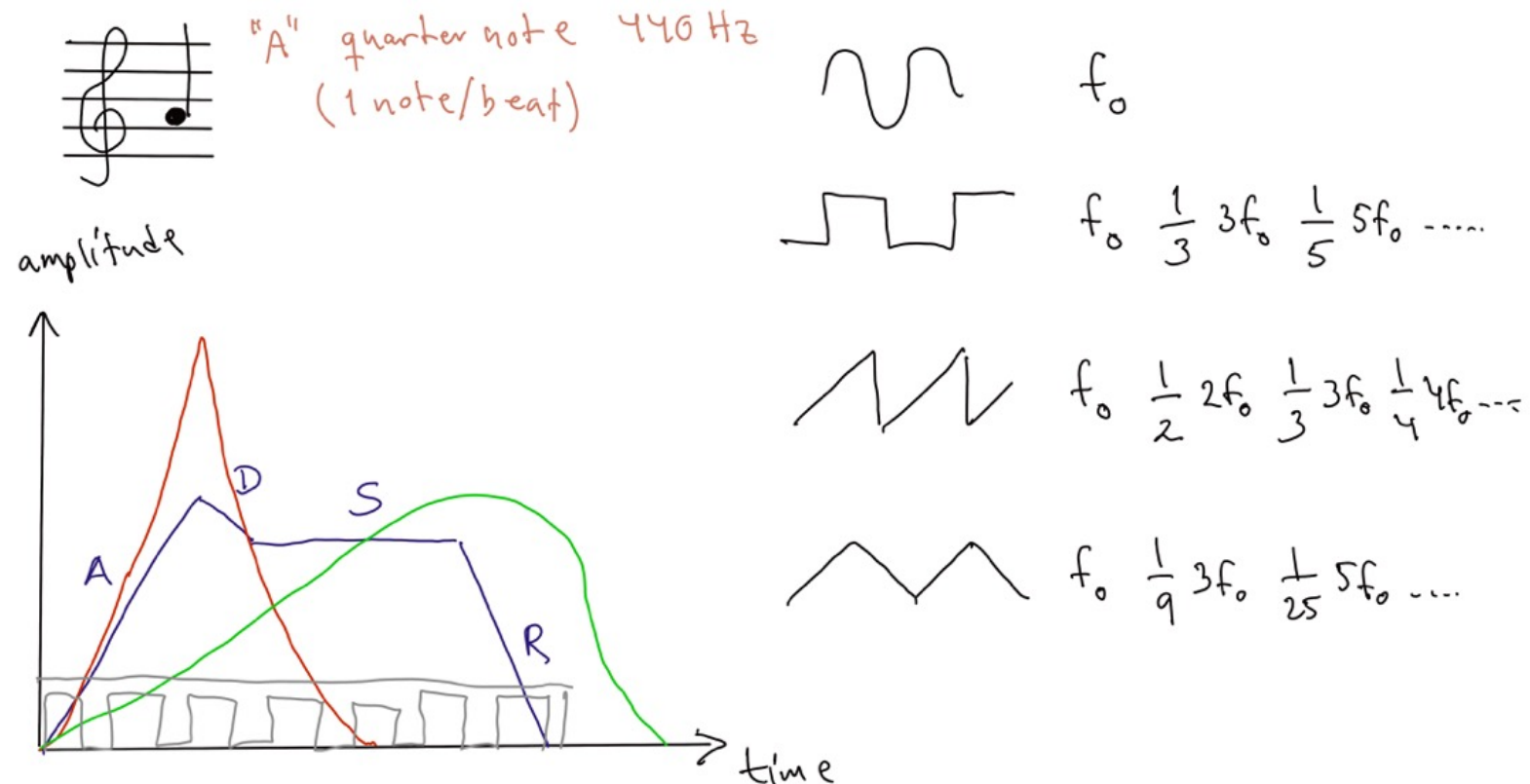


Special #1 – blackboard scribble

Tone: frequency + waveform + envelope (ADSR)

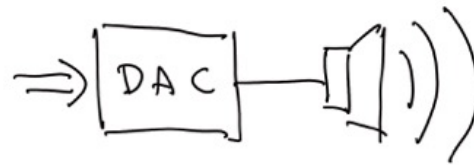
Note: "name" + length + tuning frequency



Special #1 – blackboard scribble

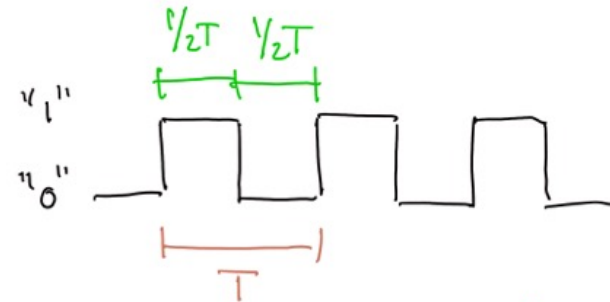
Tone generator

AFTER $\frac{1}{2}T$



"0" = value 0

"1" = value 1-5



$$T = \frac{1}{f}$$

$$f = 1 \text{ kHz}$$



$$T = 1 \text{ ms}$$

Background load

AFTER

variable load
(busy waiting loop)

no deadlines



both tasks equally
important

with deadlines

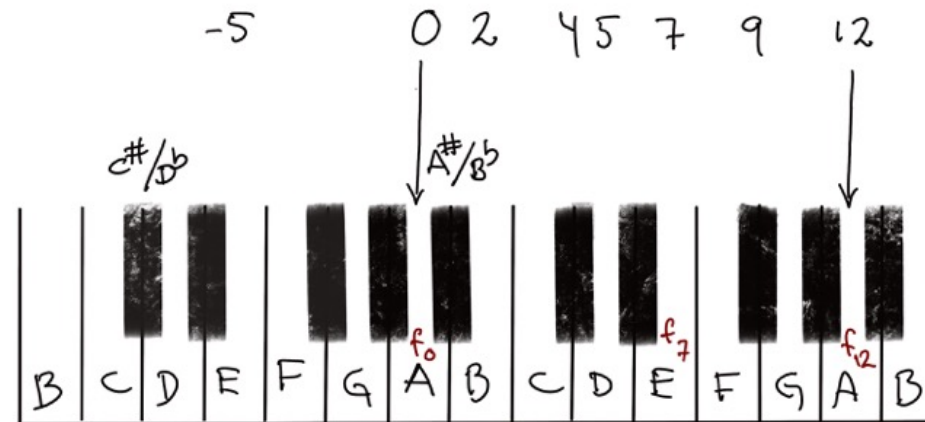


prioritize tone generator

Special #1 – blackboard scribble

Just temperament = "tune by ear" w/ perfect fifth

frequency index



Equal temperament

$$\frac{f_k}{f_0} = 2^{k/12}$$

$$\frac{f_7}{f_0} = 1.5$$

$$(f_7 = 660 \text{ Hz})$$

$$\frac{f_7}{f_0} = 2^{7/12} \approx 1.498$$

$$(f_7 \approx 659.3 \text{ Hz})$$

$$\frac{f_{12}}{f_0} = 2$$

$$(1.5)^{12} \approx 129.75$$

A E B F# C# G# D# A F C G D A

12 perfect fifths

not quite!

7 octaves

exactly

$$\left(2^{7/12}\right)^{12} = 2^7 = 128$$