

SOUNDSCAPES

SONIFICATION ENVIRONMENTS FOR STEAM LEARNING

From pixels to sounds

Sonifying pixels

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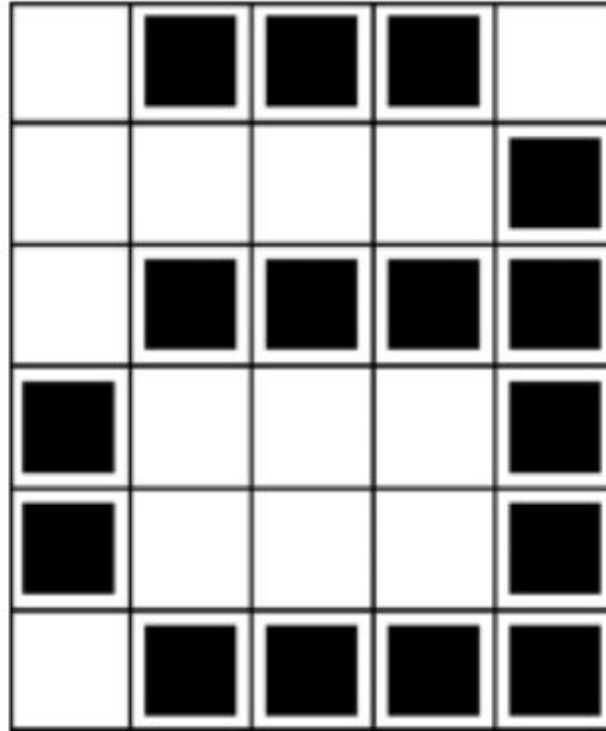
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SoundScapes - Sonification Environments for STEAM learning
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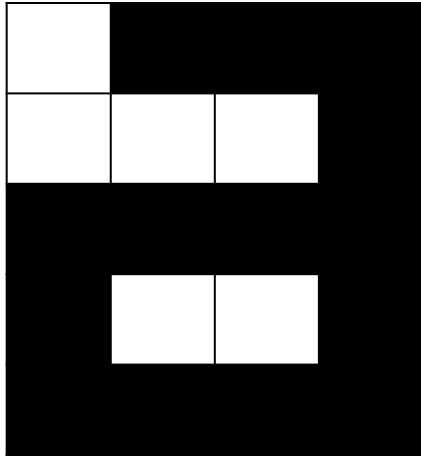
Starting point

¿What is a pixel?

A pixel is the smallest homogeneous unit of colour that is part of a digital image.



Data collection



How to encode it? We assign a value to each colour (black-1 and white-0), thus creating a matrix.

0	1	1	1
0	0	0	1
1	1	1	1
1	0	0	1
1	1	1	1

Dataset (protocol)

2	0	1	1	1	2
2	0	0	0	1	2
2	1	1	1	1	2
2	1	0	0	1	2
2	1	1	1	1	2

1. Add a value (2) at start and end of each row.
2. Flattening (6x5 matrix to a vector 1x30).
3. Transpose vector (row to column).

T

2

0

1

1

1

2

2

0

0

0

1

2

2

1

1

1

1

2

2



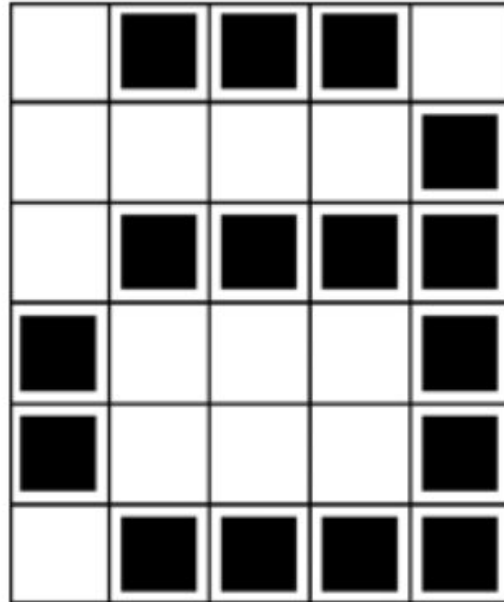
Two Tone



Let's play the audio and draw the image!

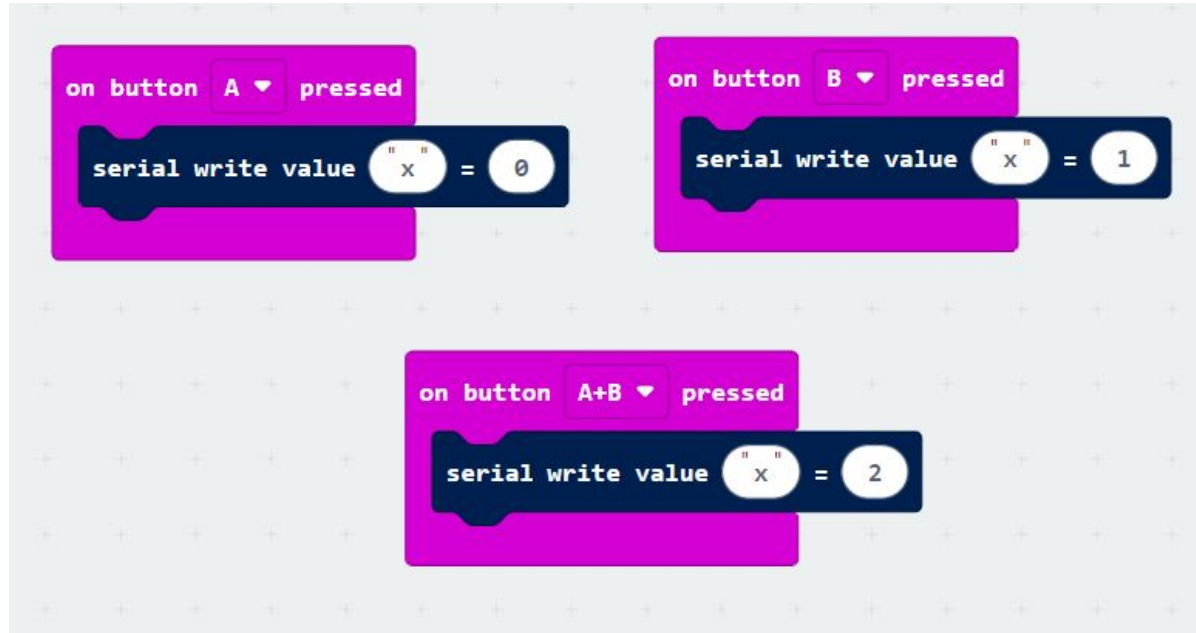
It is probably necessary to have a cheat sheet of what each sound represents.

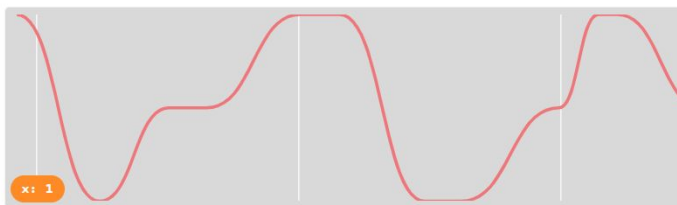
white
black
line break
start
end



Create dataset with Micro:bit

https://makecode.microbit.org/_He8CCaX5zdFV





```
x:2
x:1
x:1
x:1
x:1
```

	A	B
	time	
1	(source1)	x
2	0	2
3	1.513	0
4	3.278	1
5	3.664	1
6	4.037	1
7	5.435	2
8	5.83	2
9	7.105	0
10	7.497	0
11	7.84	0
12	8.881	1
13	10.47	2
14	10.834	2
15	15.008	1
16	15.359	1
17	15.753	1
18	16.08	1
19	17.359	2

Images with colour (RGB)

