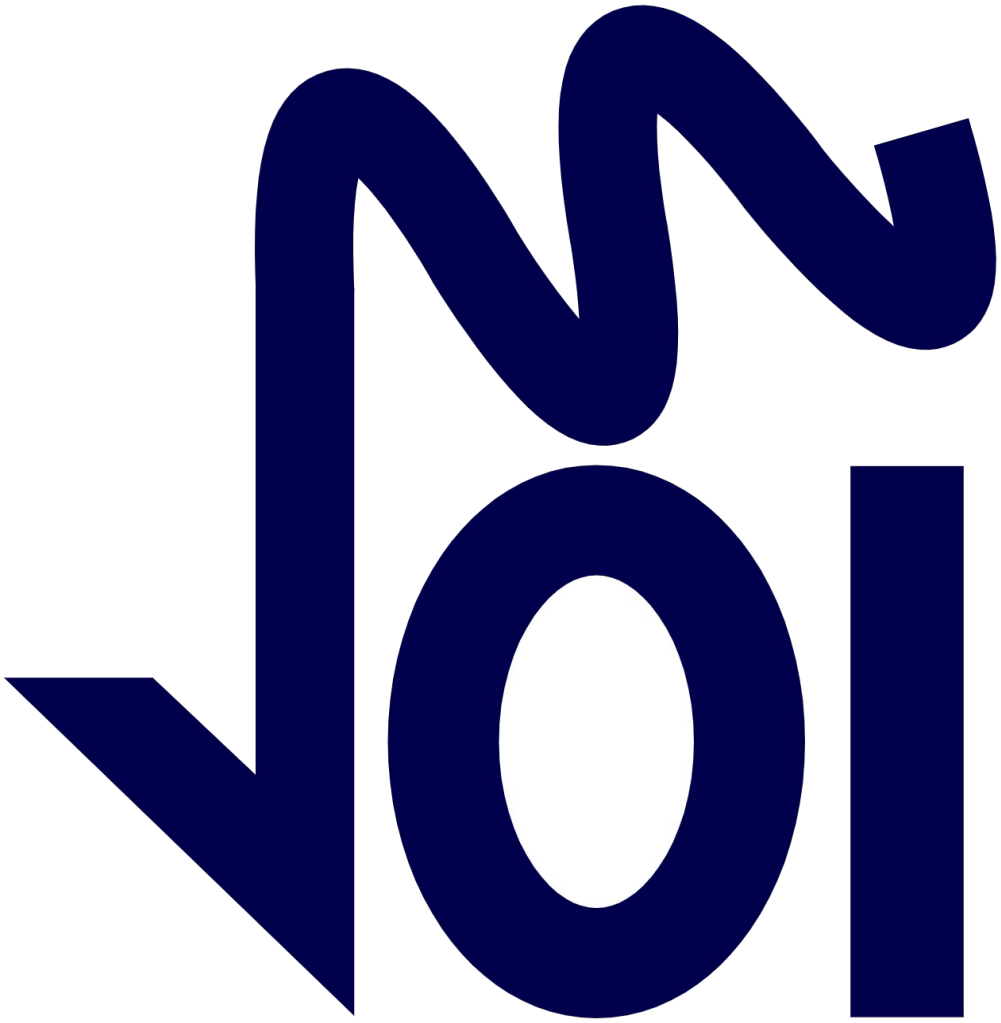
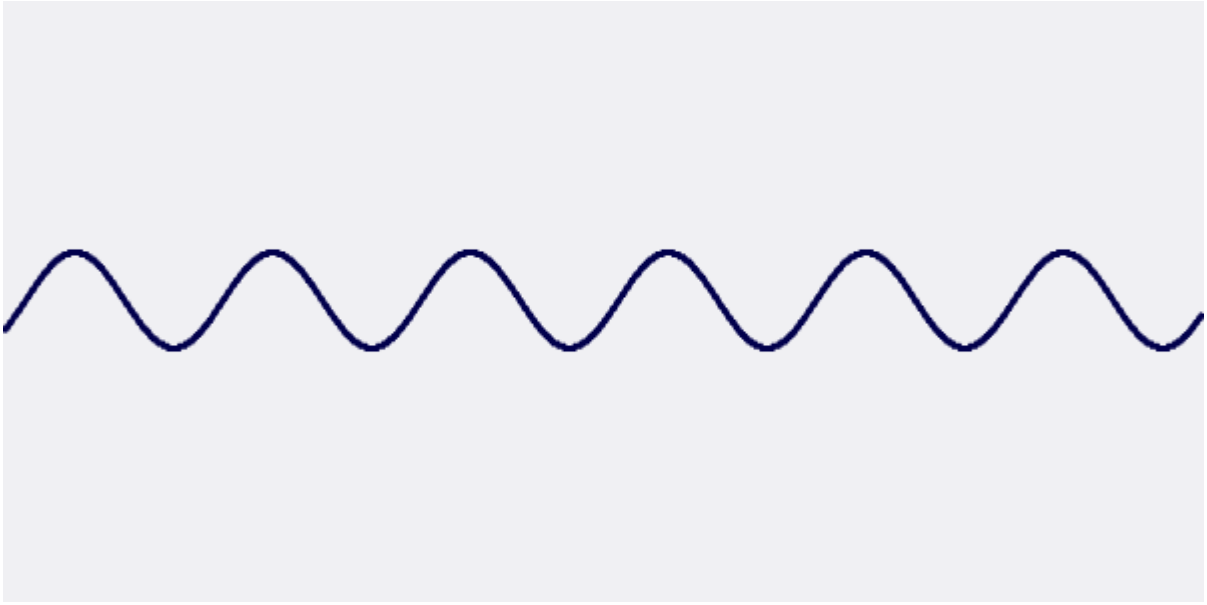


JSS-01
JavaScript Software Synthesizer

Michael Kolesidis

What is Sound?

In physics, sound is a vibration that spreads as an acoustic wave, through a transmission medium such as a gas (the air) , liquid or solid.

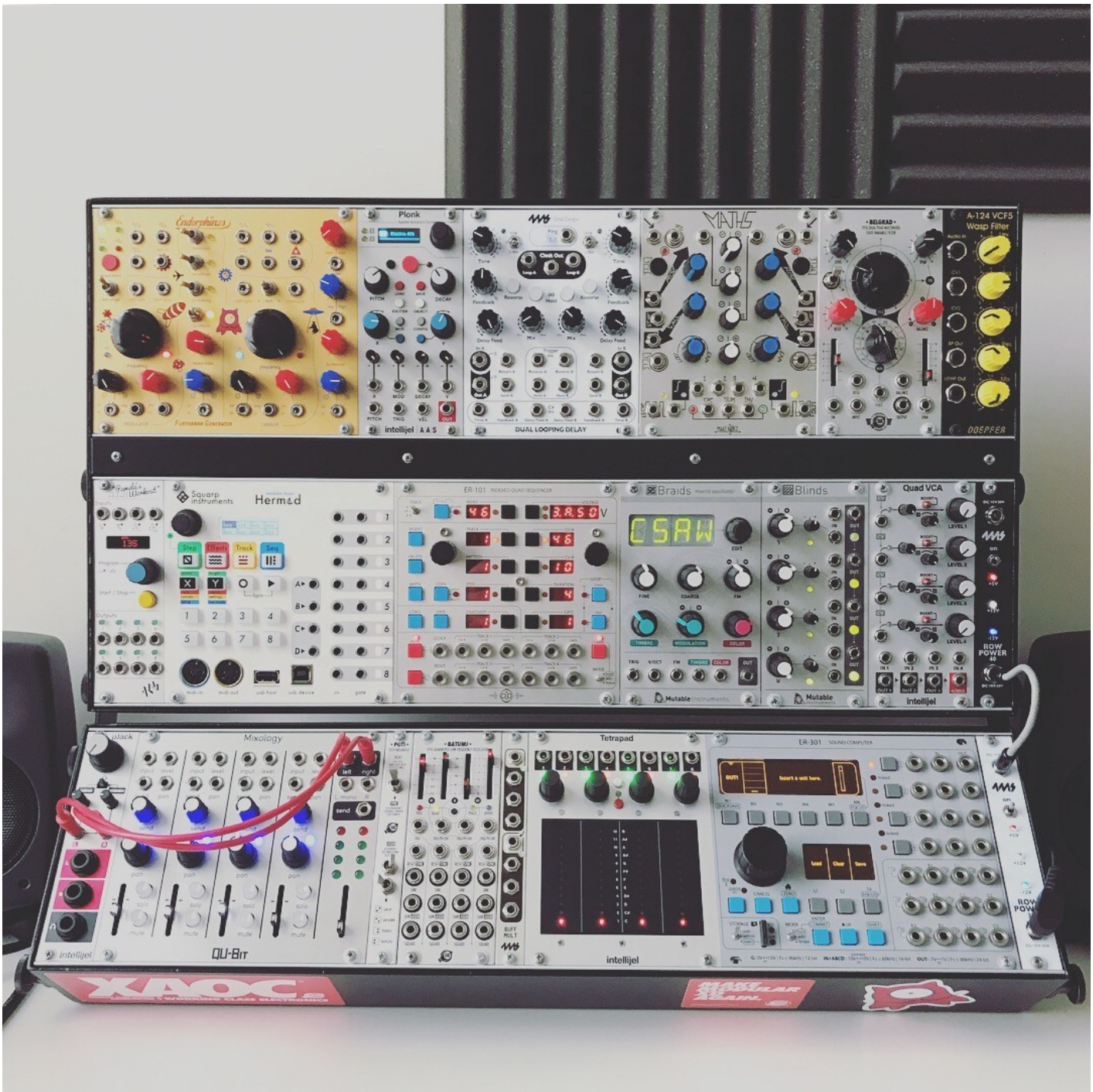


What is a Synthesizer?

A synthesizer is an electronic musical instrument that generates audio signals.

Hardware Synthesizers

KORG
minilogue xd


Endorphin.es
Plonk
intellijel
DUAL LOOPING DELAY
MATHS
A-124 VCF5
Wasp Filter
DOEPFER
Squarp instruments
Hermod
ER-101
Braids
CSAW
Blinds
Quad VCA
intellijel
Mixology
QU-BIT
Tetrapad
ER-301
intellijel
XAOC
MAKE MODULAR AGAIN

REMOVE TO ARM

Software Synthesizers

Emulate the functions of hardware synthesizers (usually written in C++)

Serum, gee mum
Bogus Realities
Compare
Copy
Paste
View:
Editor
SERUM
OSC
FX
MATRIX
GLOBAL
Bogus Realities
bogusfocus
Menu
Imported wavs
MASTER
SUB
DIRECT OUT
OCTAVE
PAN
LEVEL
NOISE
H-Breath
PHASE
RAND
PITCH
OSC A
Space_FFT_Transc
UNISON
DETUNE
BLEND
WT POS
OFF
OSC B
SpaceTransc
MIRROR
FILTER
Formant-II
CUTOFF
RES
DRIVE
FORMNT
MIX
MOD
ENV 1
ENV 2
ENV 3
LFO 1
LFO 2
LFO 3
LFO 4
VELO
NOTE
GRUNTNESS
PARP
FLUMBLE
PATOO
580 ms
0.0 ms
895 ms
-12.1 dB
1.66 s
ATTACK
HOLD
DECAY
SUSTAIN
RELEASE
GRID
TRIG
ENV
OFF
MODE
BPM
ANCH
TRIP
DOT
32 bar
RATE
RISE
DELAY
SMOOTH
VOICING
MONO
POLY
LEGATO
ALWAYS
SCALED
PORTA
CURVE
Serum

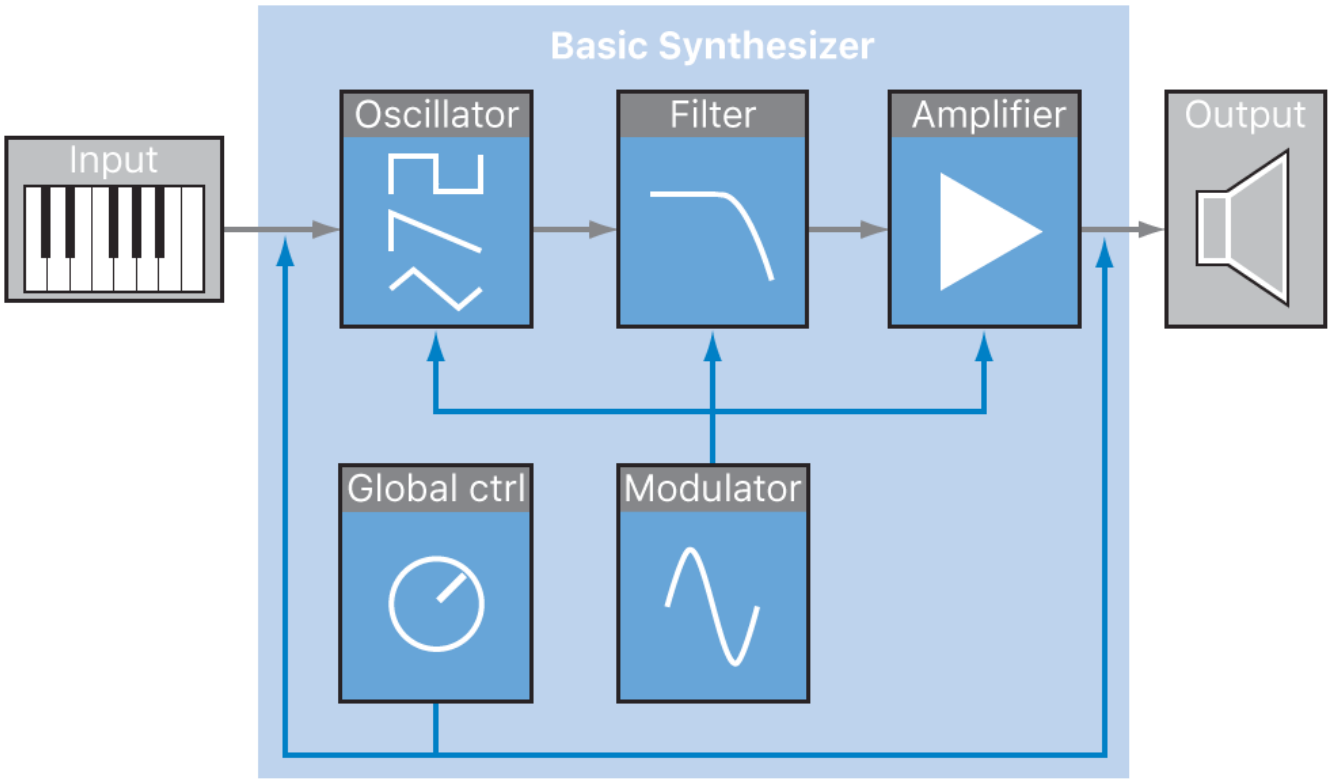
Save
Diva
MIDI Activity
OSC Model
Triple VCO
Multicore
Output
u-he
FM 1>2/3
RANGE
SYNC
WAVEFORM
LFO 1
TUNE MOD
DETUNE
NO MOD
SHAPE MOD
TRIPLE VCO
VOLUME
FEEDBACK
NOISE
PINK
WHITE
MIXER
CUTOFF
12dB
24dB
ENV 2
ADD
EMPHASIS
KYBD
FM(OSC1)
VCF | LADDER
ATTACK
DECAY
SUSTAIN
VEL
RELEASE
KYBD
ADS ENV 1
ATTACK
DECAY
SUSTAIN
VEL
RELEASE
KYBD
ADS ENV 2
LFO 1 (VIBRATO)
Polarity
Phase
Delay
Rate
Rate Mod
Pressure
sine
gate
1s
Waveform
Restart
Sync
Depth Mod
ModWheel
TUNING
Vibrato
Glide
Glide2
Range
time
GlideMode
Fine
Transpose
Up
Down
Microtuning
-12
7
12
none
AMPLIFIER | PAN
Env1
VCA
Volume
Pan
none
Vol Mod
Pan Mod
none
EFFECT 1
Plate1
Dry
Wet
PreDelay
Diffusion
Damp
Decay
Size
LFO 2 (MOD)
Polarity
Phase
Delay
Rate
Rate Mod
none
triangle
single
1s
Waveform
Restart
Sync
Depth Mod
none
legato
lowest
Mode
Note Priority
great
same
2
1
Accuracy
Offline Acc
Voices
Stack
Clock
1/8
Multiply
Swing
Arp
up
Mode
1
Octaves
Sync
serial
Progression
none
Restart
EFFECT 2
Delay2
Dry
Center Vol
Side Vol
HP
Left
Center
Right
Wow
Feedback
LP
MAIN
MODIFICATIONS
TRIMMERS
SCOPE
PRESETS

Remember:
Sound is a WAVE!

EVANS

Oscillator

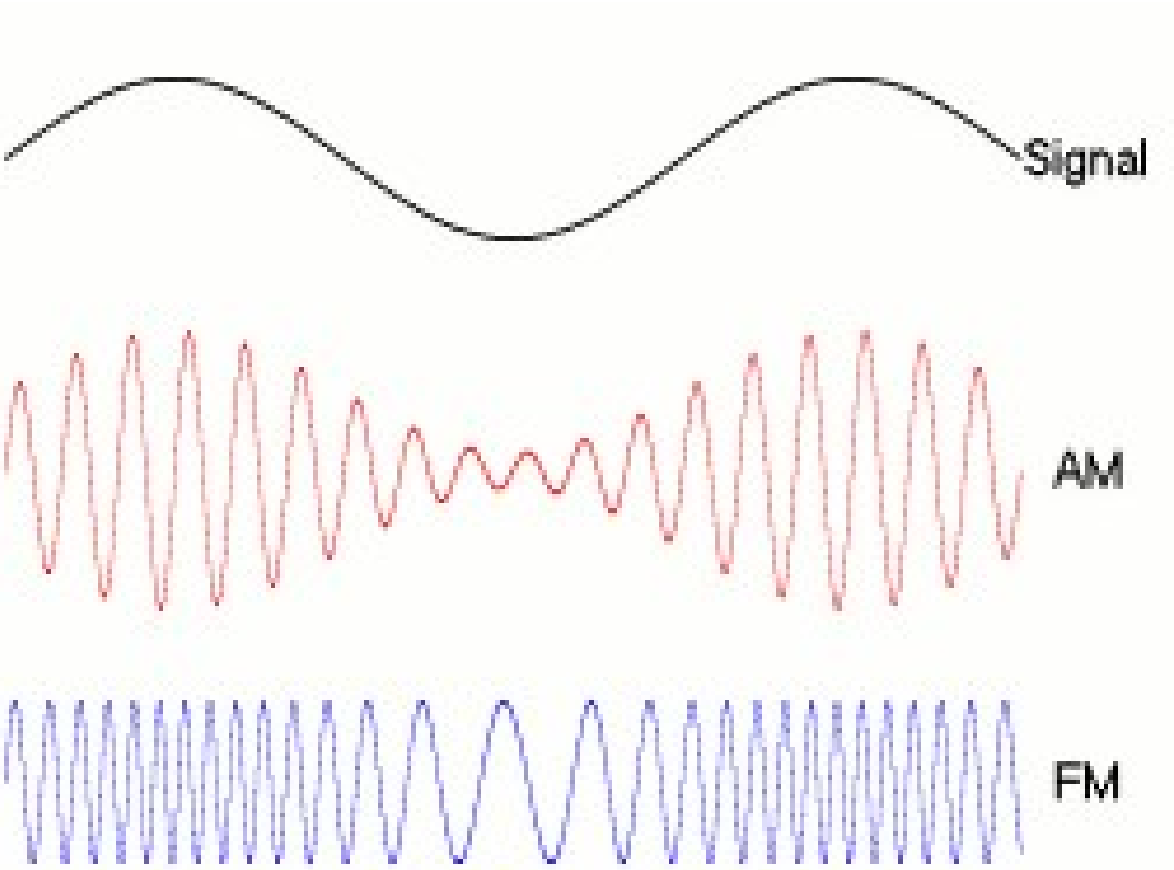
An electronic oscillator is an electronic circuit that produces a periodic, oscillating electronic signal, often a sine wave or a square wave or a triangle wave.

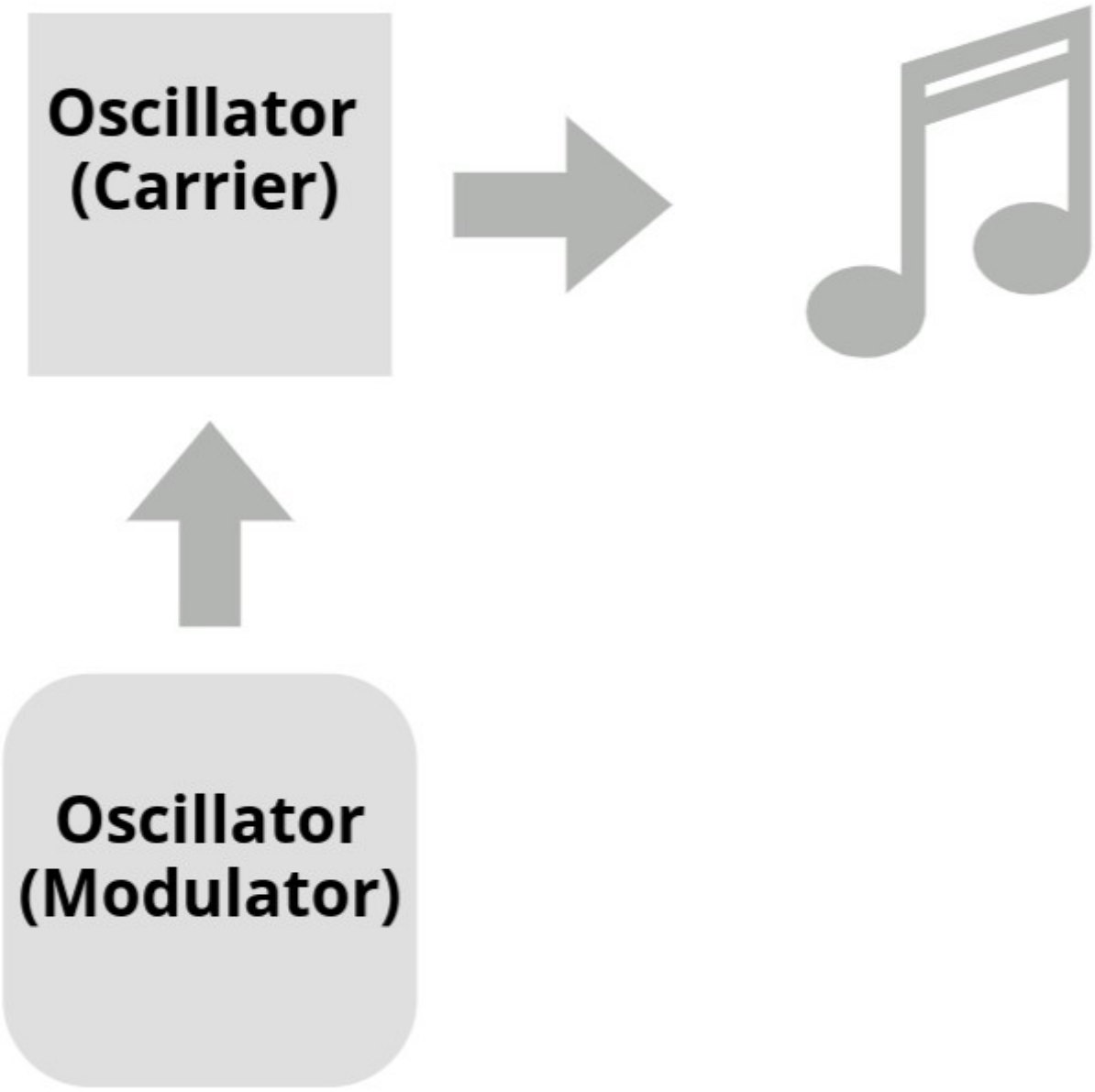


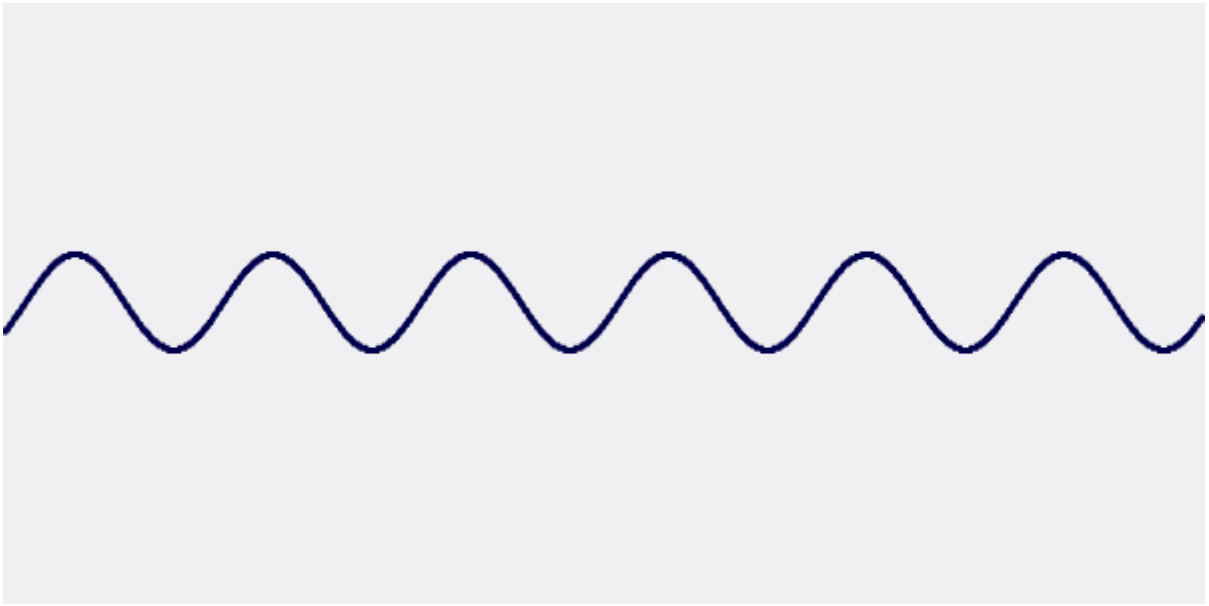
Wave Frequency

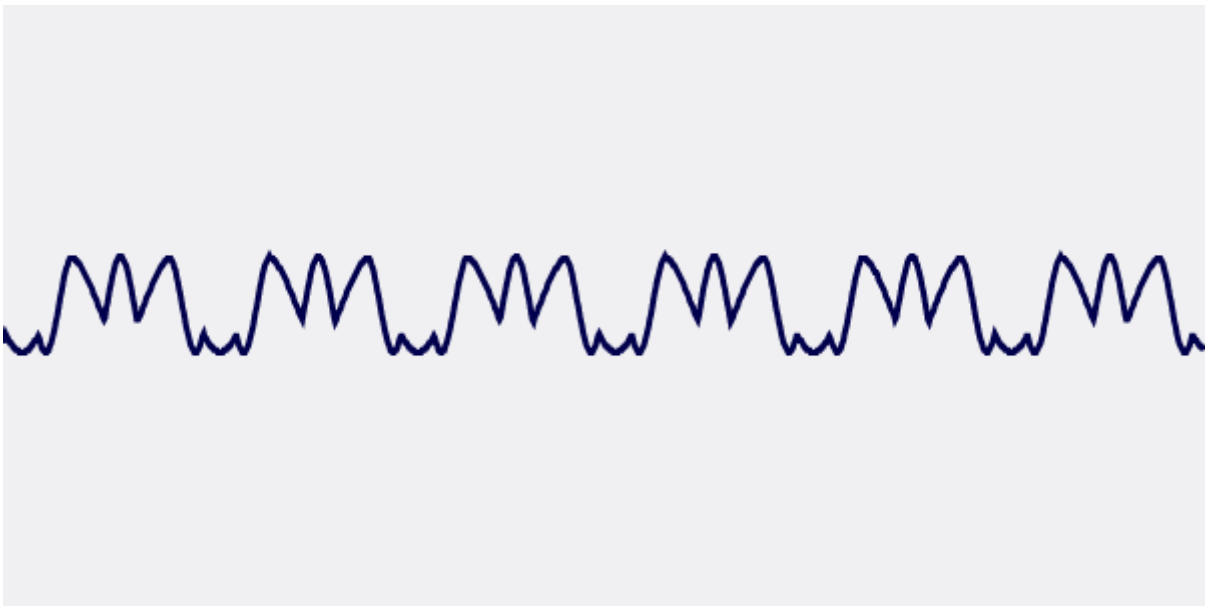
Wave frequency is the number of waves that pass a fixed point in a given amount of time.

FM Synthesis
Frequency Modulation Synthesis




Oscillator
(Carrier)
Oscillator
(Modulator)



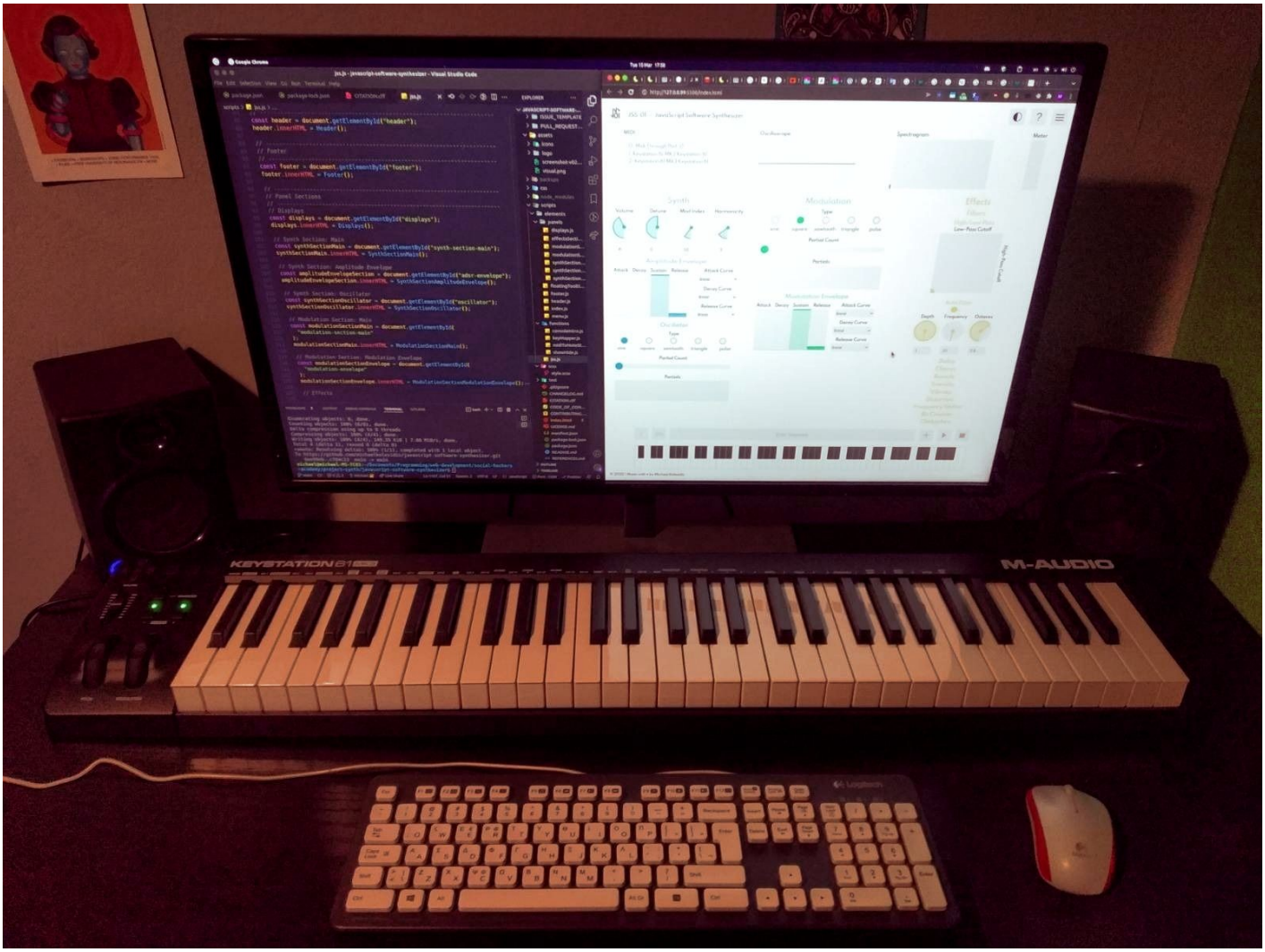


Technologies

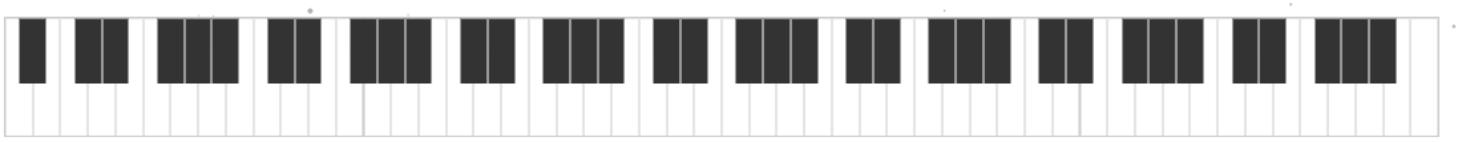
NexusUI

Controls

Three ways to play the synthesizer



On-screen keyboard



Computer keyboard

Z
Octave down

X
Octave up

MIDI Keyboard

Future Plans

Create a community!

- Dark Mode
- Help Mode with tooltips on hover (using the FloatingUI library)
- Presets to save the various configurations
- Full MIDI implementation with ability to choose input device and support for MIDI controllers
- Recorder
- Responsive Design
- Support more types of synthesis (additive, subtractive etc.)
- Switch to TypeScript
- Switch to React

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