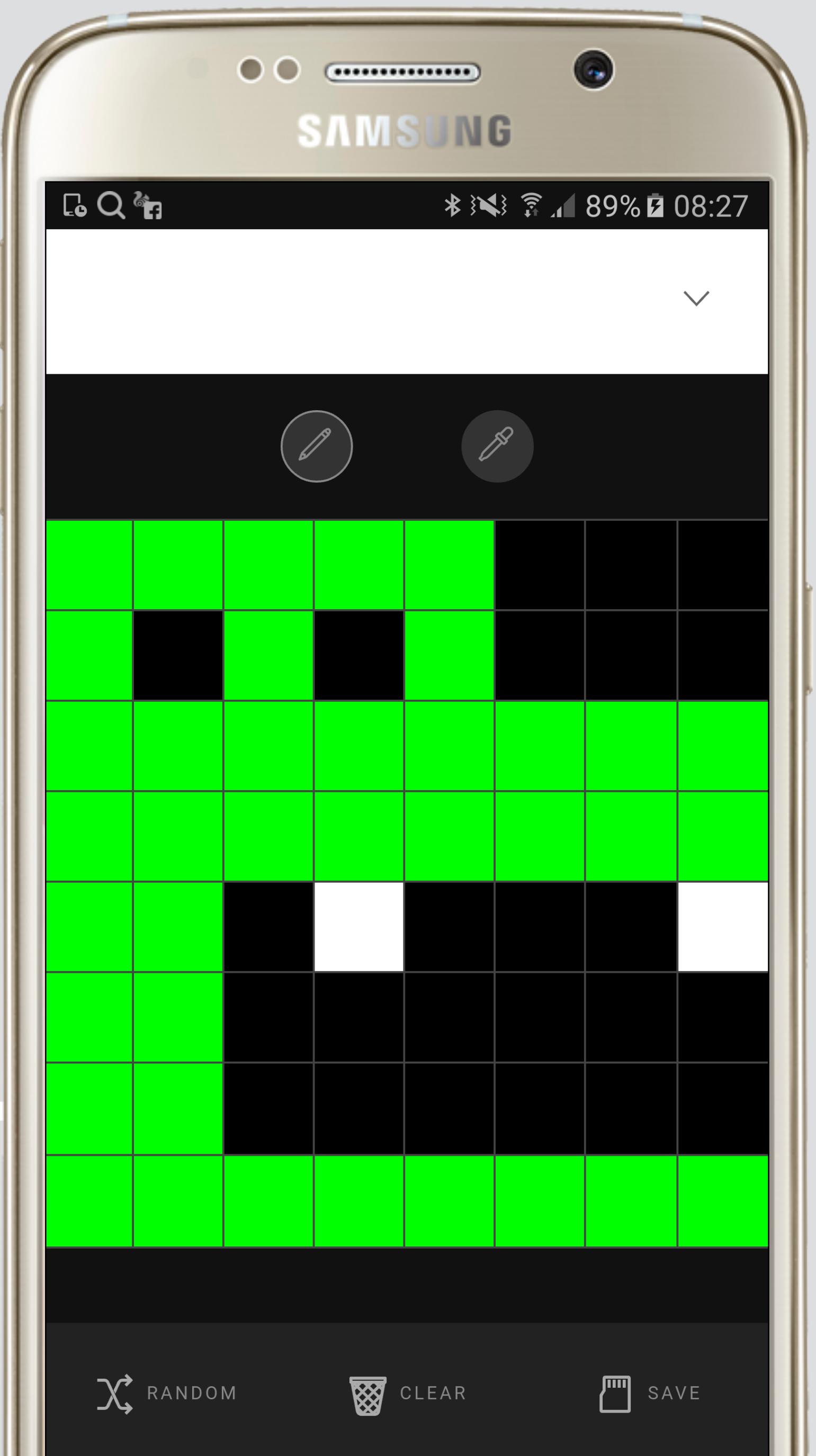
```
let socket = new WebSocket(  
    "ws://" + window.location.host + "/ws"  
);  
  
function drawPixel(elem) {  
    if (elem.dataset.color != currentColor) {  
        elem.dataset.color = currentColor;  
        elem.style.backgroundColor = '#' + currentColor;  
  
        socket.send(JSON.stringify({  
            command: "draw",  
            x: elem.dataset.x,  
            y: elem.dataset.y,  
            color: currentColor  
        }));  
    }  
}
```



```
{  
  "command": "draw",  
  "x": 5,  
  "y": 5,  
  "color": "ffffff"  
}
```



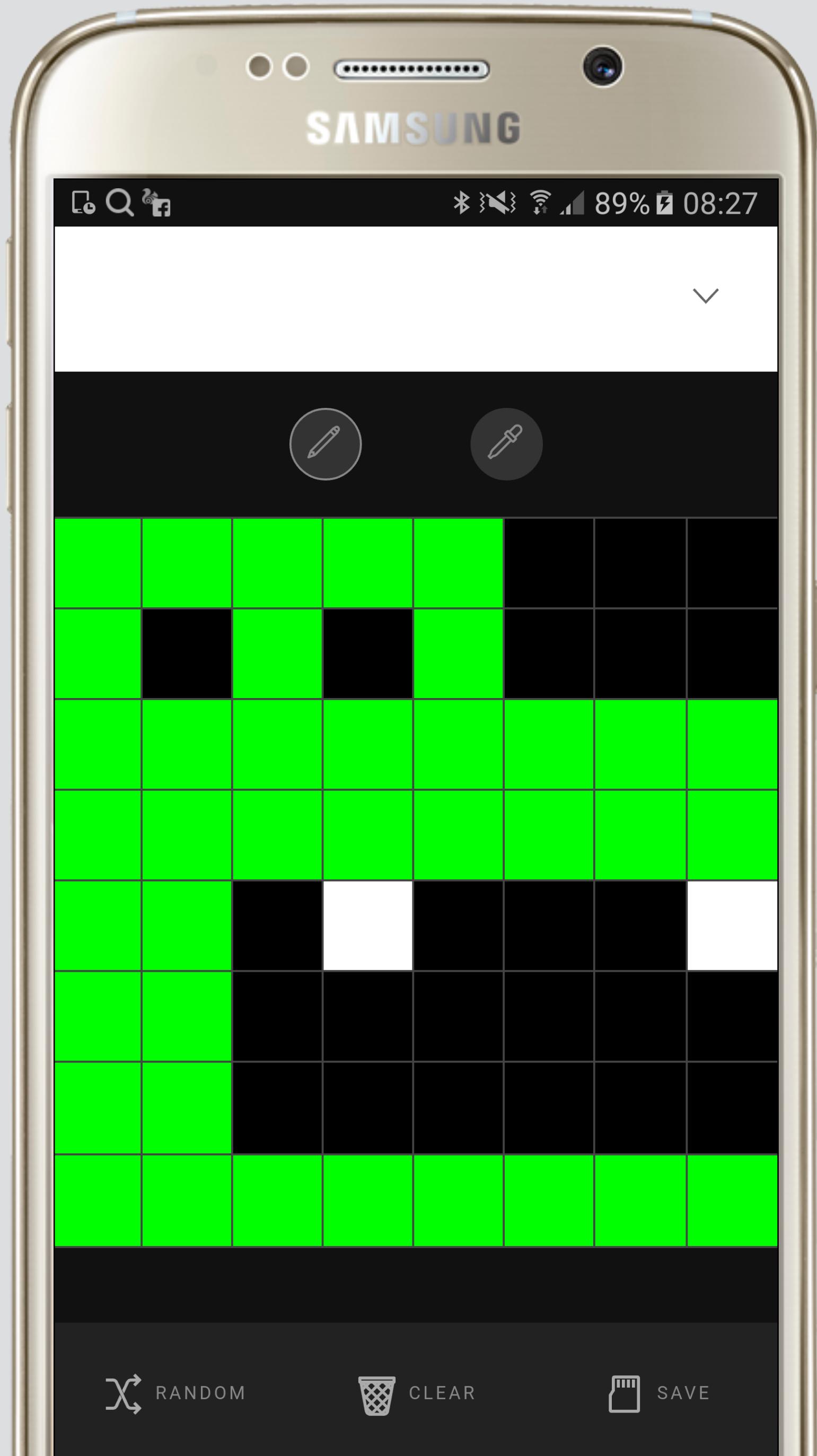
```
{  
  "command": "draw",  
  "x": 5,  
  "y": 5,  
  "color": "ffffff"  
}
```

```
socket.onmessage = function(msg) {
  let data = JSON.parse(msg.data);

  if (data.command == "draw")
  {
    let elem = document.querySelector(
      'td[data-x=' + data.x + ']' +
      '[data-y=' + data.y + ']'
    );

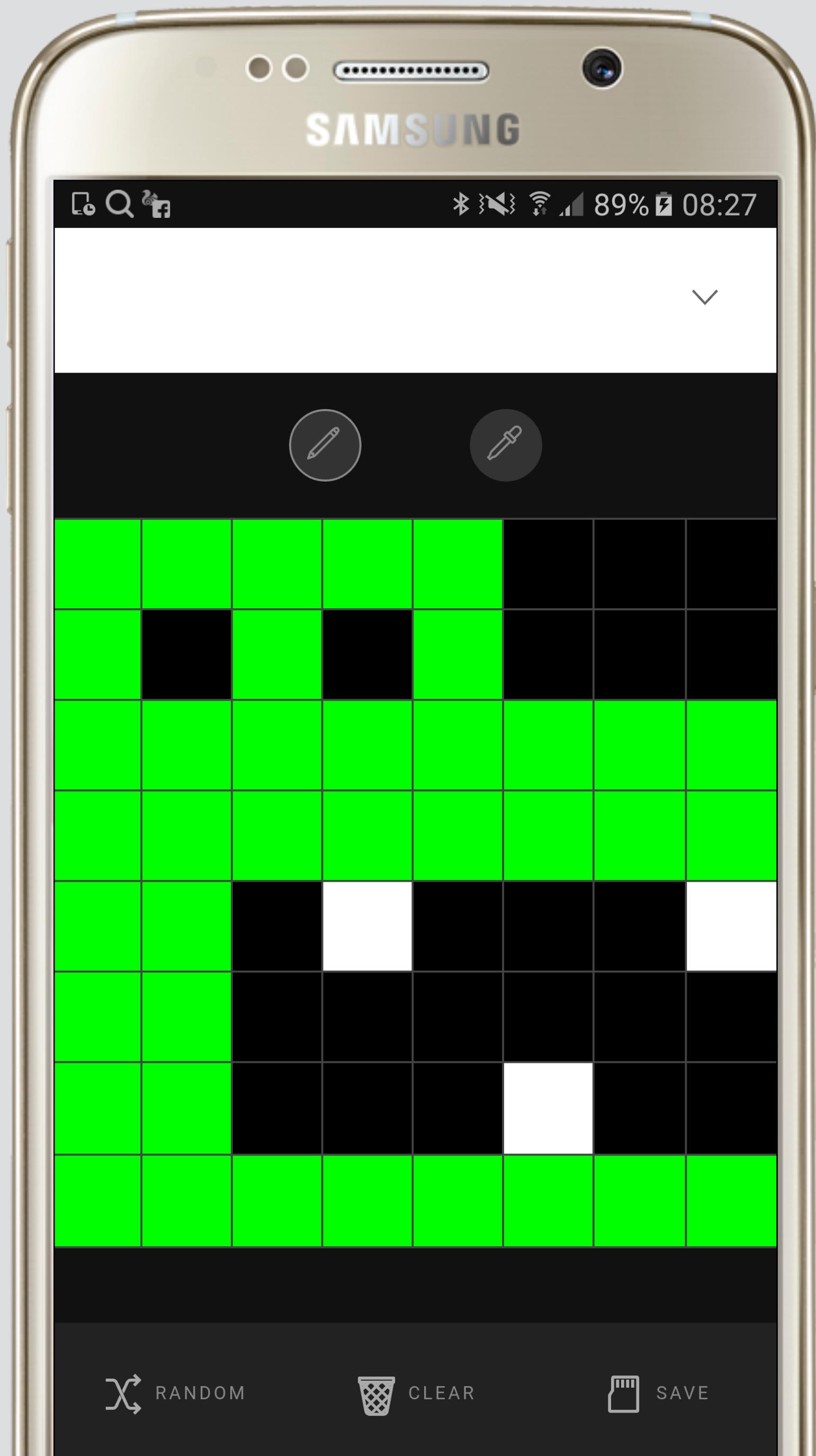
    elem.dataset.color = data.color;
    elem.style.backgroundColor = '#' + data.color );
  }
}
```



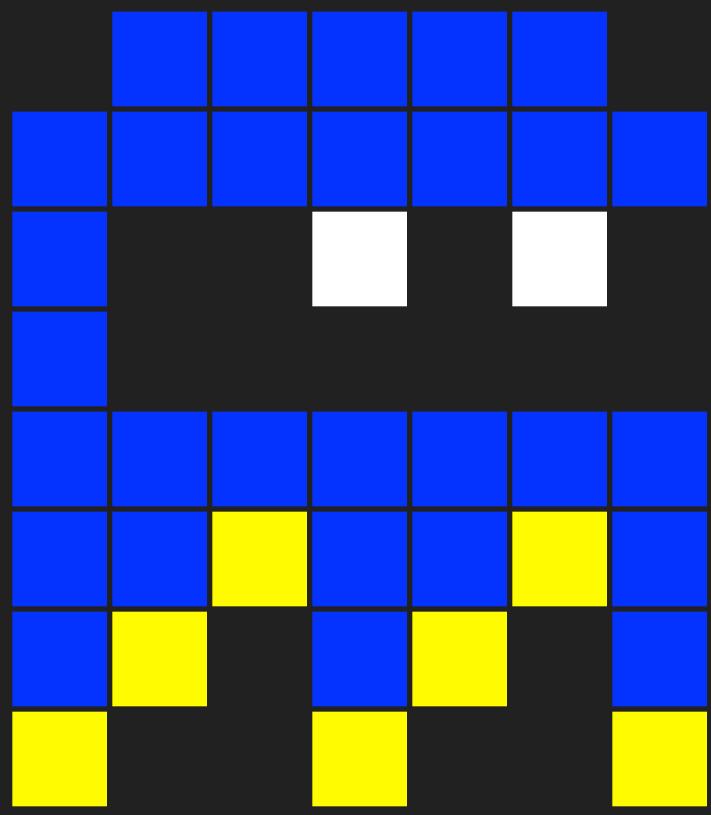
```
socket.onmessage = function(msg) {
  let data = JSON.parse(msg.data);

  if (data.command == "draw")
  {
    let elem = document.querySelector(
      'td[data-x=' + data.x + ']' +
      '[data-y=' + data.y + ']'
    );

    elem.dataset.color = data.color;
    elem.style.backgroundColor = '#' + data.color );
  }
}
```



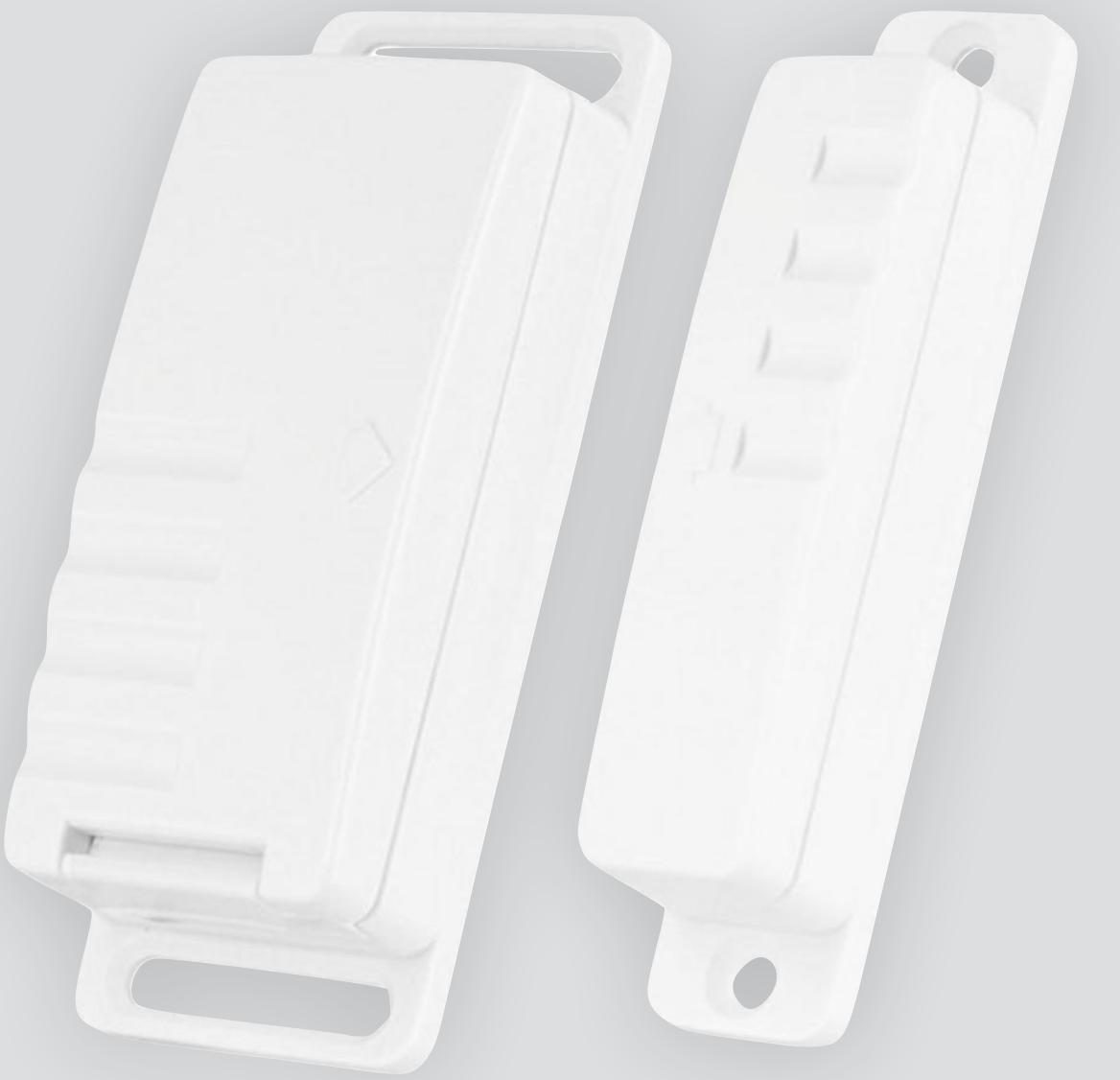
demo



the mystery
of the
haunted mailbox



mail box

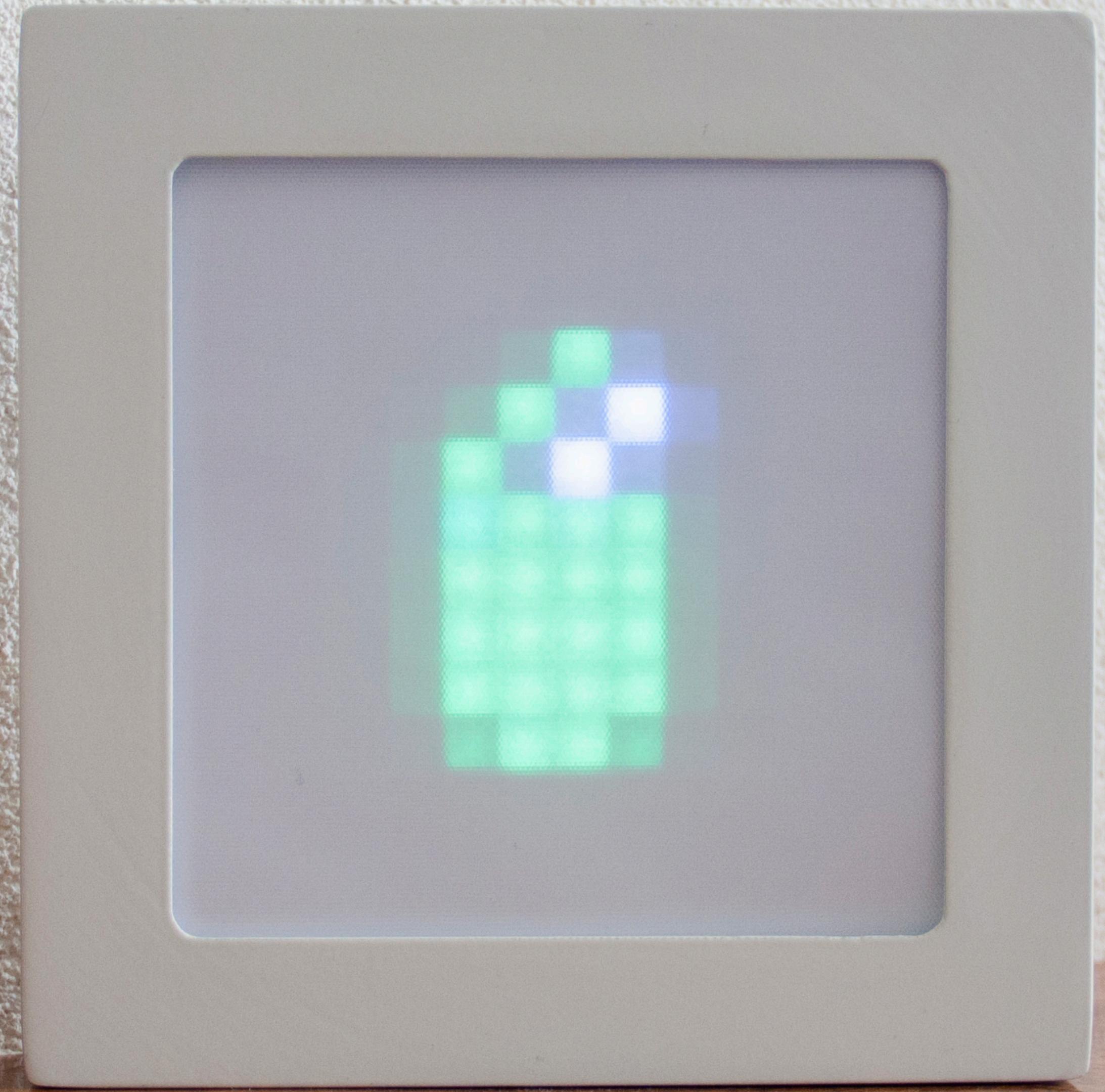


magnetic contact



when the mailbox opens it sends a signal

`http://pixel.local/api?command=notify&icon=mailbox`







combine the
magnetic contact
with a motion sensor?

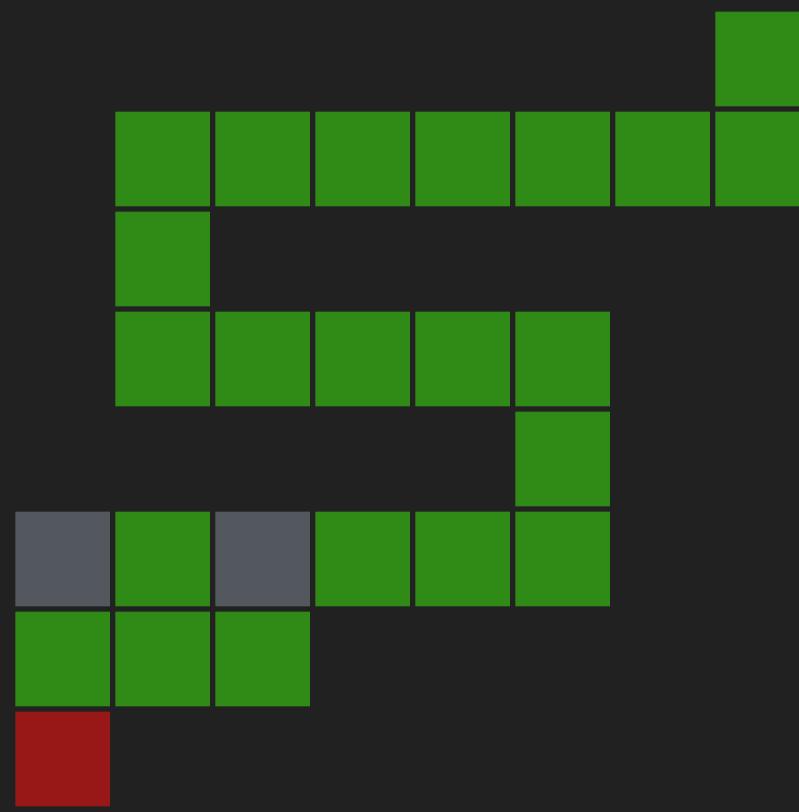
solution #1

turn off the
magnetic contact with
strong westerly winds?

solution #2



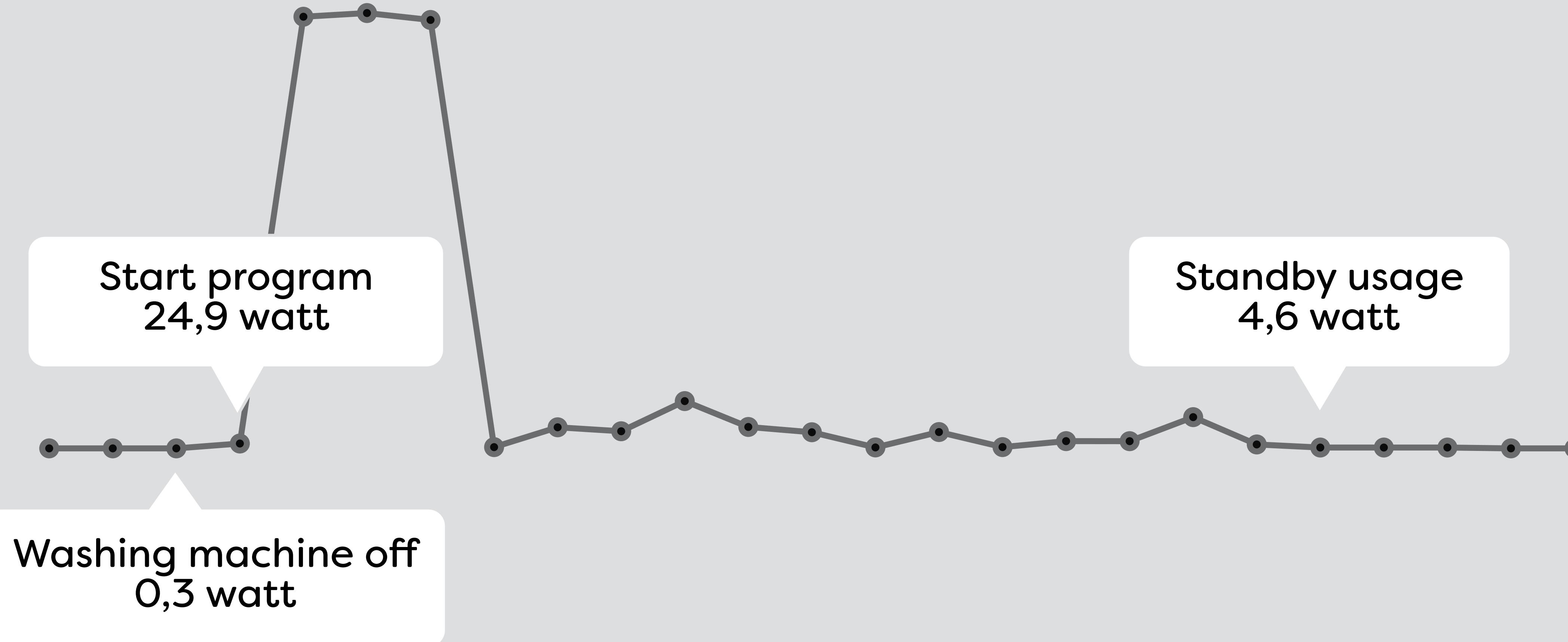
solution #3



the fickle
washing machine







```
If [S-Z Wasmachine < actual.] > [5]
Do [Set Var S-Z WasmachineBezig = 1]
```

```
If [S-Z Wasmachine < actual.] < [5] and [Var S-Z WasmachineBezig = 1]
Do [Set Var S-Z WasmachineBezig = 0]
[Open url: http://pixel.local/api?command=notify&icon=shirt]
```

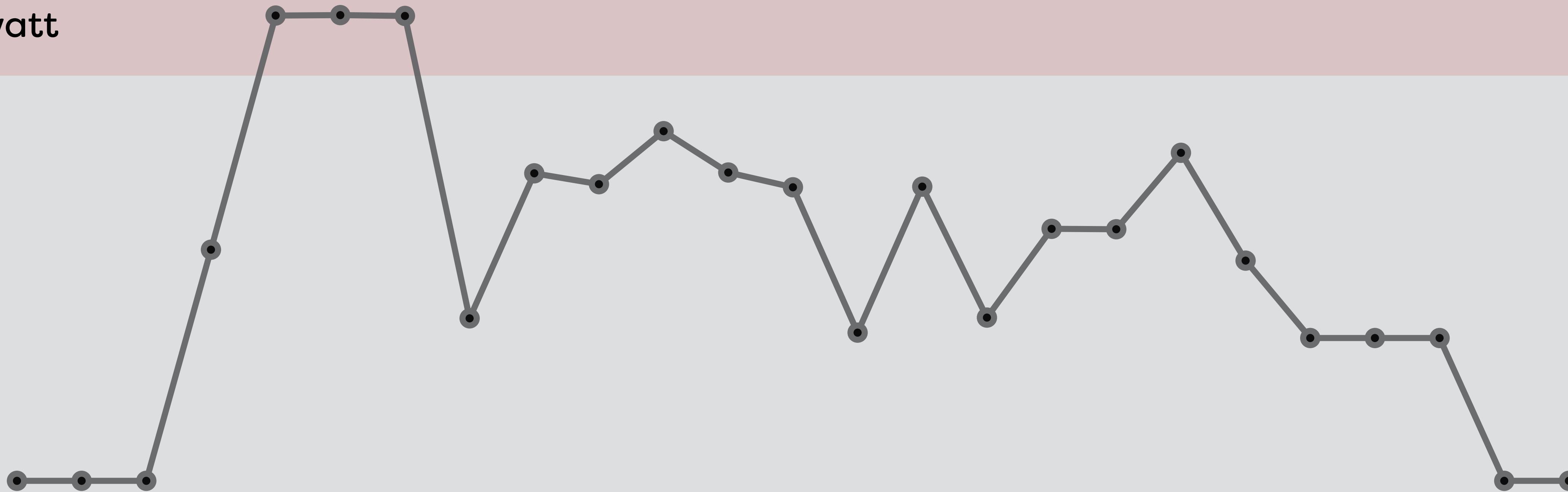


Laundry is done

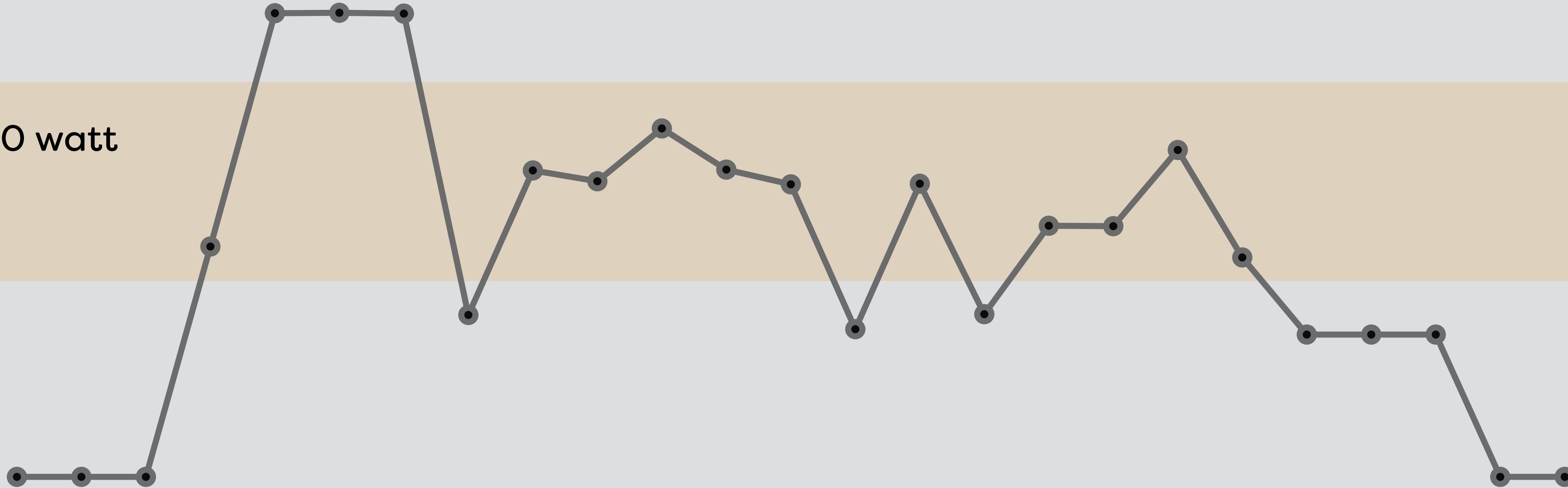


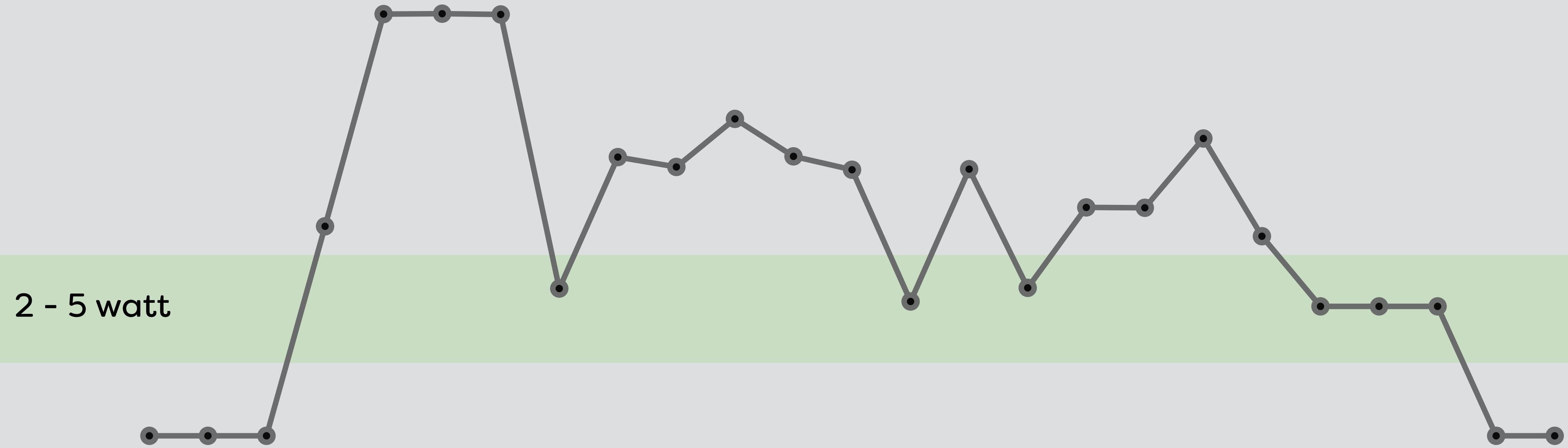


2000 watt



20 - 200 watt







```
If [S-Z Wasmachine ▾ actual. > v 5] and [Var S-Z WasmachineBezig ▾ ≠ v 1]
Do Set Var S-Z WasmachineBezig ▾ = 1
```

```
If [S-Z Wasmachine ▾ actual. < v 5] and [Var S-Z WasmachineBezig ▾ = v 1]
Do Set Var S-Z WasmachineBezig ▾ = 2
```

```
commandArray = {}

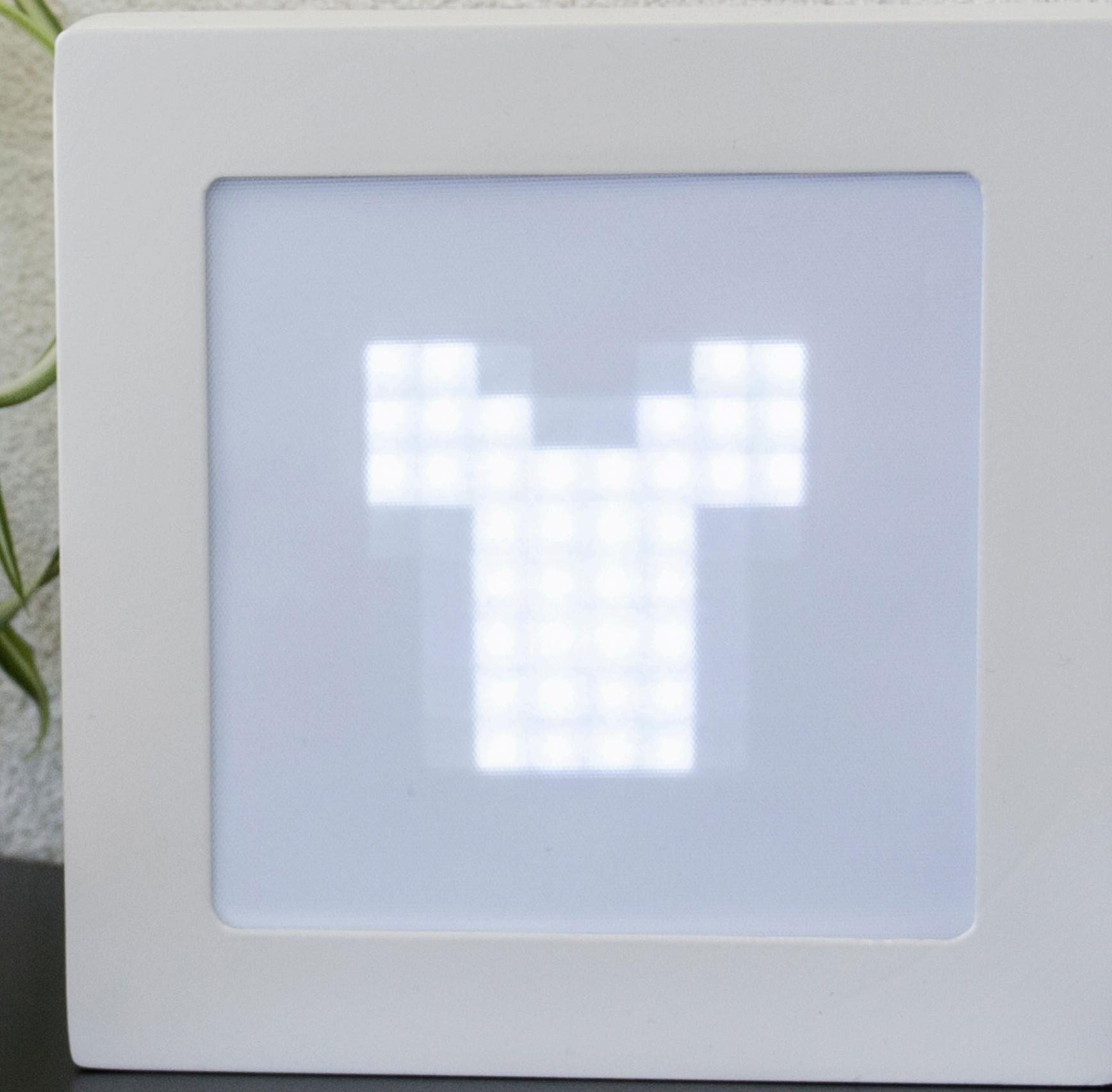
if (uservariables['WasmachineBezig'] == 2) then
    s = uservariables_lastupdate['WasmachineBezig']
    lastUpdate = os.time{
        year=string.sub(s, 1, 4), month=string.sub(s, 6, 7), day=string.sub(s, 9, 10),
        hour=string.sub(s, 12, 13), min=string.sub(s, 15, 16), sec=string.sub(s, 18, 19)
    }

    difference = os.difftime (os.time(), lastUpdate)

    if (difference > 300) then
        commandArray['Variable:WasmachineBezig'] = '0'
        commandArray['OpenURL'] = 'pixel.local/api?command=notify&icon=shirt'
    end
end

return commandArray
```





questions?