Pure Data Reference Card

Karim Barkati – December 12, 2010

Modes

`ctl-e` (or `cmd-e`) toggle between *run* mode (performance) and *edit* mode (programming); this affects how mouse clicks affect the patch.

Glue

bang	output a bang message
float	store and recall a number
symbol	store and recall a symbol
int	store and recall an integer
send	send a message to a named object
receive	catch "sent" messages
select	test for matching numbers or symbols
route	route messages according to first element
pack	make compound messages
unpack	get elements of compound messages
trigger	sequence and convert messages
spigot	interruptible message connection
moses	part a numeric stream
until	looping mechanism
print	print out messages
makefilename	format a symbol with a variable field
change	remove repeated numbers from a stream
swap	swap two numbers
value	shared numeric value

Time

delay	send a message after a time delay
metro	send a message periodically
line	send a series of linearly stepped numbers
timer	measure time intervals
cputime	measure CPU time
realtime	measure real time
pipe	dynamically growable delay line for messages

Math

+ - * / pow	arithmetic
== != > < >= <=	relational tests
& && | || %	bit twiddling
mtof ftom powtodb rmstodb	convert acoustical units
dbtopow dbtorms	
mod div sin cos tan atan	higher math
atan2 sqrt log exp abs	
random expr	lower math
max min	greater or lesser of 2 numbers
clip	force a number into a range

Midi

notein ctlin pgmin bendin touchin	MIDI input
polytouchin midiin sysexin	
noteout ctlout pgmout bendout touchout	MIDI output
polytouchout midiout	
makenote	send note-on messages and schedule note-off for later
stripnote	strip note-off messages

Tables

tabread	read a number from a table
tabread4	read with 4 point interpolation
tabwrite	write a number to a table
soundfiler	read and write tables to soundfiles

Misc

loadbang	bang on load
serial	serial device control for NT only
netsend	send messages over the internet
netreceive	receive them
qlist	text-based message sequencer
textfile	file to message converter
openpanel	"Open" dialog
savepanel	"Save as" dialog
bag	set of numbers
poly	polyphonic voice allocation
key, keyup	numeric key values from keyboard
keyname	symbolic key name

Audio Math

+~ -~ *~ /~	arithmetic on audio signals
max~ min~	maximum or minimum of 2 inputs
clip~	constrict signal to lie between two bounds
q8_rsqrt~	cheap reciprocal square root (beware 8 bits!)
q8_sqrt~	cheap square root (beware 8 bits!)
wrap~	wraparound (fractional part, sort of)
fft~	complex forward discrete Fourier transform
ifft~	complex inverse discrete Fourier transform
rfft~	real forward discrete Fourier transform
rifft~	real inverse discrete Fourier transform
framp~	estimate frequency and amplitude of FFT components
mtof~ ftom~ rmstodb~ dbtorms~	acoustic conversions
rmstopow~ powtorms~	

Audio Glue

dac~	audio output
adc~	audio input
sig~	convert numbers to audio signals
line~	generate audio ramps
vline~	deluxe line~
threshold~	detect signal thresholds
snapshot~	sample a signal (convert it back to a number)
vsnapshot~	deluxe snapshot~
bang~	send a bang message after each DSP block
samplerate~	get the sample rate
send~	nonlocal signal connection with fanout
receive~	get signal from send~
throw~	add to a summing bus
catch~	define and read a summing bus
block~	specify block size and overlap
switch~	switch DSP computation on and off
readsf~	soundfile playback from disk
writesf~	record sound to disk

Audio Oscillators and Tables

phasor~	sawtooth oscillator
cos~	cosine
osc~	cosine oscillator
tabwrite~	write to a table
tabplay~	play back from a table (non-transposing)
tabread~	non-interpolating table read
tabread4~	four-point interpolating table read
tabosc4~	wavetable oscillator
tabsend~	write one block continuously to a table
tabreceive~	read one block continuously from a table

Audio Filters

vcf~	voltage controlled filter
noise~	white noise generator
env~	envelope follower (RMS amplitude in dB)
hip~	high pass filter
lop~	low pass filter
bp~	band pass filter
biquad~	raw filter (2 poles and 2 zeros)
samphold~	sample and hold unit
print~	print out one or more "blocks"
rpole~	raw real-valued one-pole filter
rzero~	raw real-valued one-zero filter
rzero_rev~	time-reversed rzero~
cpole~ czero~ czero_rev	corresponding complex-valued filters

Audio Delay

delwrite~	write to a delay line
delread~	read from a delay line
vd~	read from a delay line at a variable delay time

Subwindows

pd	define a subwindow
table	array of numbers in a subwindow
inlet	add an inlet to a pd
outlet	add an outlet to a pd
inlet~ outlet~	signal versions of inlet and outlet

Data Templates

struct	define a data structure
drawcurve, filledcurve	draw a curve
drawpolygon, filledpolygon	draw a polygon
plot	plot an array field
drawnumber	print a numeric value

Accessing Data

pointer	point to an object belonging to a template
get	get numeric fields
set	change numeric fields
element	get an array element
getsize	get the size of an array
setsize	change the size of an array
append	add an element to a list
sublist	get a ptr into a list which is an elemt of another scalar