Hyperapp Flipdots & Pixelkunst

Michael Geers | @naltatis

neuland.conf 2018

hyperapp.js

Functional
DOM Diffing
Komponenten
State Management
1kB JavaScript

Elm, React/Redux
The Important Parts

Vergleich: ~30kB Elm, ~40kB React+Redux, ~60kB Vue, ~110kB Angular

hyperapp in action

counter.js

Zentraler State

Interaktionen

Template

Initialisierung

```
import { h, app } from "hyperapp"

const state = {
  count: 0
}

const actions = {
  down: value => state => ({ count: state.count - value }),
  up: value => state => ({ count: state.count + value })
}

const view = (state, actions) =>
  h("div", {}, [
    h("h1", {}, state.count),
    h("button", { onclick: () => actions.down(1) }, "-"),
    h("button", { onclick: () => actions.up(1) }, "+")
  ])

app(state, actions, view, document.body)
```

hyperapp in action

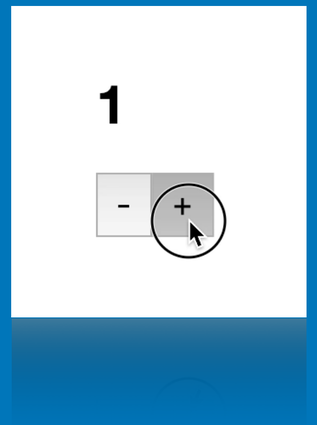
counter.jsx

Zentraler State

Interaktionen

Template

Initialisierung

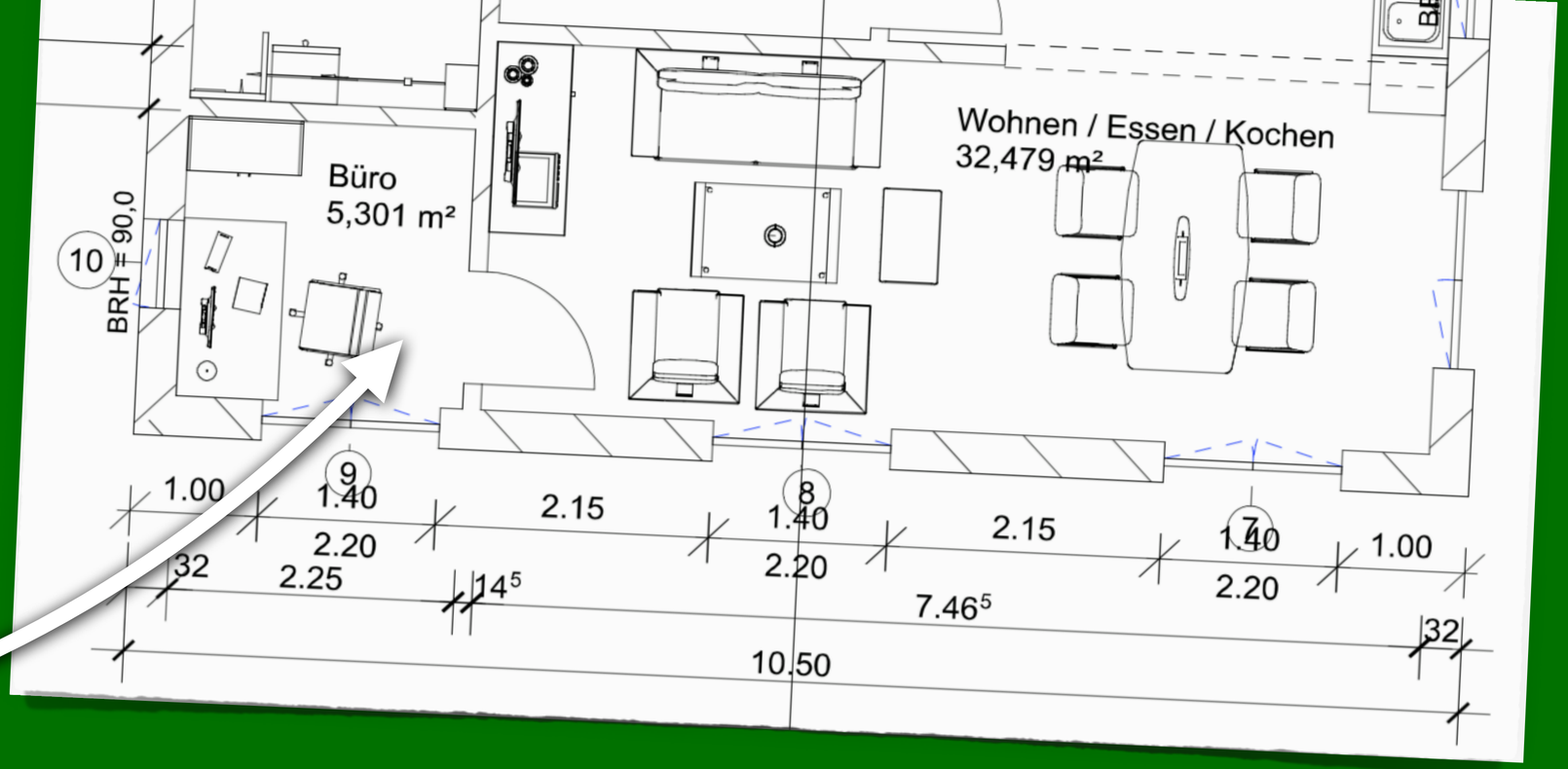



```jsx
import { h, app } from "hyperapp"

const state = {
  count: 0
}

const actions = {
  down: value => state => ({ count: state.count - value }),
  up: value => state => ({ count: state.count + value })
}

const view = (state, actions) => (
  <div>
    <h1>{state.count}</h1>
    <button onclick={() => actions.down(1)}>-</button>
    <button onclick={() => actions.up(1)}>+</button>
  </div>
)

app(state, actions, view, document.body)
```

And Now for Something
Completely Different

Homeoffice

Home


Büro
5,301 m²
Wohnen / Essen / Kochen
32,479 m²
BRH = 90,0
10
9
8
7
1.00
1.40
2.15
1.40
2.15
1.40
1.00
2.20
2.20
2.20
32
2.25
14⁵
7.46⁵
32
10.50

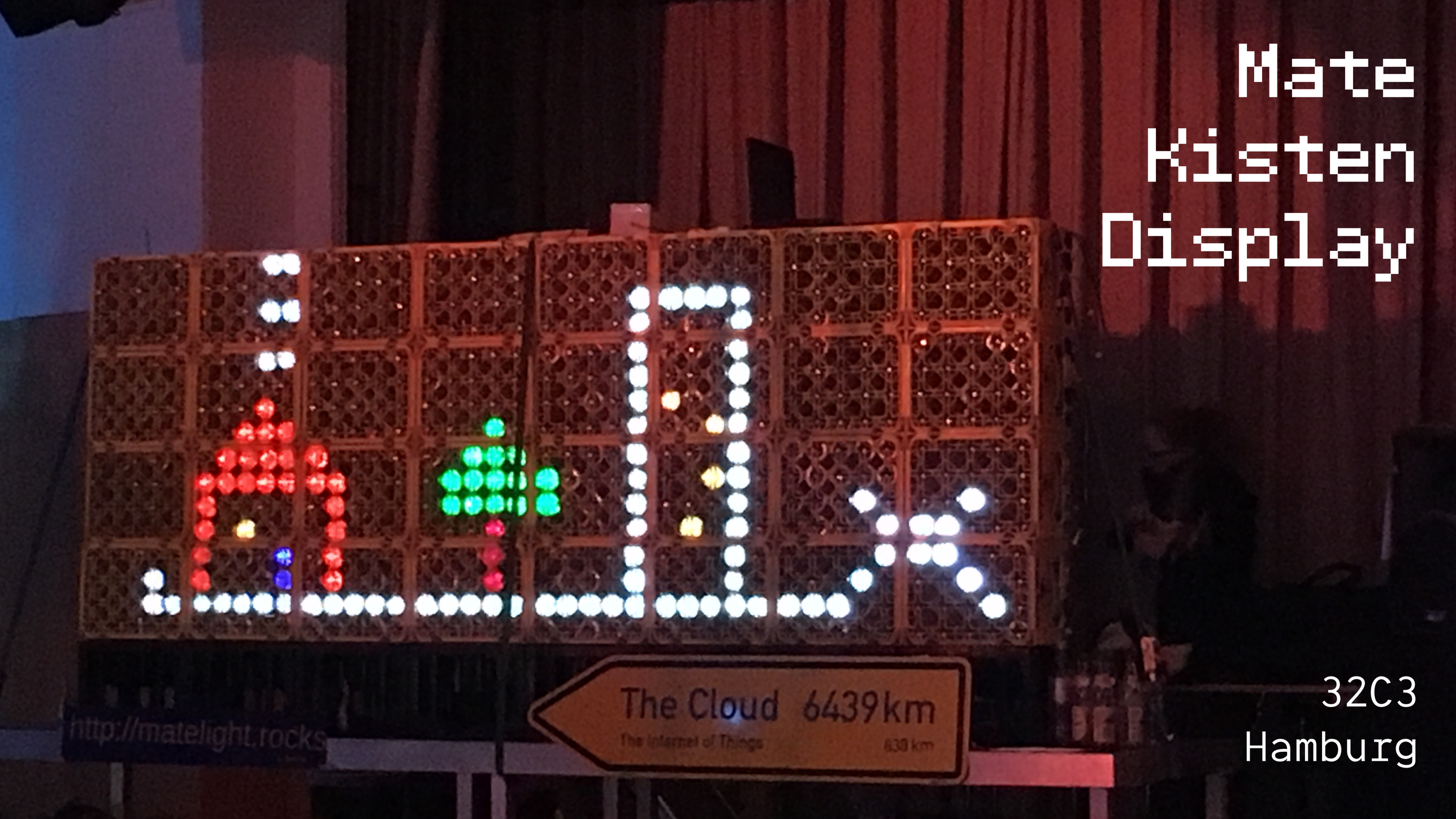
BBC
NEWS
LONDON
BERLIN
PARIS
ROME
JERUSALEM
CAIRO
BAGHDAD
DELHI
NAIROBI
JOHANNESBURG

@AndreSchroeter

Keine Glastür

Headset für Musik

On Air LED

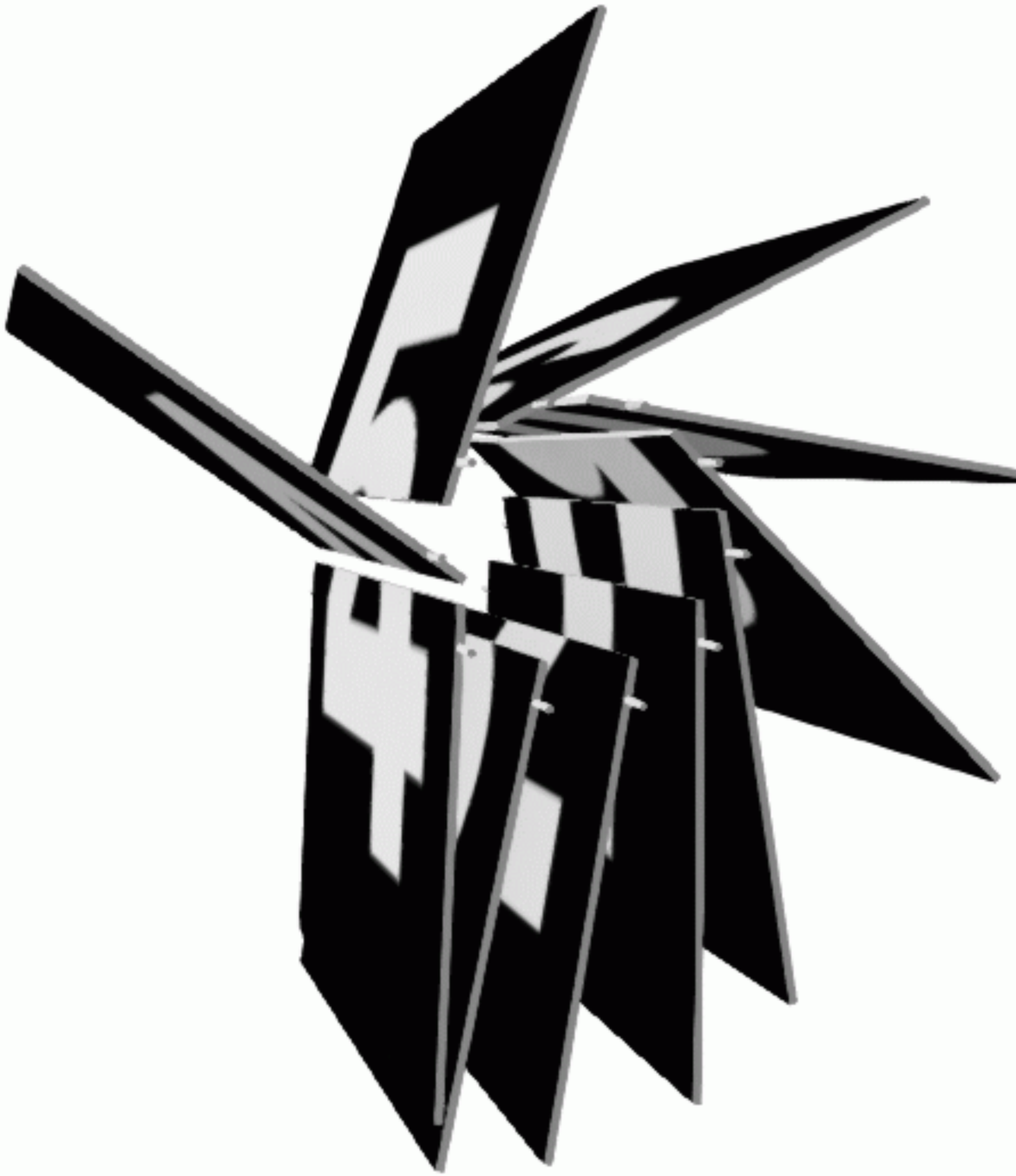


Mate Kisten Display

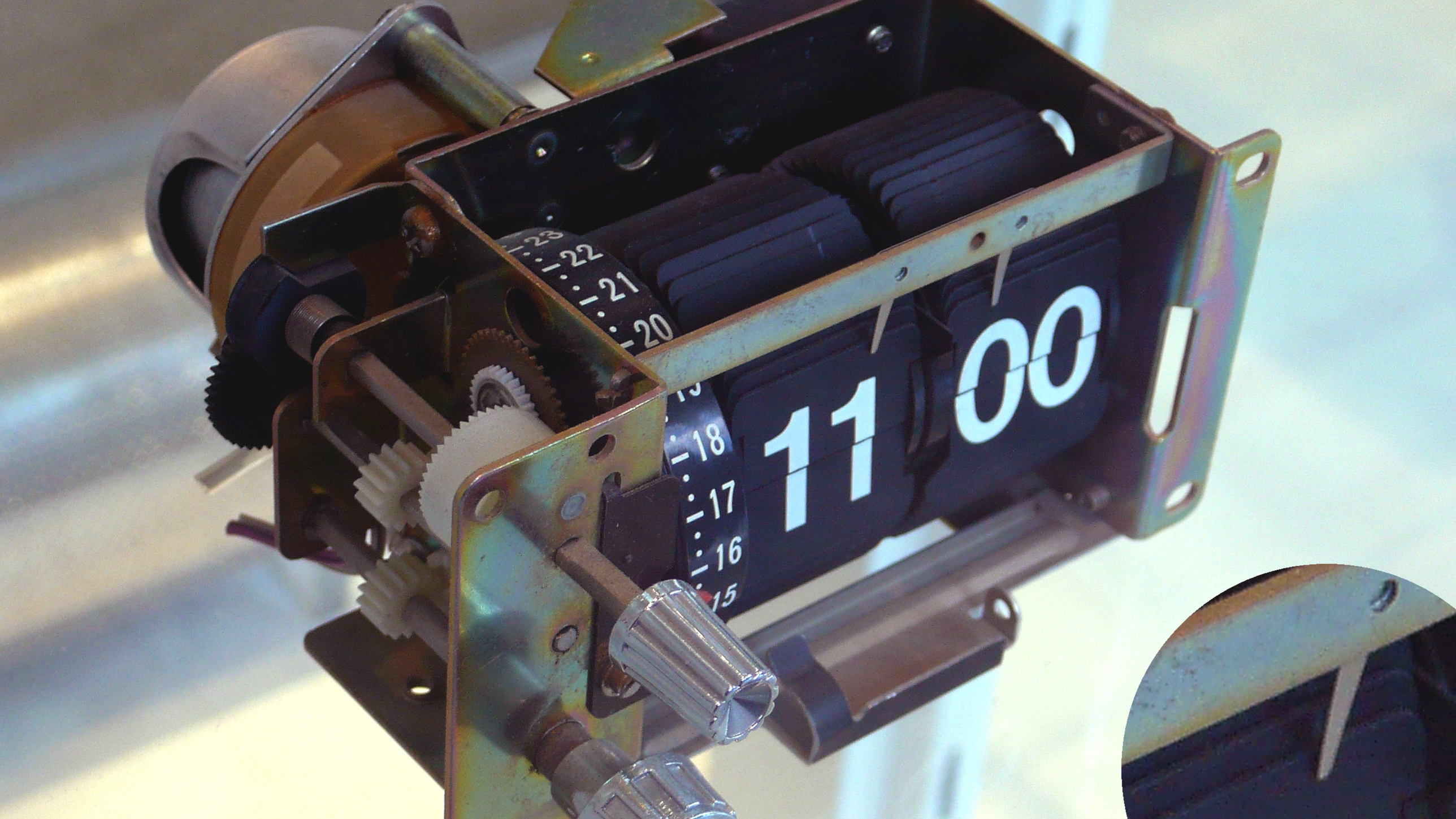
32C3
Hamburg

Mechanische Displays

Split-Flap Display



KARLSRUHE 13
WÄCHTERSBACH 11
DORTMVND 6
KÖNIGSTEIN/TS 23 Hält nicht
MÜNCHEN 9
MARBURG 14
RIEDST. GODDELAU 2
KOBLENZ 24


23
22
21
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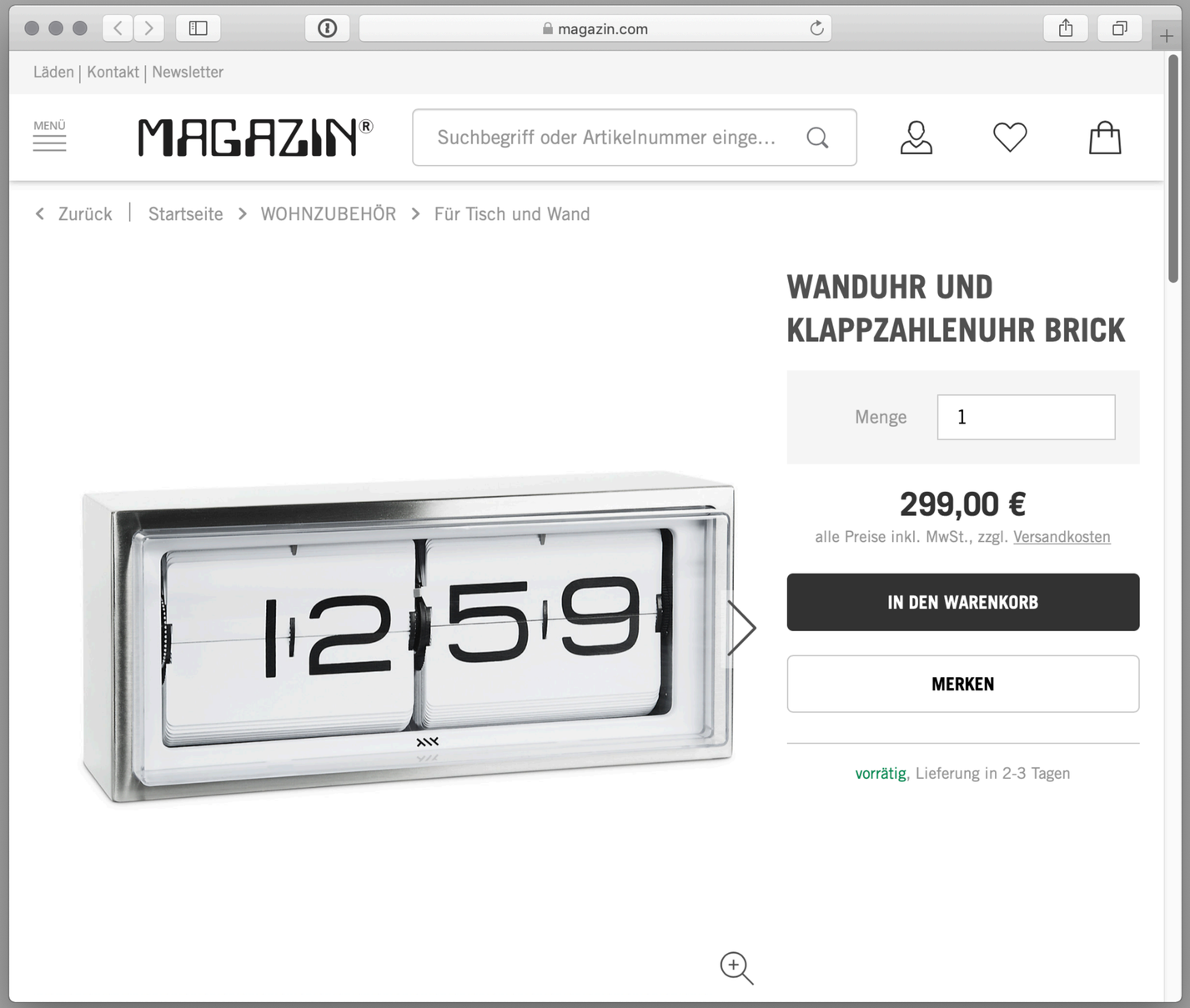
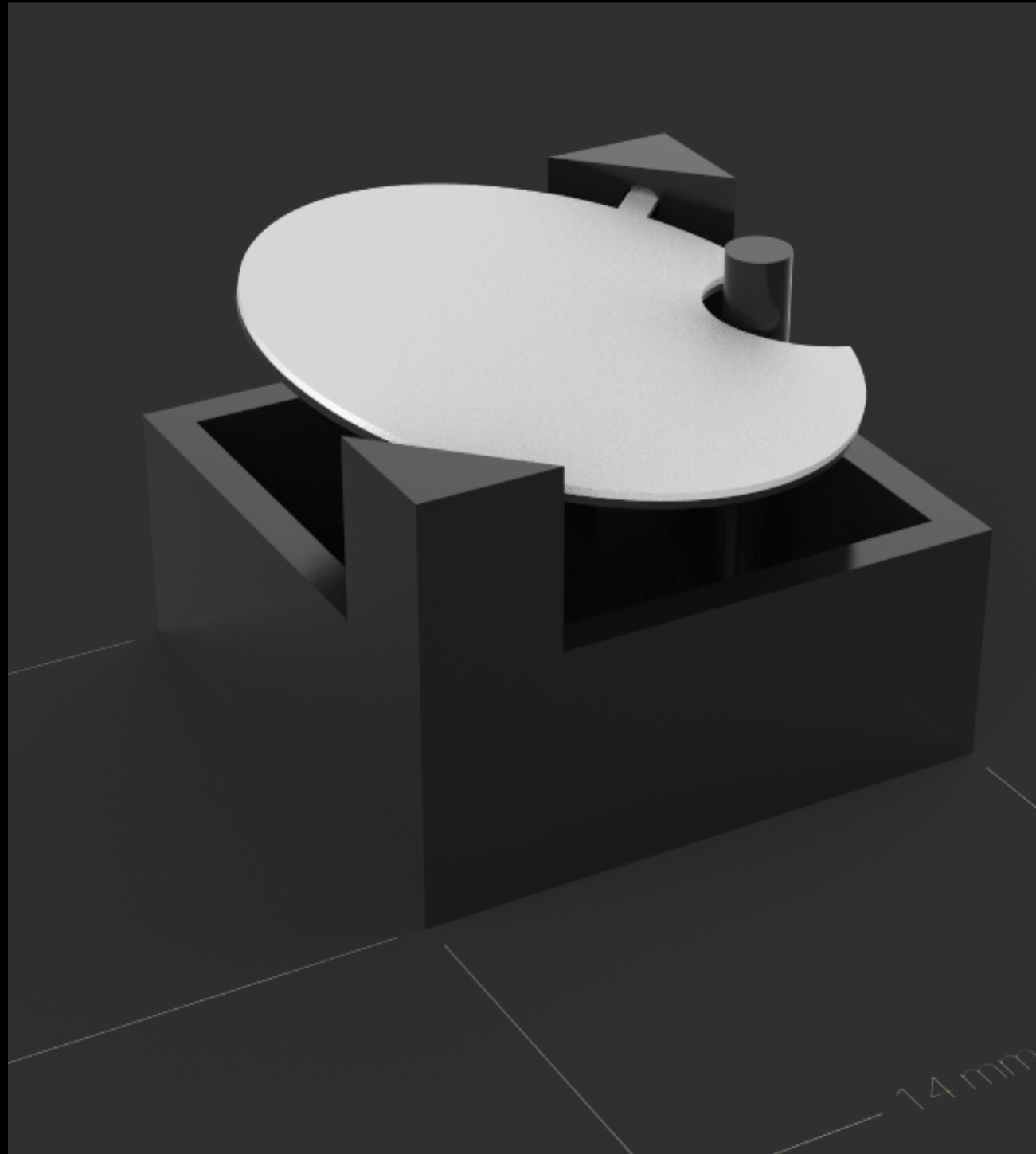
11 00



https://www.magazin.com/wanduhr-klappzahlenuhr-brick-p1463864/

Flip-Dot Display

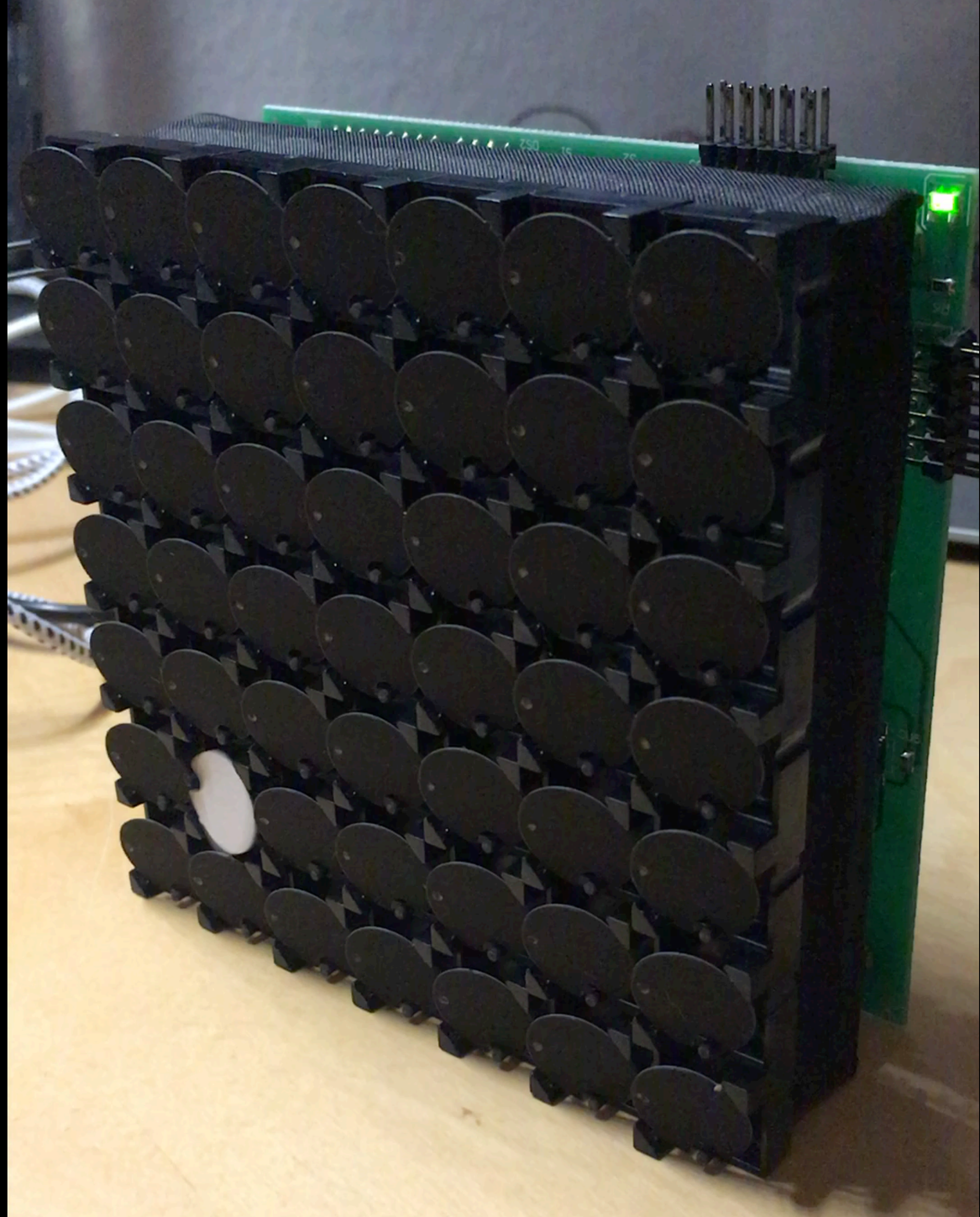


BUSE

https://breakfastny.com/flip-disc

7x7 Dev Board

- Serielle Steuerung RS485 Arduino/RPi *yay*
- 24V Spannung
- Erweiterbar über Steckverbindung



AlfaZeta - Flip-Dot Boards XY5 - https://flipdots.com/

Serielle Ansteuerung

node.js

```
const port = new SerialPort("/dev/ttyUSB0", { baudRate: 57600 });

const payload = [
  0x80, // header
  0x87, // 7 bytes, refresh
  0x01, // address
  0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00 // all pixels black
  0x8f // EOT
];

port.write(Buffer.from(payload));
```

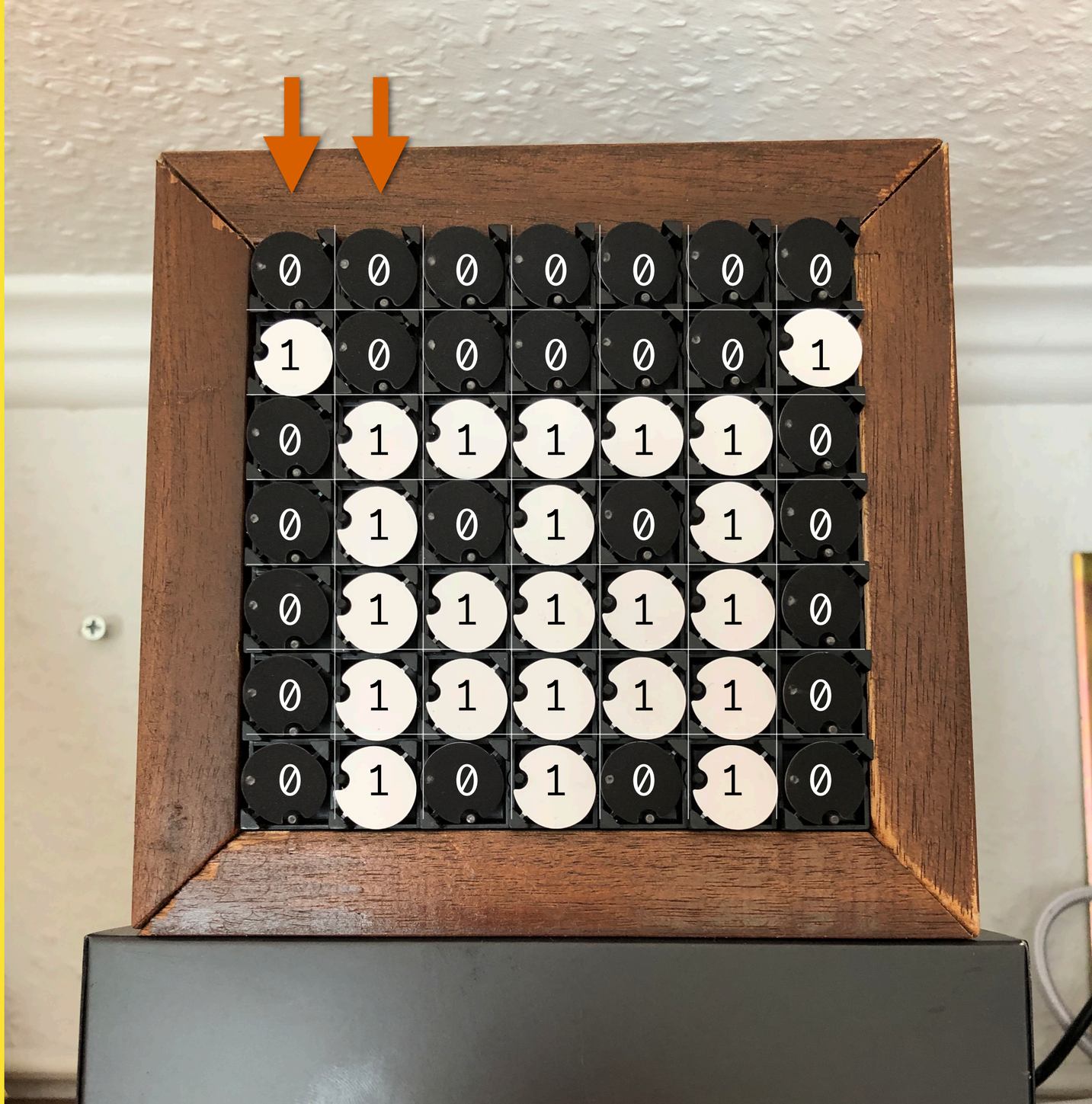
Payload berechnen

Jede Spalte ist ein Byte

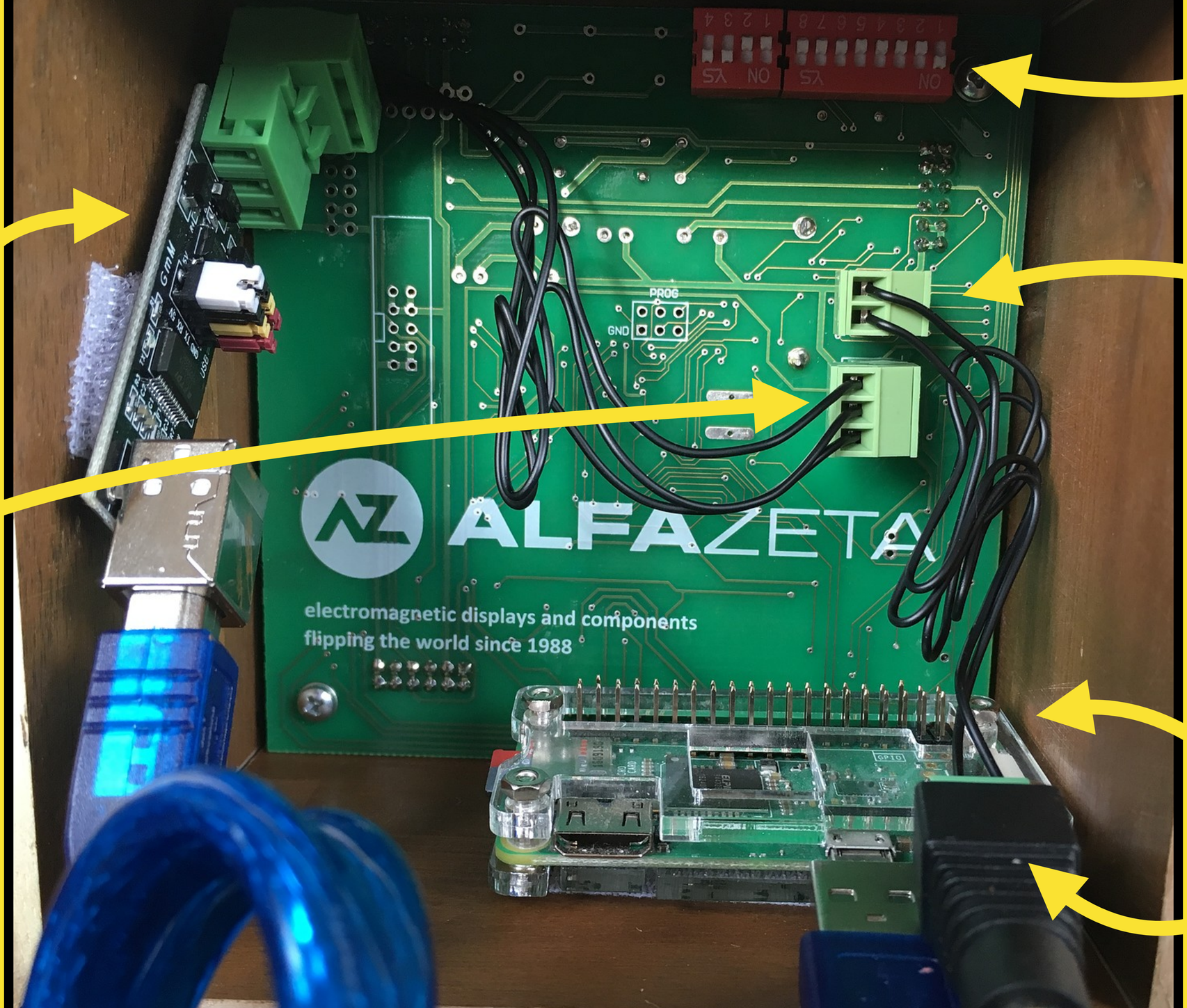
Basis 2

```
parseInt("0100000", 2)
⇒ 32 // 0x20
```

```
parseInt("0011111", 2)
⇒ 31 // 0x1f
```



Rückseite



RS485 to USB Adapter

Steuersignal

Konfiguration (Adresse/Mode)

Strom

Raspberry Pi Zero W

24 V Netzteil

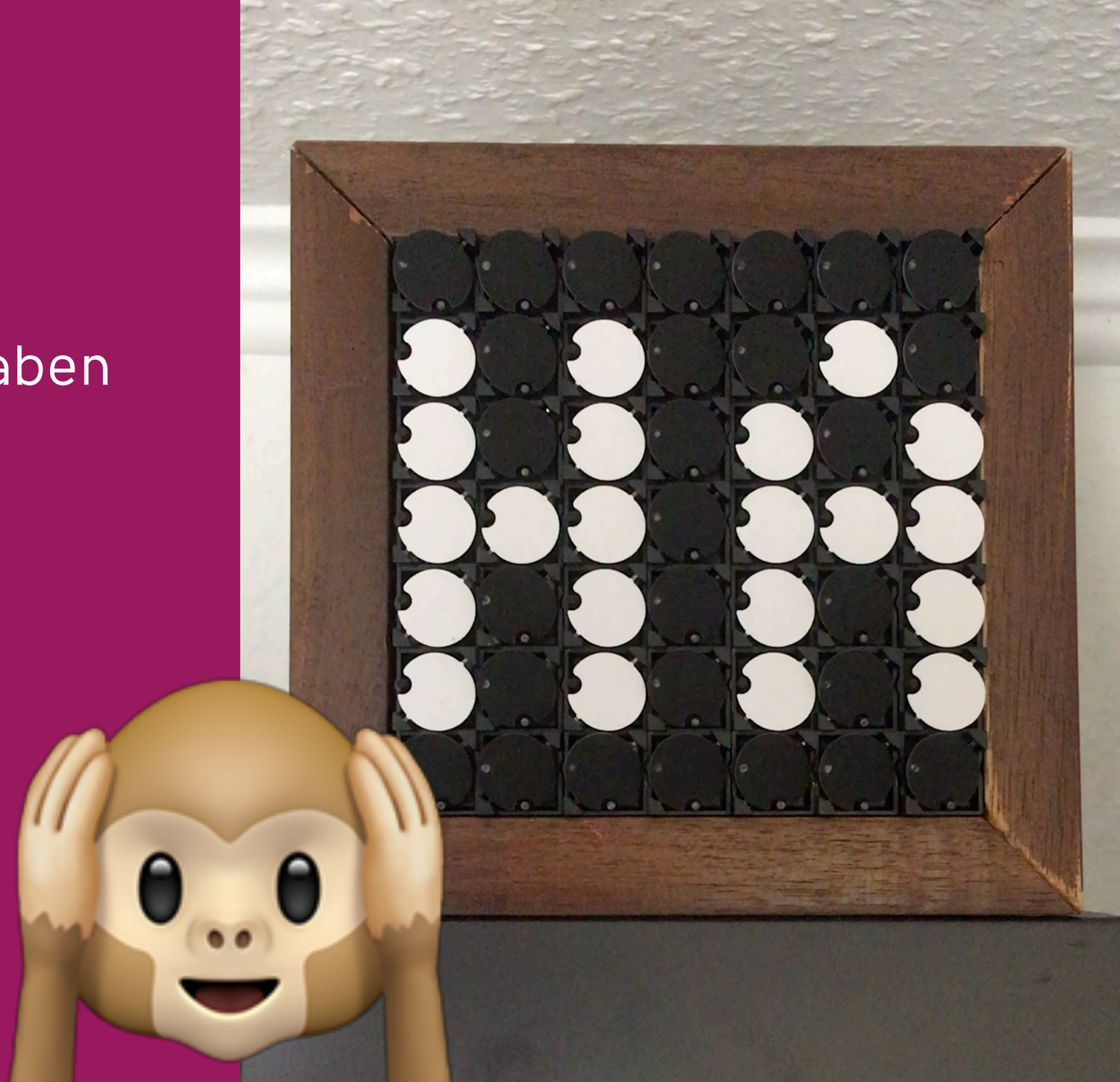
On Air Flip-Dot Display

Inhalt?

Platz für zwei Buchstaben

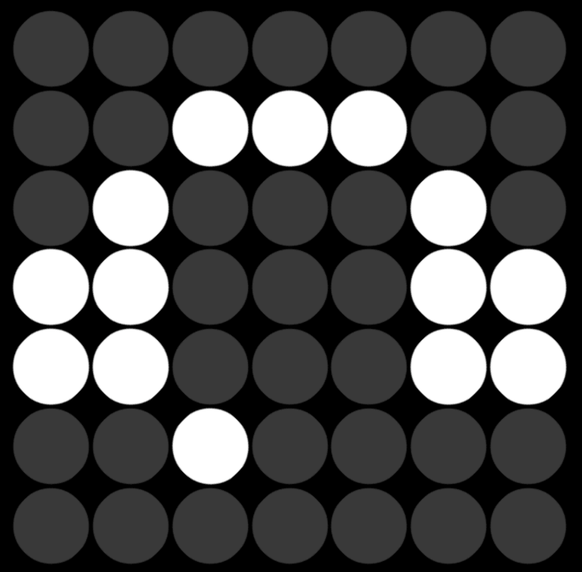
Lauftext?

Updates sind laut!

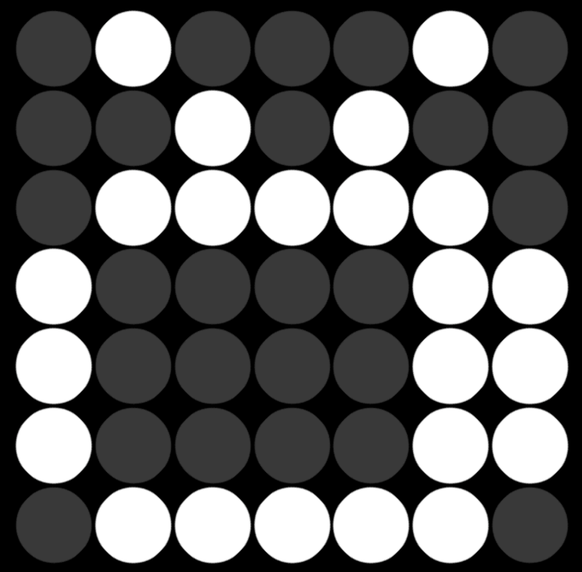


Icons

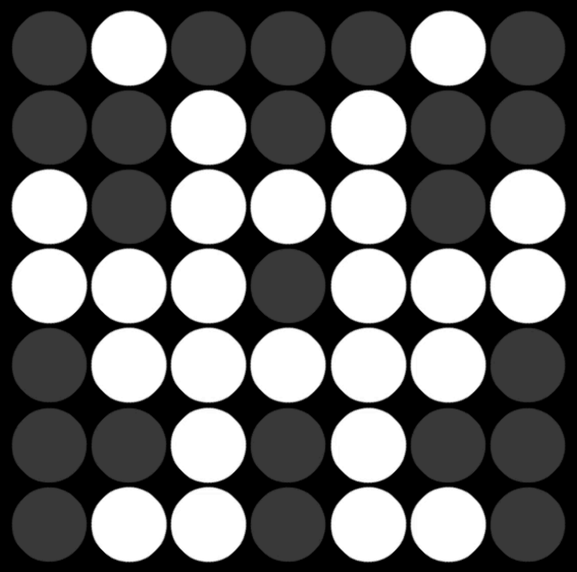
Zufälliges Monster



Mikro an



Kamera an



Luft ist rein

Zuverlässigkeit !important

Steuerung

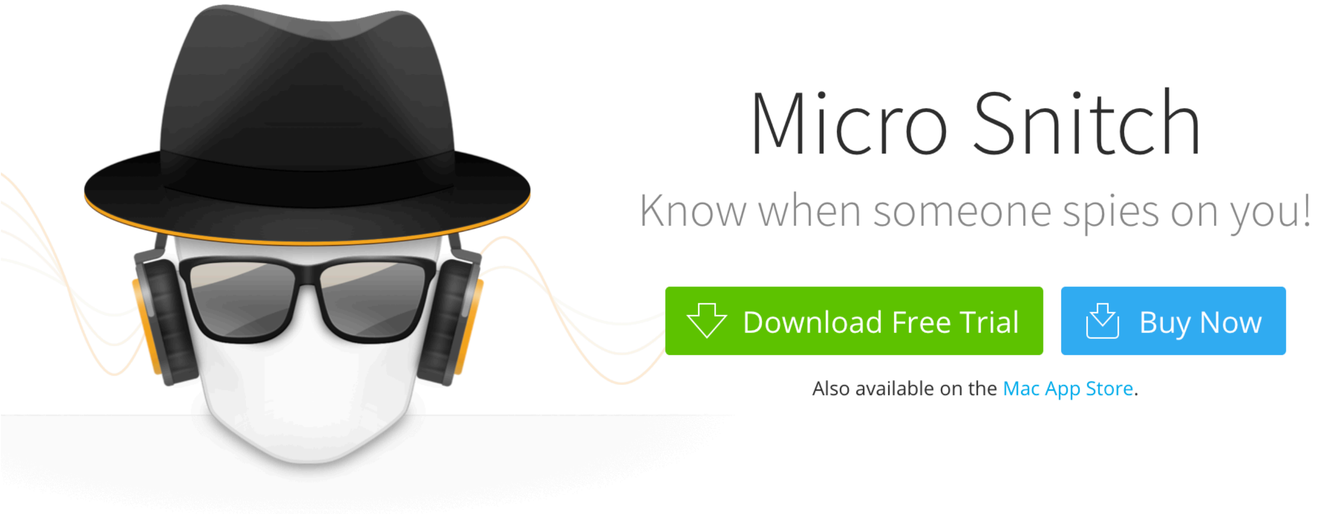
Version 1: Button

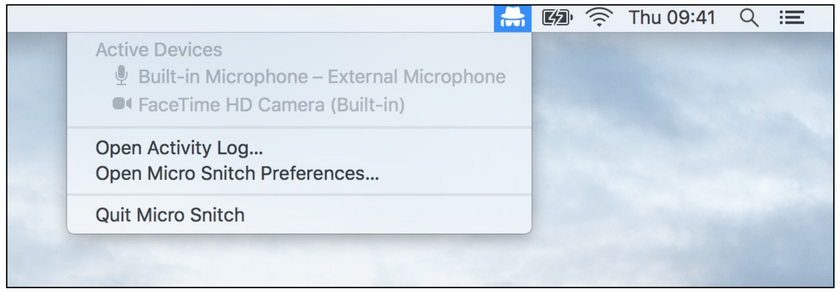
Steuerung

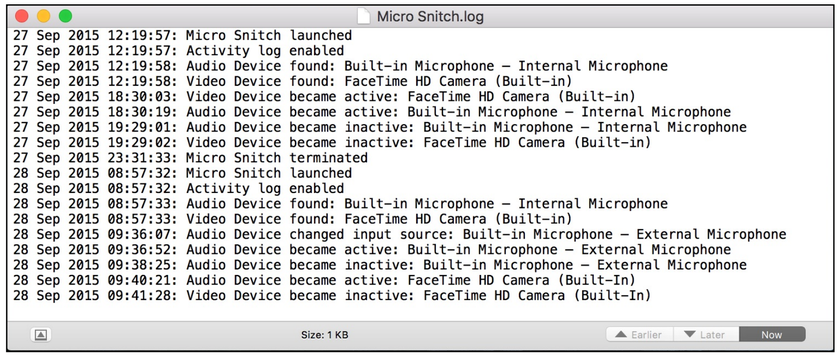
Version 1.5: Button mit LED

Steuerung

Version 2: Macbook Micro- und Kamera-Aktivität (automatisch)



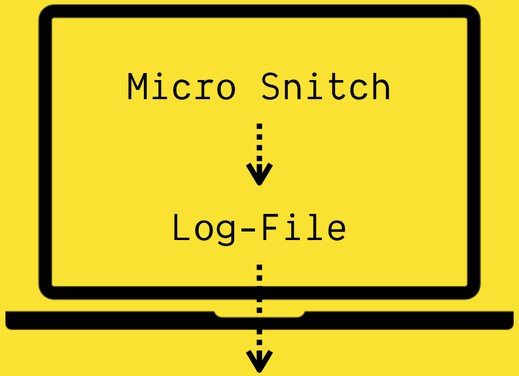




https://obdev.at/products/microsnitch/

Steuerung

Macbook



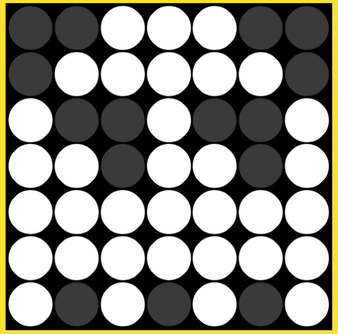
On-Air Daemon

PUT /status/audio

PUT /status/video

PUT /status/idle

Flip-Dot
Raspberry Pi



Webservice

Local Wifi

49 Pixel

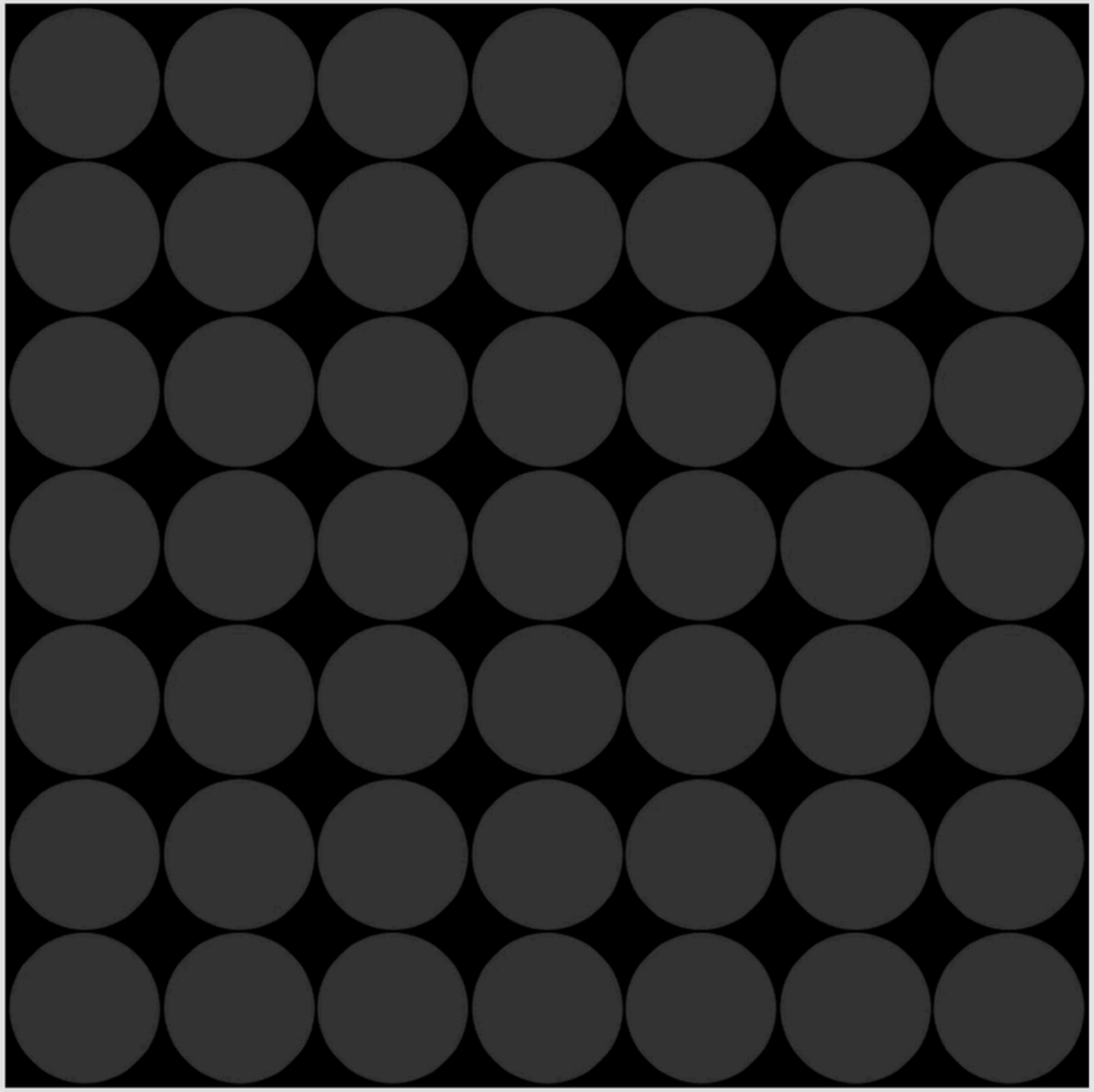
Pixel Editor

Simple Webapp

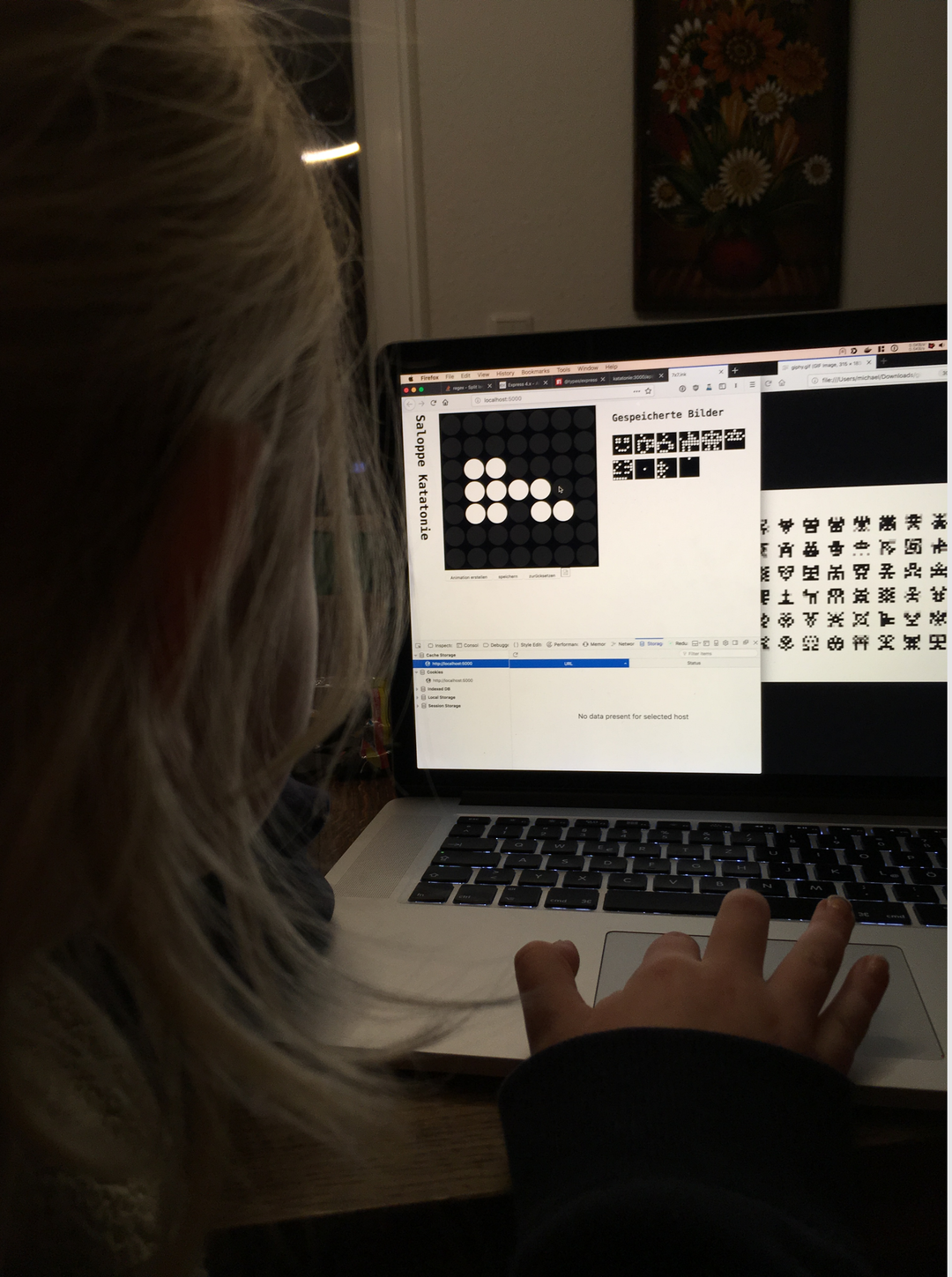
Etwas CSS Magie

hyperapp!

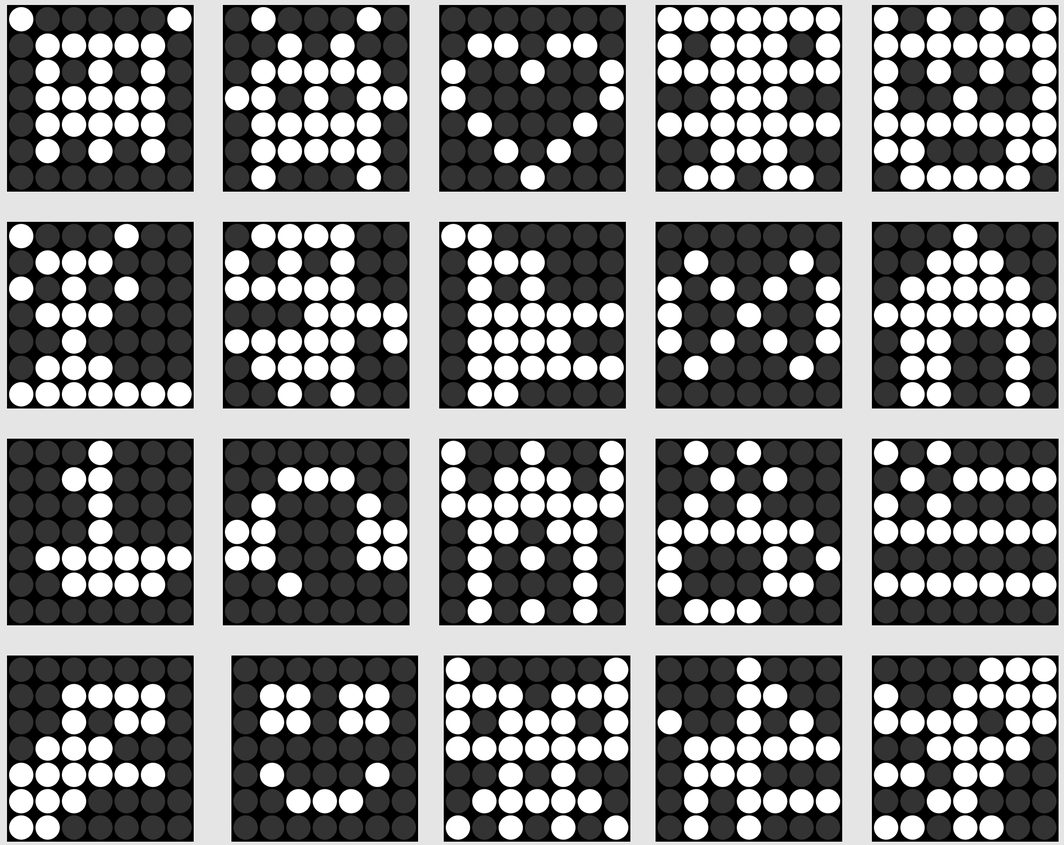
Live Vorschau *flip*flip*



invert save clear



Kids 💖 Pixel Editor



types.ts — 7x7.ninja

types.ts

```typescript
declare module "hyperapp";

type Matrix = Array<0 | 1>;
type Frames = Matrix[];

interface Item {
  id?: string;
  frames: Frames;
  currentFrame: number;
  animation: boolean;
}

interface Catalog {
  items: Item[];
  scope: string;
}

interface State {
  animation: Animation;
  currentItem: Item;
  inspiration: string;
  catalog: Catalog;
}
```

TypeScript

JavaScript + Types

Tooling Support
(VSCode, IntelliJ, …)

types.ts — 7x7.ninja

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}
```

EditorView.tsx — 7x7.ninja

types.ts | EditorView.tsx

```typescript
function CurrentItemView({
  matrix,
  toggle
}: {
  matrix: Matrix;
  toggle: (i: number) => void;
}) {
  return (
    <div class="currentItem">
      <div class="currentItem__square">
        <div class="currentItem__inner">
          {matrix.map((x, i) => (
            <button
              class={`dot dot--${x === 0 ? "off" : "on"}`}
              onclick={() => toggle(i)}
            >
              <div class="disc">
                <div class="disc__white" />
                <div class="disc__black" />
              </div>
            </button>
          ))}
        </div>
      </div>
    </div>
  );
```

types.ts — 7x7.ninja

types.ts

```ts
declare module "hyperapp";

type Matrix = Array<0 | 1>;
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  currentItem: Item;
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}
```

EditorView.tsx — 7x7.ninja

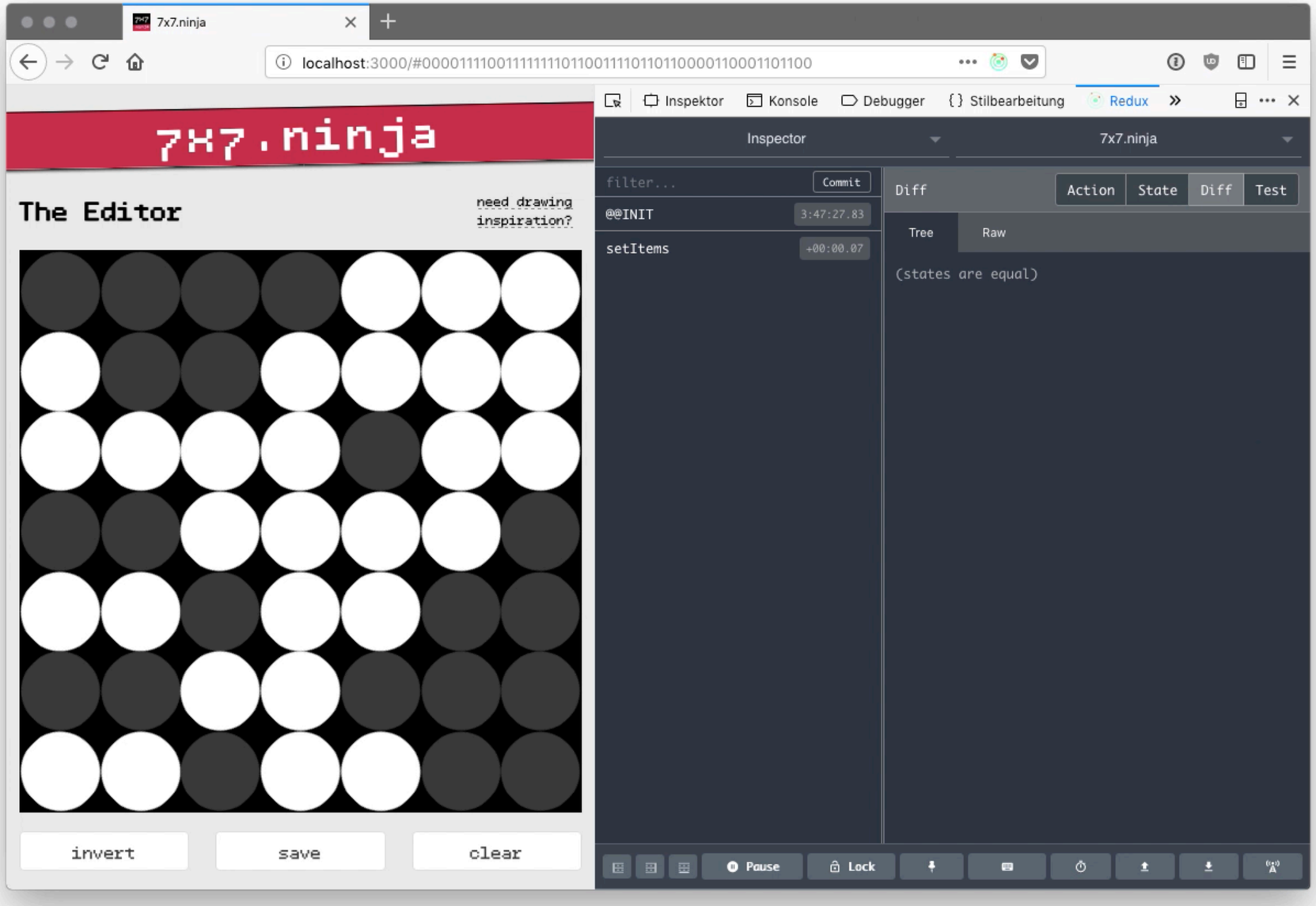
types.ts | EditorView.tsx

```tsx
function CurrentItemView({
  matrix,
  toggle
}: {
  matrix: Matrix;
  toggle: (i: number) => void;
}) {
  return (
    <div class="currentItem">
      <div class="currentItem__square">
        <div class="current
          {matrix.map((x, i
            <button
              class={`dot dot--${x === 2 ? "off" : "on"}`}
              onclick={() => toggle(i)}
            >
              <div class="disc">
                <div class="disc__white" />
                <div class="disc__black" />
              </div>
            </button>
          ))}
        </div>
      </div>
    </div>
  );
```

[ts] This condition will always return 'false' since the types '0 | 1' and '2' have no overlap.

Debugging

Redux DevTools kompatibel



https://github.com/andyrj/hyperapp-redux-devtools

PARCEL

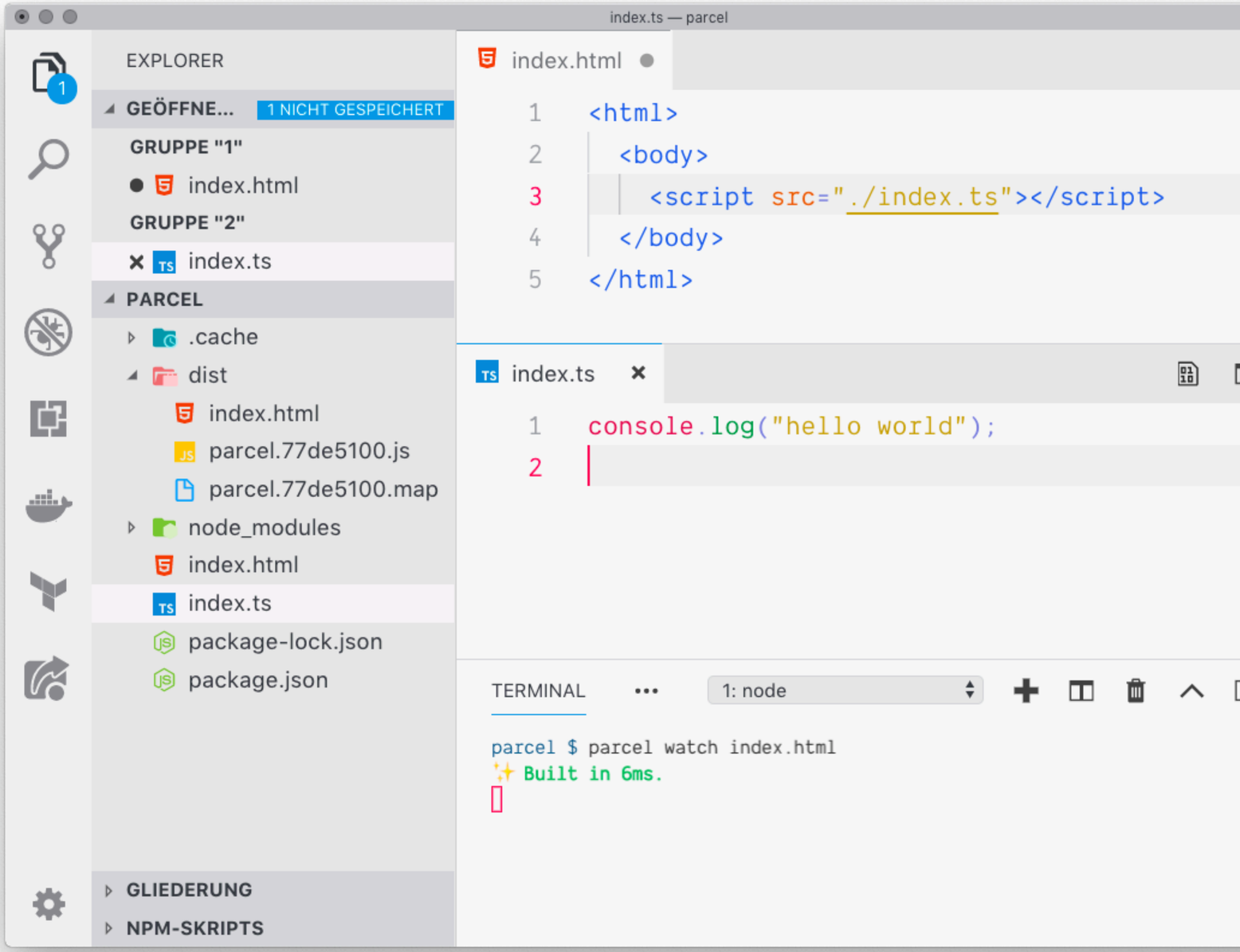
Module Bundler

like Webpack but
Batteries
Included

Zero Config

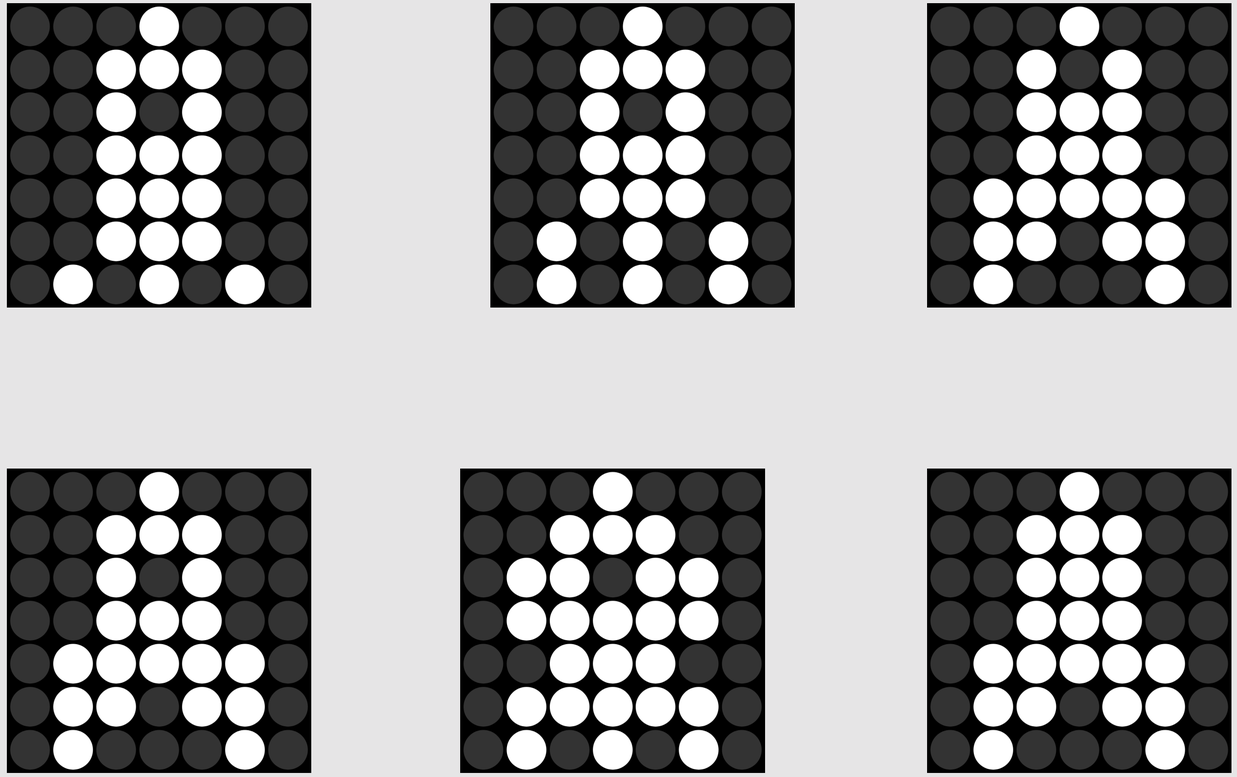
Schnell!

https://parceljs.org/



Wenig Pixel - Viele Möglichkeiten

Male eine Rakete!



Try it yourself!

https://7x7.ninja/

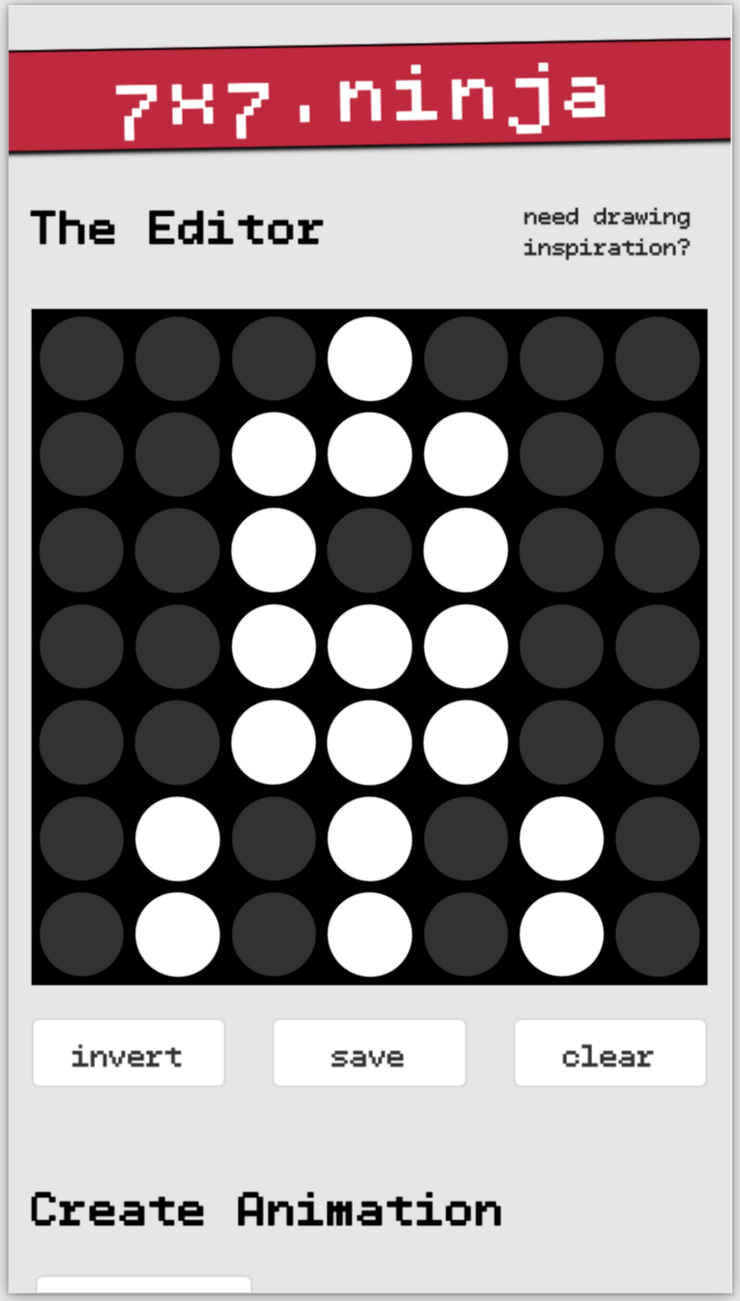
Responsive

Progressive Webapp

Lighthouse Score 100 :)

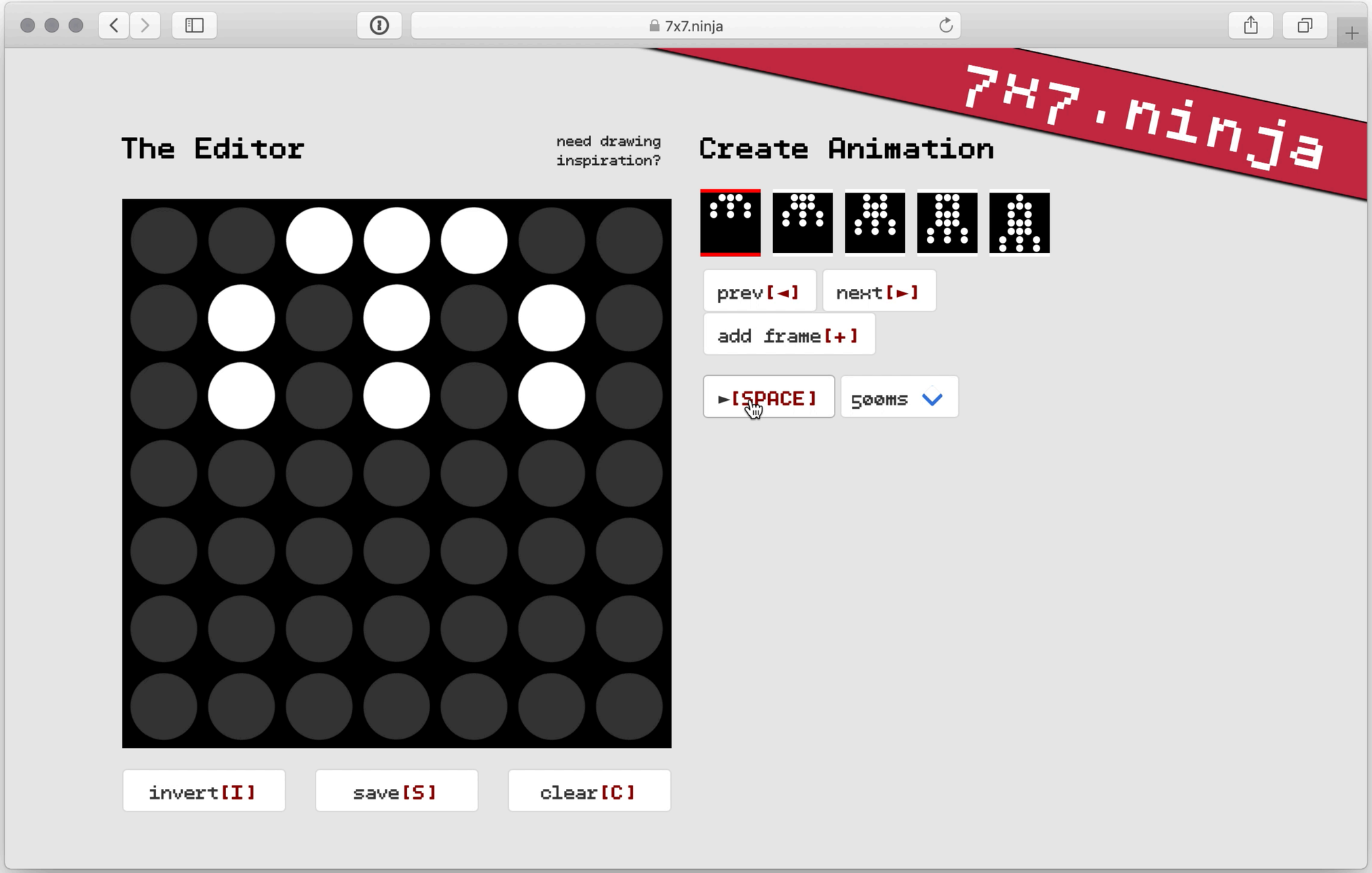
11kb Script

https://github.com/naltatis/7x7ninja

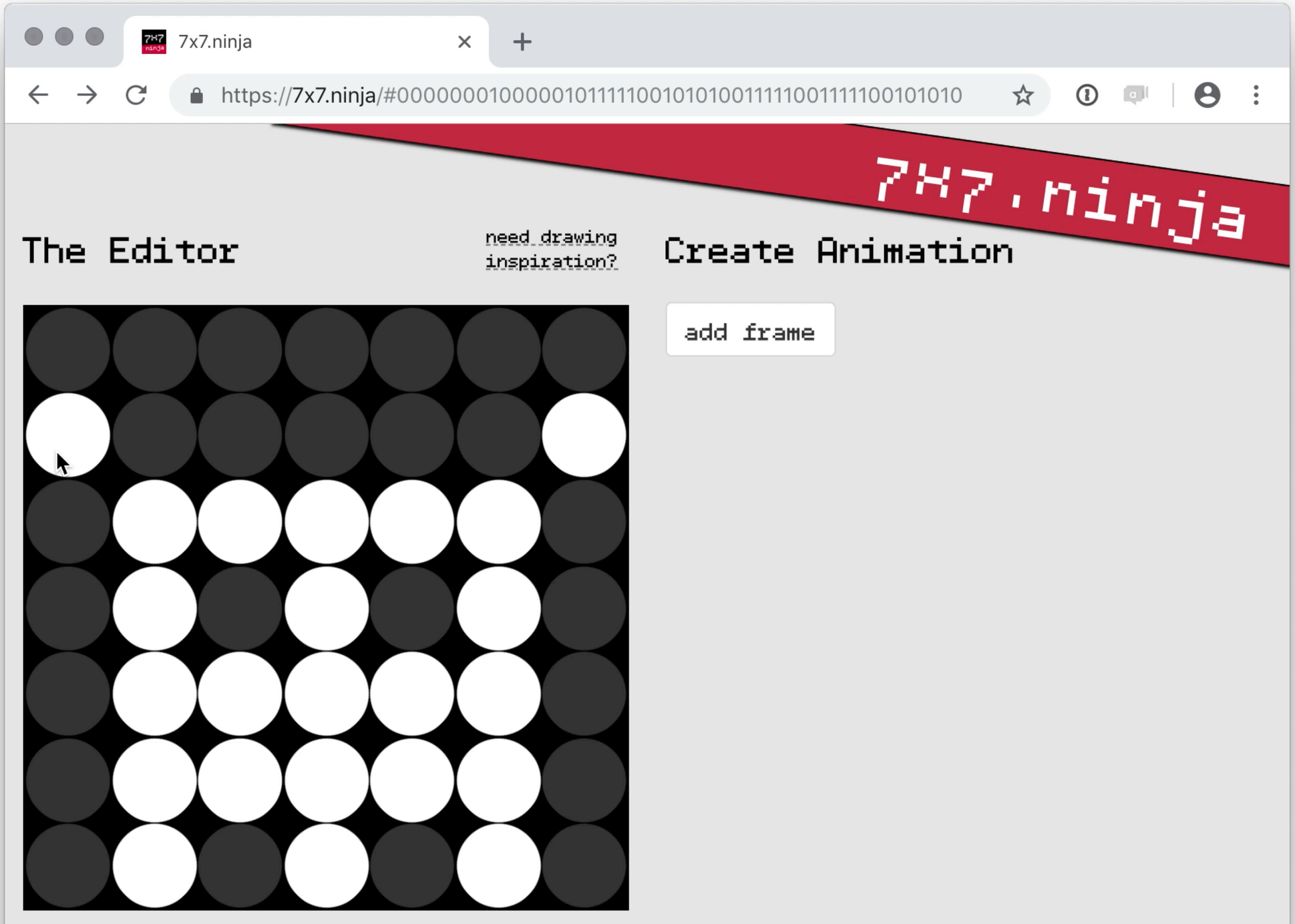


Und nein, das ist nicht mit meinem Display gekoppelt :)

Animations


7x7.ninja
7x7.ninja
The Editor
need drawing inspiration?
Create Animation
prev[◄]
next[►]
add frame[+]
►[SPACE]
500ms
invert[I]
save[S]
clear[C]

Navigation State



Possible Takeaways

hyperapp rocks

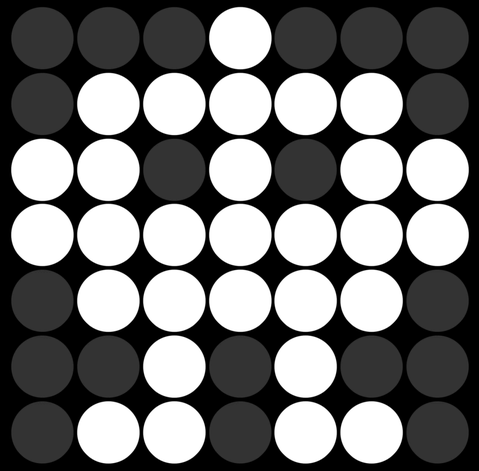
hyperapp + TypeScript ~= Elm

https://github.com/JorgeBucaran/hyperapp

Keine Angst vor Hardware

Simple is Beautiful

Danke!



Credits

John Cleese Desk
https://ichef.bbci.co.uk/images/ic/1200x675/p01gk35d.jpg

Icons by Freepik
https://www.flaticon.com

Split-Flap Animation+
https://en.wikipedia.org/wiki/Split-flap_display

Flip-Disk Schema
https://breakfastny.com/flip-disc-system

ŠJů (cs:ŠJů) - Own work
https://commons.wikimedia.org/w/index.php?curid=10771385

Code: Carbon
https://carbon.now.sh/

Fonts: Dank Mono & BPdots
https://dank.sh/
https://www.fontsquirrel.com/fonts/BPdots