LINKS

SOFTWARE

ORCA (programming environment)
Download at: https://hundredrabbits.itch.io/orca
https://100r.co/site/orca.html
https://github.com/Hundredrabbits/Orca

PILOT (UDP synthesizer)
Download at: https://hundredrabbits.itch.io/pilot
https://wiki.xxiivv.com/site/pilot.html
https://github.com/hundredrabbits/Pilot

Ableton Live (DAW)
https://www.ableton.com/en/trial/

IAC Driver Setup
https://docs.google.com/presentation/d/1JIuJvY_dzRHFgUWG4P5H-6mEgcdG59A9r2V909mQvwA/edit#slide=id.g2a5283b2661_0_71

RESOURCE

Live Coding: A User's Manual
The first comprehensive introduction to the origins, aspirations, and evolution of live coding.
PDF:
https://static.livecodingbook.toplap.org/books/livecoding.pdf

All things live coding
https://github.com/toplap/awesome-livecoding/

Hundred Rabbits
the authors of orca, pilot and more other software.
https://100r.co/site/about_us.html

Tidal Cycles
Live coding environment with Algorithmic patterns
https://tidalcycles.org/

Gibber
A live coding environment for audiovisual performance.
https://gibber.cc/

History of Livecoding_Huichun
https://docs.google.com/presentation/d/1_QfMgqrWLL9XSgo3RLfpOERksDRgS-J_O2cgn08kfqY/edit?usp=sharing

COMMUNITY

TOPLAP
An organization founded in 2004, to explore and promote live coding.
https://blog.toplap.org/
https://blog.toplap.org/nodes/

llllllll.co
Lines is a Place to Discuss Sound, Process, and Technology.
https://llllllll.co/

ICLC
The International Conference on Live Coding
https://iclc.toplap.org

ORCA Operators

Orca is an esoteric programming language designed to quickly create procedural sequencers, in which every letter of the alphabet is an operation, where lowercase letters operate on bang, uppercase letters operate each frame. This application is not a synthesizer, but a livecoding environment capable of sending MIDI, OSC & UDP to your audio/visual interfaces, like Ableton, Renoise, VCV Rack or SuperCollider. If you need help, visit the chatroom, join the forum or watch a tutorial.

ORCA Operators Cmd/Ctrl+G
A add(a b): Outputs sum of inputs.
B subtract(a b): Outputs difference of inputs.
C clock(rate mod): Outputs modulo of frame.
D delay(rate mod): Bangs on modulo of frame.
E east: Moves eastward, or bangs.
F if(a b): Bangs if inputs are equal.
G generator(x y len): Writes operands with offset.
H halt: Halts southward operand.
I increment(step mod): Increments southward operand.
J jumper(val): Outputs northward operand.
K konkat(len): Reads multiple variables.
L lesser(a b): Outputs smallest of inputs.
M multiply(a b): Outputs product of inputs.
N north: Moves Northward, or bangs.
O read(x y read): Reads operand with offset.
P push(len key val): Writes eastward operand.
Q query(x y len): Reads operands with offset.
R random(min max): Outputs random value.
S south: Moves southward, or bangs.
T track(key len val): Reads eastward operand.
U uclid(step max): Bangs on Euclidean rhythm.
V variable(write read): Reads and writes variable.
W west: Moves westward, or bangs.
X write(x y val): Writes operand with offset.
Y jymper(val): Outputs westward operand.
Z lerp(rate target): Transitions operand to input.
* bang: Bangs neighboring operands.

# comment: Halts a line. (cmd/ctrl + /)
$ self(cmd): Send a command to Orca.
: midi(channel octave note velocity length): Send a MIDI note.
% mono(channel octave note velocity length): Sends monophonic MIDI note.
! cc(channel knob value): Sends MIDI control change.
? pb(channel value): Sends MIDI pitch bench.
; udp: Send UDP message.
= osc(path): Sends OSC message.
$ self: Sends ORCA command.

0	1	2	3	4	5	6	7	8	9	A	B
0	1	2	3	4	5	6	7	8	9	10	11

C	D	E	F	G	H	I	J	K	L	M	N
12	13	14	15	16	17	18	19	20	21	22	23

O	P	Q	R	S	T	U	V	W	X	Y	Z
24	25	26	27	28	29	30	31	32	33	34	35

PILOT Commands

Pilot is a UDP synthesizer. It has 16 voices, and 8 effects. Commands can be entered directly with the input bar, or through UDP via the port 49161. You can send multiple commands at once by using the ; character.

Commands

Play: play synth notes. For example, 03C;13E will play a C3 and E3 chord.

Command	Channel	Octave	Note	Velocity	Length
04C	0	4	C	64	1/16
04Cf	0	4	C	127	1/16
04Cff	0	4	C	127	1 bar

Settings: change the sound of the synth. The settings command format is a channel value between 0-G, a 3 characters long name, followed by four values between 0-G. The possible waveforms are **si, 2i, 4i, 8i, tr, 2r, 4r, 8r, sq, 2q, 4q 8q, sw, 2w, 4w, 8w.**

Command	Channel	Name	Info
0ENV056f	0	Envelope	Set Attack:0.00 Decay:0.33 Sustain:0.40 Release:1.00
1OSCsisq	1	Oscilloscope	Set Osc1:Sine Osc2:Square

Effects: applied to all channels. The effect command format is a 3 characters long name, followed by one value between 0-G for wet and depth.

Command	Operation	
BITff	**Bitcrusher**	Reduces audio resolution for a gritty, low-fidelity effect.
DISff	**Distortion**	Adds saturation or clipping for an intense, aggressive tone.
WAHff	**AutoWah**	Automatically modulates a filter, creating a wah-like effect.
CHEff	**Chebyshev**	Produces nonlinear harmonic distortion for unique textures.
FEEff	**Feedback**	Reuses output in the input, creating resonance or layering.
DELff	**Ping Pong Delay**	Alternates echoes between left and right channels.
TREff	**Tremolo**	Modulates volume to create rhythmic fluctuations.
REVff	**Reverb**	Simulates room reflections for spatial depth and ambience.
PHAff	**Pashor**	Creates sweeping, swirling phase modulation effects.
VIBff	**Vibrato**	Modulates pitch subtly for a warbling effect.
CHOff	**Chorus**	Adds detuned, delayed layers for a fuller sound.
STEff	**StereoWidener**	Enhances the stereo field for spaciousness.
EQUff	**EQ3**	Adjusts bass, mid, and treble frequencies.
COMff	**Compressor**	Balances dynamics for consistent volume.
VOLff	**Volume**	Controls overall sound output level.
LIMff	**Limiter**	Caps audio peaks to avoid distortion.

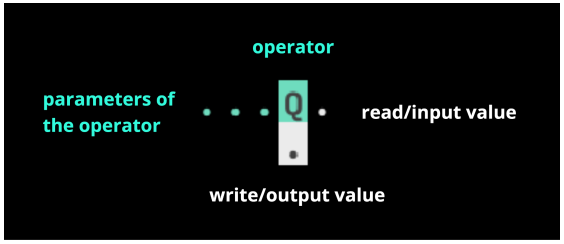
Special

Command	Operation
bpm140	sets the BPM to 140
renv	randomizes envelopes
rosc	randomizes oscillators
refx	randomizes effects
reset	reset all

ORCA x PILOT Modules

Orca and Pilot use UDP to communicate. Orca operators are color-highlighted. Copy and paste these modules. Change the parameters and input values. Duplicate the modules as much as you like in your patch.

Universal logic in Orca:



- Orca operate from top to bottom, left to right
- **cmd/ctrl /**: # comment
- **cmd/ctrl I**: keep typing
- **cmd/ctrl K**: send self commands, ie. bpm

SELF COMMAND

#**bpm**#
#or cmd/ctrl k, type bpm#
.D.........
..$bpm:120.

#**apm:Animates.bpm.speed.to**#
..D.....................
...$apm:080.............

#**Generative.bpm**#
#.R.......Ra#
#.n2Tab.3X6.#
#.2Xb....Ra.#
#.R4...1X7..#
#D3....R3...#
#.$bpm:176..#

#**theme color default: 000;7dc;fff**#
.D.....................
..$color:000;7ff;ffk..

BANG

#**D:bang**.......#
..D2...........
..*;55Cff......

#**U:euclidean.bang**.#
.3U8.......
...;C1C....

#**F:if.bang**..#
#bang if left matches right#
.I5.........
.1F3.........
...;54G......

#**A:add**.#
#offset#
```
....2C.....
..D2.0AC...
..*;23C....
```

#turn sharp note to natural note#
```
cA1..
.dAZ.
..C..
```

#**M:multiply**#
```
cA1..
.dAZ.
..CM1
...c.
```

#**B:subtract**.#
#back n forth#
```
..4C6............
...3B3...........
..D404TCAFE......
...;33C..........
```

#**C:clock**.#
#for each 1 frame output frames % 8#
```
...C.....
...0.....
```

#for each 1 frame output frames % 5#
```
...C5.....
...2......
```

#for each 3 frames output frames % 5#
```
..3C5.....
...4......
```

#**I:increment/interval**.#
#add 1 step a time up to z#
```
...I.........
...f.........
```

#add 1 step a time up to 9#
```
...I9........
...5.........
```

#add 2 steps a time up to 9#
```
..2I9........
...1.........
```

#**R:random**#
#random from left min and right max#
```
aR.
.h.
...
.R9
.7.
```

#**Z:Transition**#
#type.in.right.inlet#
```
...Z..................
...0..................
......................
```

```
..5Z..............
...0..............
```

WRITE

#**X:write single**.#
```
.22XC..
.......
.D2....
..;66C.
```

#**G:write multiple**#
```
223G55C.
........
...D2...
....;55C
```

STORE

#**V:variable**.#
#orca operates from top to bottom, left to right#
```
......Va....
............
..aV5.......
......Va....
......5.....
..aV7.......
......Va....
......7.....
```

READ

#**T:read one at a time**#
#read a row of notes#
```
...2C4.........
..D214TCAFE....
..*;03A........
```

#**Q:read multiple from offset**#
#read a sequence#
```
.....C..........
.D1.305Q..#13A..#
.*;13A....#24A..#

..........#13A..#
..........#24A..#
..........#13C..#
..........#24C..#
..........#13C..#
..........#13C..#
```

#**K:read multiple at a time**#
#read multi variables#
```
.aRz..Rf..Rf
aVn.bV2.cV5.
............
............
...D23Kabc..
....;34n25..
```

#**O:read one from offset**#
#read a random value#

```
3R8.R4........
.3Y31O...qwert
.....p...poiuy
.D1..J...kjhgf
.*;73p...xzasd
```

JUMP

#**J:jump v** #
```
.a..
.J..
.a..
```

#**Y:jump >** #
```
aYa.
```

MOVE

#**EWSN:move H:stop**#
#bang from any direction#
#fun but might mess up the patch if remove ;#
```
.....................;.............
................................
.....................;.............
................................
................................
................................
............R...................
............k4TEWSN.............
..............E......N...........
..........7R9.J..................
H..........7.XE..................
W..............W...E...........;.
.;.....................S.........
................................
................................
................................
```

```
................................
.....................;.............
................................
.....................;.............
```

SEQUENCER

#**rhythm sequencer**.#
```
.C8.........
.38T*..*....
...*...R....
...;C0cc....
............
.C8.........
.38T.*....*.
........R...
...;C1cb....
............
.C8.........
.38T....*...
........R...
...;C2cm....
```

#**euclidean rhythm**.#
```
...........
.2Uc..1Rg..
...;C1c4...
...........
.3Ub..1Rg..
...;93ca...
...........
.4Ua..1Rg..
..*;65c3...
```

#**notes.sequencer**.#
#with variable#
```
.C5.........
.48TCDEFG...
.aVG........
............
.C7.........
.18TCDEFGAB.
.bVD........
............
..D3..Va....
..*;24G.....
............
..D4..Vb....
..*;53D.....
```

#**notes.sequencer**.#
#change octave#
```
..2C............
...78T22323223...
...5X3..........
................
..2C8...........
...78TCDEFGABC...
.....C..........
.D2..J..........
..;A3C..........
```

#tracker#
```
..aV1.bVg..........
..................
..................
......Vb..........
......g...........
....VaJ.......CgR..
```

```
..Va1Cg.......cXt..
.D1.4c5Q...#12ap.#.
.*;13dt....#.2cz.#.
...........#12dg.#.
...........#.2du.#.
...........#12ah.#.
...........#12cp.#.
...........#.2di.#.
...........#12co.#.
...........#13cn.#.
...........#13at.#.
...........#.3di.#.
...........#13dm.#.
...........#13dt.#.
...........#13cm.#.
...........#.3aw.#.
...........#13du.#.
```

#random offset read#
```
..1R3...........
...2C7..........
D2.305Q..#13A..#
.;13A....#24Cff#
.........#132..#
.........#24D..#
.........#13E..#
.........#24F..#
.........#13Gff#
```

#**random vertical bang**#
```
.R.......
.dC......
..1X*....
.........
...*;73C.
```

```
....;63C.
....;74D.
....;64D.
....;74G.
....;63G.
....;75D.
```

#random eastward bang#

```
.R..............................
.6C.............................
..2XE...........................
........;C2A4...................
............E...;73A69..........
...E......E...E........;65D.....
.......E;C2F5...................
...................;73D..........
....E...E.................;65D69.
........;C2D6...................
......................;73F.......
```

#modulate envelop and oscillator#

```
#j:lowercase letter only bang when being triggered#
....0R4.Rg.....
.....14X7......
.D3.............
..;94c55.......
.j..............
.j..............
..;9env478b....
.j......R......
.j......t3Tiqw.
..;9oscsisw....
```

#modulate effects#

```
#room shrink and expand#
#sound source close and far#
..........2Cu..
...........gBf.
.D1.......zV1..
.*;C2C.........
.j.............
.j.....Vz......
.*;rev11.......
.j.............
.j....Vz.......
.*;del1f.......
```

OTHER FUN PATCHES

https://www.youtube.com/watch?v=VzPmCyDCO5k

```
...#Orca...Techno.Practice#...........
.....................................
.....#Z:Transition#...................
....#type.in.right.inlet#.............
....#..Z..............#.............
....#..0..............#.............
....#.................#.............
....#.5Z..............#.............
....#..0..............#.............
.....................................
.....................................
...#apm:Animates.bpm.speed.to#........
...#.D.....................#........
...#..$apm:080.............#........
.....................................
.....................................
.#lower.vs.upper.case.x#.............
```

```
.#..C3.D.............#.............
.#..2M3.H............#.............
.#...6.xS............#.............
.....................................
```

https://www.youtube.com/watch?v=DBI8eBMGyYs

```
.#Generative.Loop...ORCA#............
#.................................R9#
#...I8............................5.#
#...3.............................#
#R..J.R...........................#
#vYv3Xq...........................#
#.................................#
#.R9.I9...........................#
#.4Y401GE.........................#
```

https://www.youtube.com/watch?v=tdunjIiroao

```
#.Orca...Delay.with.animated.velocity#
.....................................
.#create.interval.for.note#..........
.....................................
.#............gC6.........#.........
.#.220.220.310.26TCGCBFE...#.........
.#.2AI.3AF.3AC.2AC.........#.........
.#3VK.2VI.1VF.0VE..........#.........
.....................................
.....................................
......#ocave#..#delay.structure#.....
......#...........................#
......#..7.X4..H.230..............#
......#........*;54...............#
......#..a.X5.....H.230...........#
......#...........*;55K...........V0#
......#..d.X3........H.630.........E.#
......#.............*;53.....C..V3J.#
......#.......................23TK.E.#
......#.........................E....#
......#............................#
```

https://www.youtube.com/watch?v=N-CzNpa5Apk

```
#Alicef...Pong#.....................
#the.old.version.orca#..............
.....................................
#a.half#.#back.n.forth#.............
#...................................#
#...................................#
#...Ik.....Ig.......................#
#.aB7....8B9........................#
#xV3....yV1.........................#
#...................................#
#..................Vy..............#
#................2A1................#
#.....2Kxy.........3O................#
#.......31X*0000000000..............#
#........0...........0..............#
#........0...*.......0..............#
#........0...........0..............#
#........0...........0..............#
#........0...........0..............#
#........0...........0..............#
#........0...........0..............#
#........0...........0..............#
#......Vx............0..............#
#......3.O00000000000...............#
#........0..........................#
#...................................#
#...................................#
#.....Vx......Vx.......Vy.......Vy....#
#.....3Fa.....3F0......1F0......1F8...#
```

#.......;74D....;73C.....;64G.....;65C#
#.....................................#