



POLITECNICO
MILANO 1863

ACTAM 2022/23

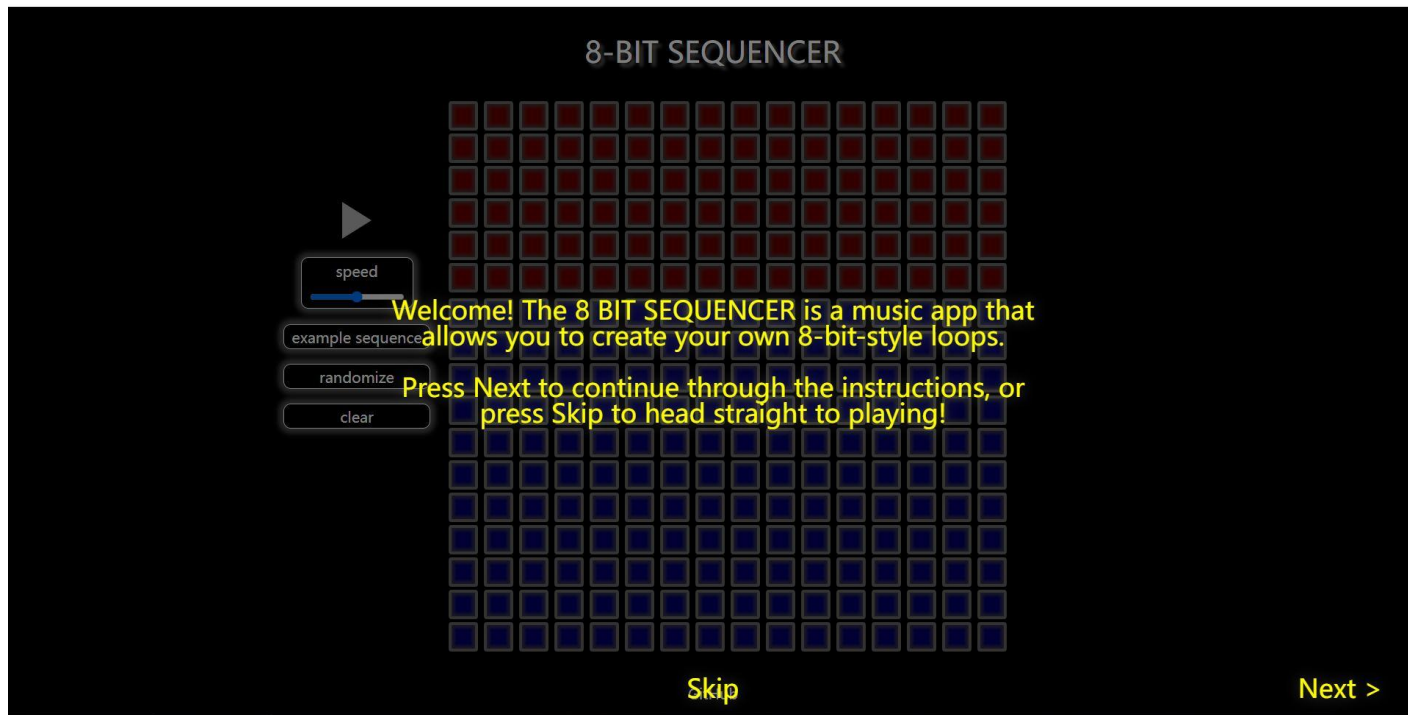
8-BIT SEQUENCER

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INTRODUCTION

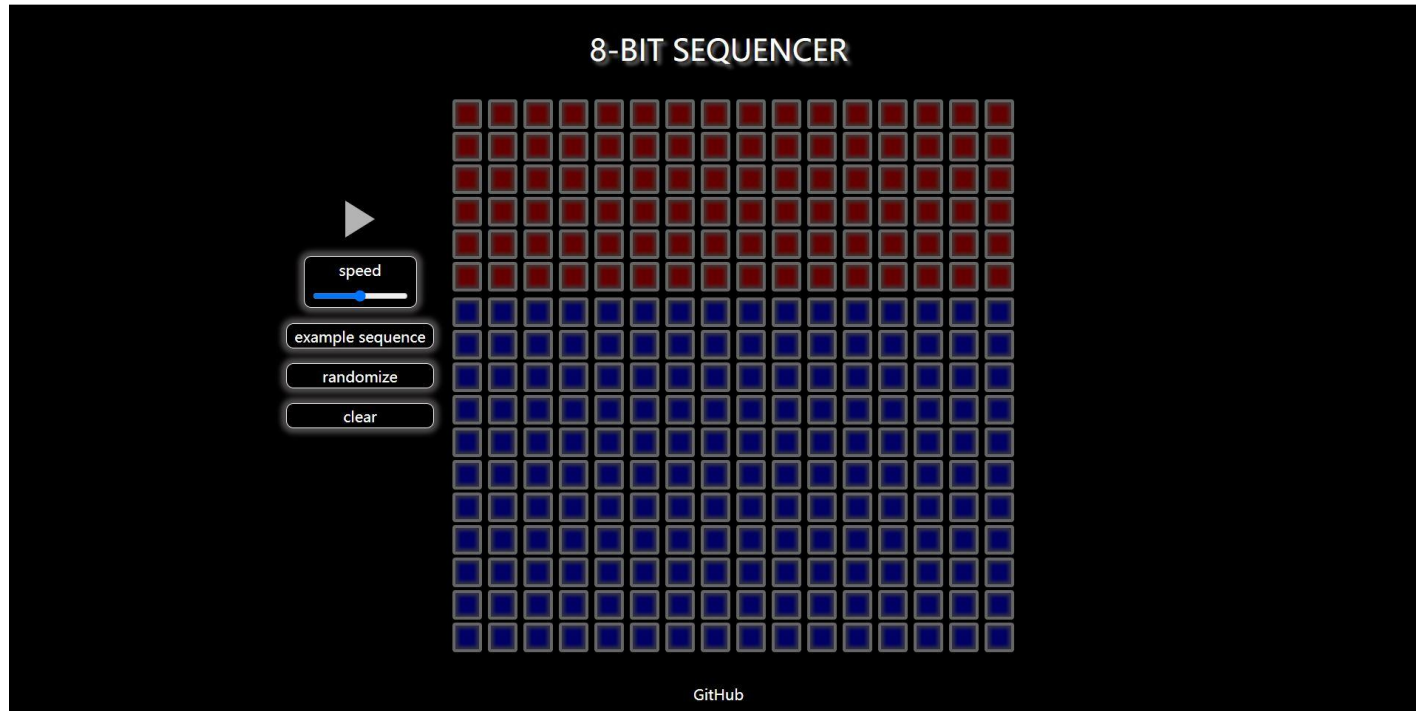
- 8-bit music is a genre of electronic music that emulates the sound of vintage video game consoles and computers.
- The 8-BIT SEQUENCER is an online app that allows users to create their own 8-bit style loops in an easy way. It can also generate random patterns that allow users to explore more potentials.

- When you open the website, you will be greeted with a 6-page instruction.



WEBPAGE

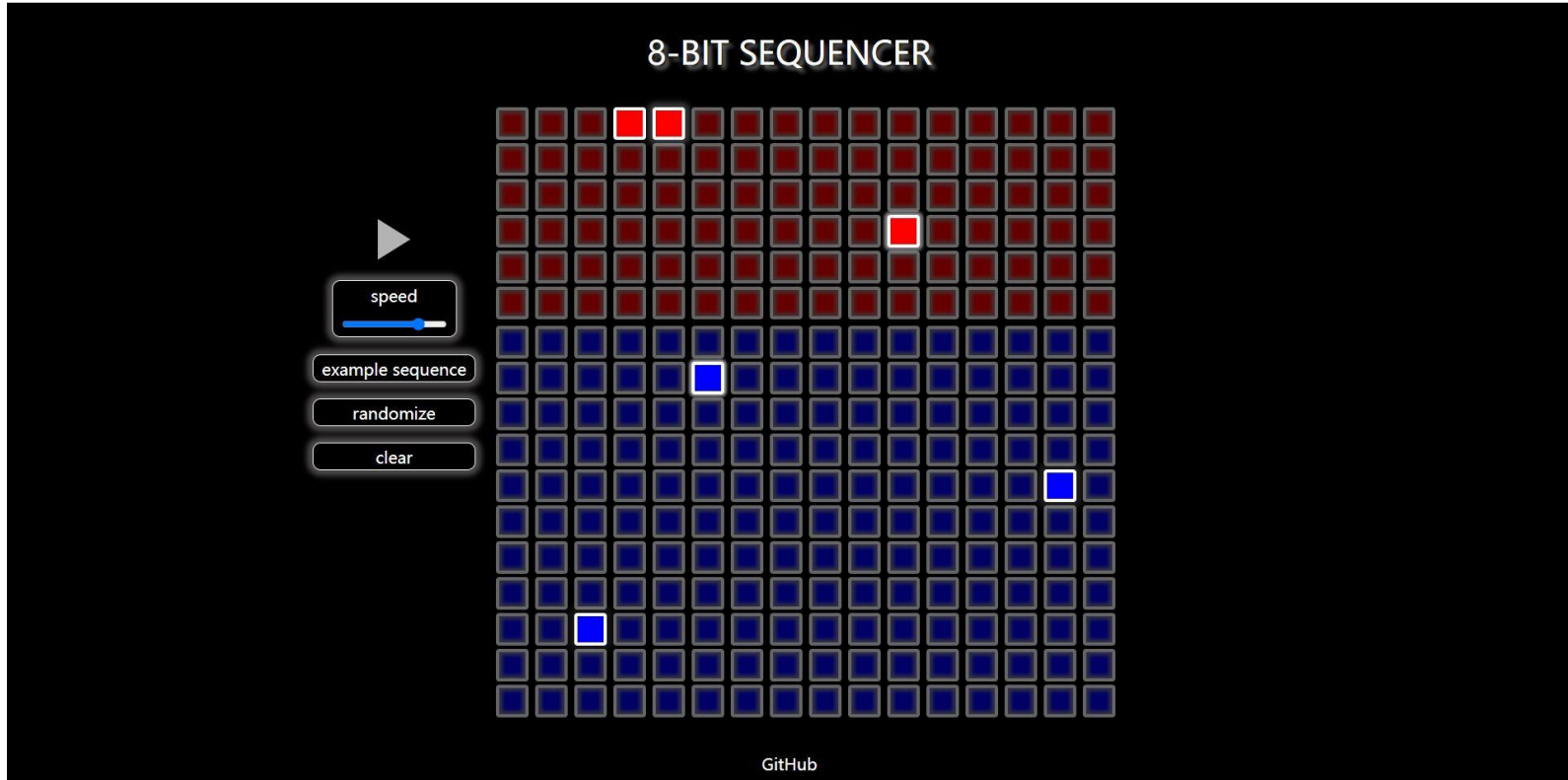
- The grid of buttons represents a series of sounds that will be played in a loop.



- The two colors correspond to different instruments.

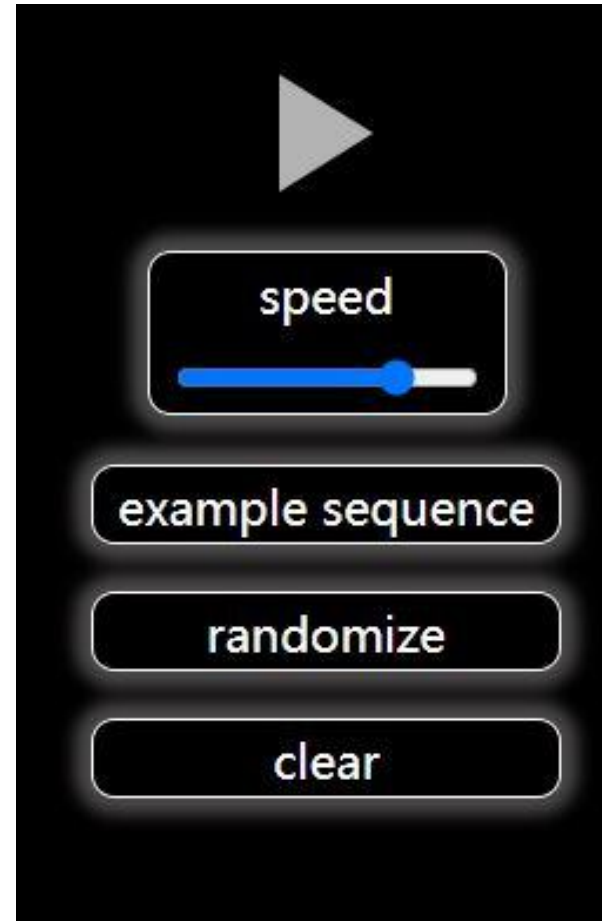
WEBPAGE

- The sequencer buttons can be turned on with a click.

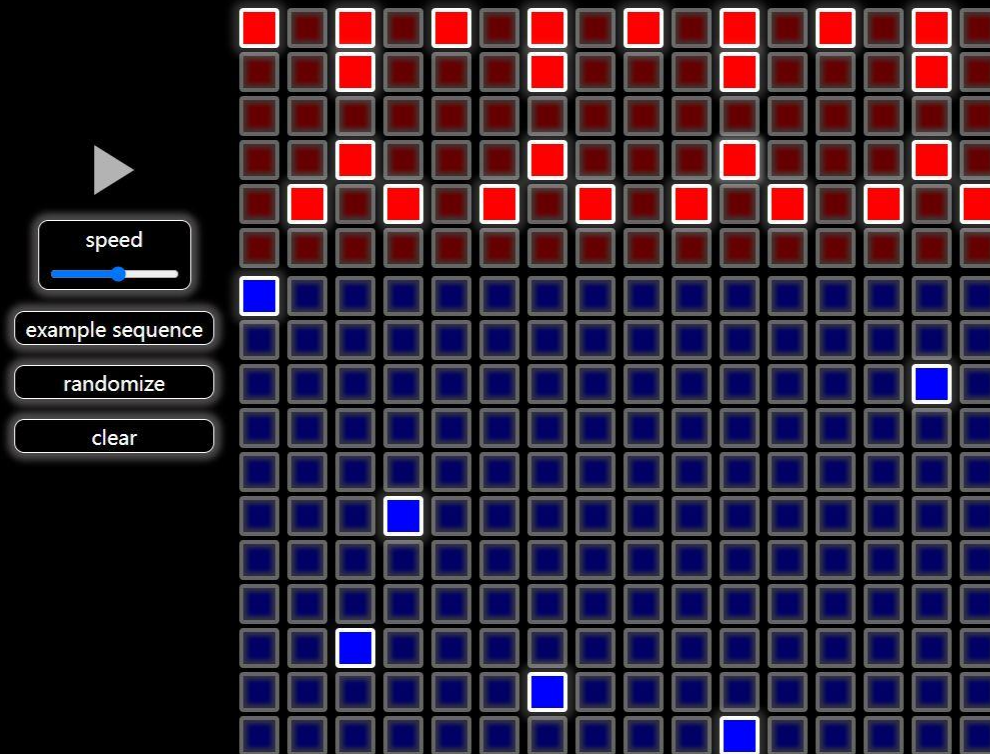


WEBPAGE

- The triangle at the top is the play button.
- The slider adjusts the speed at which your loop will play.
- The EXAMPLE SEQUENCE button turns on a pre-set pattern.
- The RANDOM button generates a random speed and a random pattern.
- The CLEAR button will clear the entire grid.

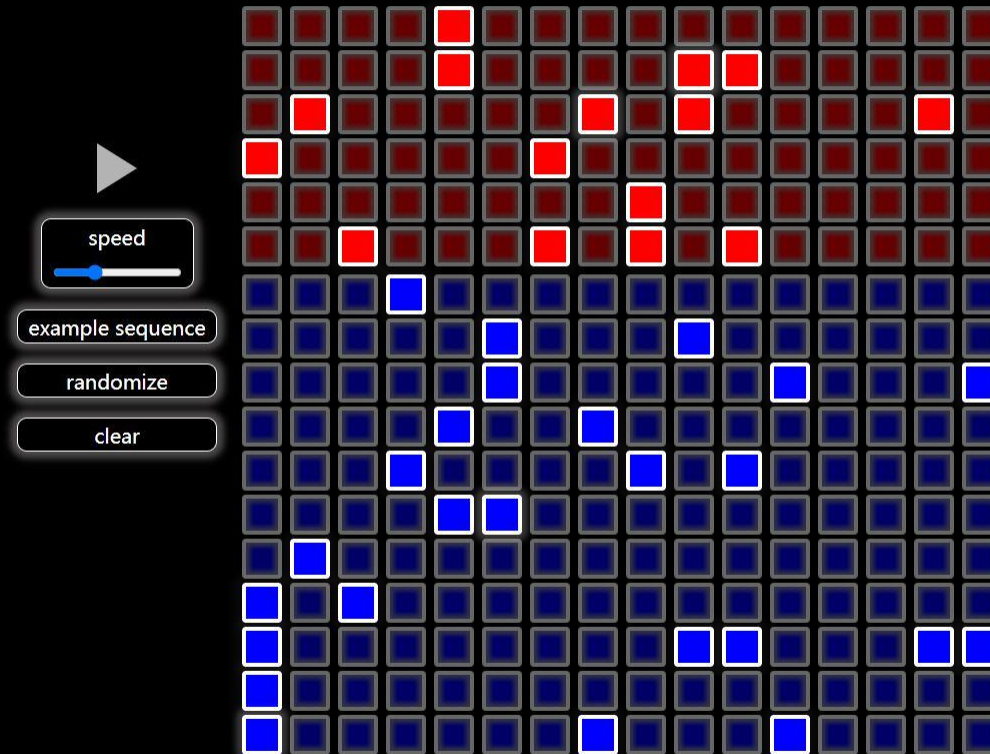


8-BIT SEQUENCER



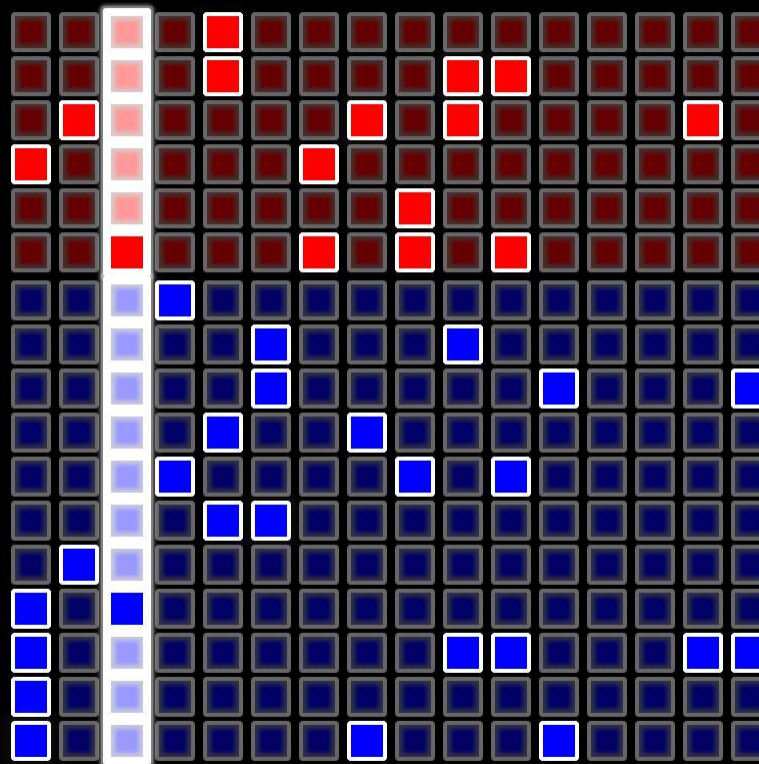
GitHub

8-BIT SEQUENCER



GitHub

8-BIT SEQUENCER



GitHub

SOUNDS



- The 'Drum Beats'
 - Audio samples of 8-bit game effects
 - Pre-set to suitable volume through a series of tests
- The Synthesizer
 - Tone.js
 - PolySynth (allowing multiple notes playing at a same time)
 - Square wave
 - Notes from G major pentatonic scale

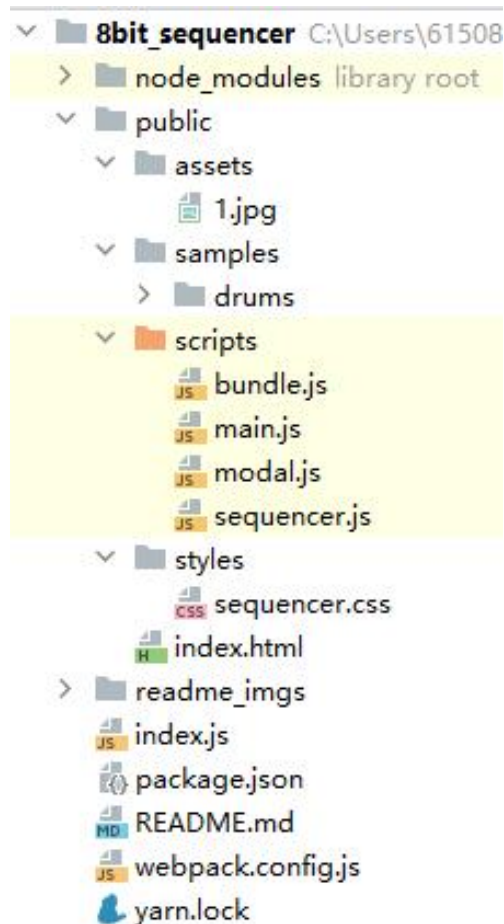
TECH STACK

A decorative horizontal bar consisting of many thin, vertical white lines of varying heights, creating a textured, barcode-like effect.

- Language: HTML, CSS, JavaScript
- Environment: Node.js
- Package manager: Yarn
- Library/Framework: Tone.js(to generate the sounds of the synthesizer)
- Other tools: Webpack(for bundling assets)

IMPLEMENTATION

— file organization



- **public/**: containing all the static resources that are used to render the page.
 - **assets/**: containing the static images .
 - **samples/**: containing the audio samples.
 - **scripts/**: containing the JavaScript files.
 - **main.js**: the main entry point .
 - **modal.js**: the codes for the instruction part of the web application.
 - **sequencer.js**: the codes for the main function of the web application.
 - **styles/**: the CSS styling file.
 - **index.html**: the main page.
- **package.json**: the manifest file
- **webpack.config.js**: the file used for bundling *sequencer.js* and *modal.js*.

IMPLEMENTATION

—— Main Functions

- 'Synthesizer': creating a polyphonic synthesizer using the Tone.js library.
- 'Sampler': setting up audio samples that are played back when triggered.
- 'Player': This class acts as a manager that decides whether to play a note. It also includes a parser function to get the sound key from a click event.
- 'Randomizer': responsible for the random function.
- 'Grid': setting up the grid buttons and other visual elements and listening to button clicks.
- 'Sequencer': the main class tying everything together.

FUTURE WORKS



- To implement the feature that allow the users to save and download their loops.
- To implement the feature that allow the users to user adjust the synthesiser's tone on their own.
- To find a way to create more tension While ensuring harmony.

DISPLAY



LIVE DEMO

Thank you for your attention !

8-BIT SEQUENCER

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