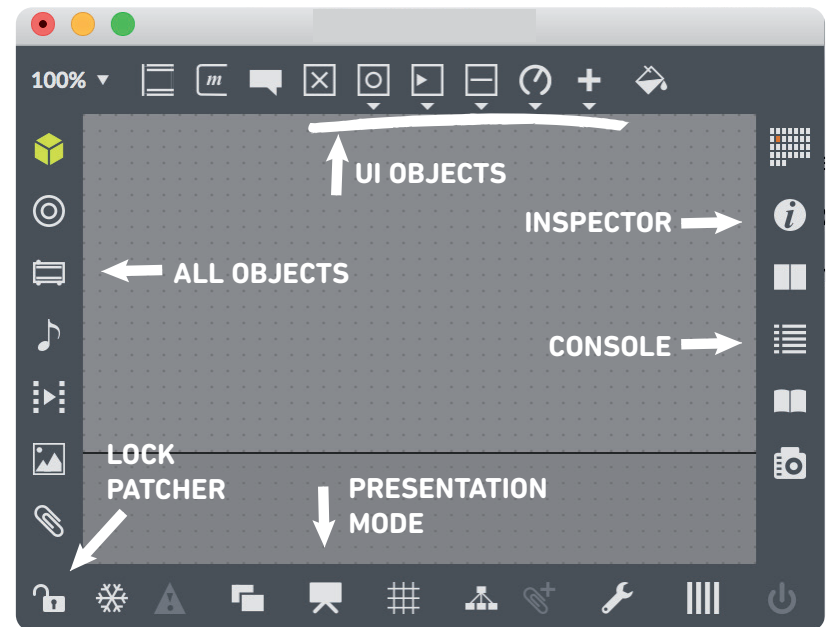


MAX CHEATSHEET 1

KEYBOARD SHORTCUTS!

- CMD + CLICK** ANYWHERE IN PATCHERWINDOW TO LOCK IT
- CMD + CLICK** ON UI OBJECT (e.g. SLIDER) TO EDIT ITS VALUE IN AN UNLOCKED PATCH
- HELP** RIGHT CLICK ON AN OBJECT > **HELP**
- n** CREATE A **NEW OBJECT**
- b** CREATE A **BANG** (= bang)
- m** CREATE A **MESSAGEBOX** (can be used as a debugger / monitor)
- i / f** CREATE A **NUMBOX** OR A **FLONUMBOX** (= 1 / 1.)
- t** CREATE A **TOGGLE** (= 1 / 0)

PATCHER WINDOW



AN OBJECT'S ANATOMY _n

object

- EVERY OBJECT HAS A **PARTICULAR FUNCTION**
- EVERY OBJECT HAS **INLETS AND OUTLETS**
- THE **LEFTMOST** INLET IS HOT – IT TRIGGERS THE OBJECT'S FUNCTION (AND THEREFORE OUTPUT)
- **ALL OTHER INLETS** ARE COLD – THEY'RE USED TO CHANGE ARGUMENT (THIS FUNCTION'S "SETTINGS")

- ARGUMENTS CAN BE SET WHEN CREATING THE OBJECT → **random 5**
- ARGUMENTS CAN BE OVERWRITTEN **10**

random 5 (BUT MIND: IT WON'T CHANGE IN THE OBJECT'S NAME!)

MESSAGE BOXES _m

OUTPUT THE MESSAGE
(AND REPLACE ARGUMENTS)

SET THE MESSAGE WITH
NO OUTPUT (ALSO GOOD FOR MONITORING!)

1 2 3 4

- A MESSAGE BOX IS AN OBJECT, TOO!
- IT CAN BE USED TO:
 - > **DISPLAY THINGS** (= E.G. THE OUTPUT OF OTHER OBJECTS)
 - > **SEND MESSAGES** TO OTHER OBJECTS
 - > **FORMAT STRINGS AND COMMANDS**
- A MESSAGE BOX CAN CONTAIN ANY DATA TYPE!

- **ARGUMENTS CAN BE REPLACED** IN MESSAGES

i'm benni
hello \$1 \$2

hello i'm benni

"DATA TYPES"

INTEGERS	22	0	1
FLOATS	22.2451	1.1	999.123457
LISTS	1 2 3 4	hello stupid	1.1 211 hello
BANG	bang		
SYMBOLS	"1 2 3 4"	"bier wut"	"1.1 hallo"
SIGNALS			

MOST OBJECT "EXPECT" CERTAIN DATA TYPES (AND REACT ACCORDINGLY)

hello i'm benni

A SENDING A NON-NUMBER TO A [+] OBJECTS PRINTS AN ERROR INTO THE CONSOLE

B SENDING A NUMBER TO A [+] OBJECTS OUTPUTS THE RESULT

C IF YOU WANT THE OBJECT TO WORK WITH FLOATS, IT IS NECESSARY TO PRE-DEFINE IT WITH A FLOAT

! SENDING A FLOAT TO AN OBJECT DEFINED TO HANDLE INTEGERS WILL USUALLY ROUND THE RESULT DOWN

2.2 5
unpack i i
2 5

MAX CHEATSHEET 2

ORDER OF MESSAGES

THIS IS CRUCIAL!

BE AWARE, THAT MESSAGES ARE ALWAYS ORDERED:

RIGHT TO LEFT

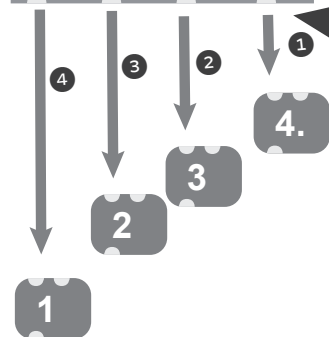
TOP TO BOTTOM



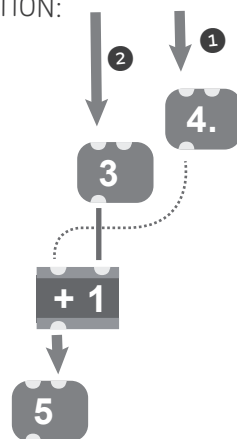
1 2 3 4.

AS SOON AS THE MESSAGE 1 2 3 4. IS CLICKED / SENT TO THE [UNPACK] OBJECT, ITS LIST-ELEMENTS ARE EXPLODED / SEPERATED. THIS HAPPENS FROM RIGHT TO LEFT – SO THE RIGHT-MOST OUTLET OF [UNPACK] WILL BE THE FIRST TO OUTPUT SOMETHING

unpack i i i f



THIS IS IMPORANT TO KEEP IN MIND, BECAUSE THEREFORE THE RIGHT-MOST OUTPUT MAY BE THE FIRST TO TRIGGER A NEXT OPERATION:



- 1) LOOKING AT THIS EXAMPLE, WE HAVE CREATED THE [+] OBJECT WITH AN ARGUMENT OF 1 – IT WILL THEREFORE ADD "1" TO ITS (LEFT) INPUT
- 2) WE SEND A "4" INTO THE **HOT** (LEFT) INLET – TRIGGERING THIS CALCULATION (4 + 1)
- 3) AFTER WE'VE TRIGGERED THE CALCULATION (=5), WE OVERWRITE THE OBJECTS ARGUMENT (1) WITH THE MESSAGE "3" INTO THE **COLD** (RIGHT) INLET
== WE DON'T HOW EVER RETRIGGER THE CALCULATION! OUR RESULT IS NOT 4+3!

SUMMING IT UP:

CREATING AND SETTING UP OBJECTS

THE NAME WE GIVE OBJECTS DEFINES "WHAT THEY ARE"

THINK: DELAY PEDAL – WE HOOK IT UP TO DELAY A GUITAR SIGNAL

THE ARGUMENTS WE GIVE OBJECTS DEFINE "HOW THEY BEHAVE"

THINK: YOU SET THE DELAY TIME ON THE PEDAL BEFORE YOU PLAY

ARGUMENTS CAN USUALLYBE CHANGED DYNAMICALLY, ALTERING AN OBJECT'S BEHAVIOUR

THINK: MAYBE YOU WANT MORE DELAY LATER IN THE SONG

PARTICULAR MESSAGES ARE RESERVED AND MAY ACT AS "COMMANDS"

THINK: YOU WANT TO CLEAR THE FEEDBACK IMMEDIATELY WITHOUT CHANGING THE DELAY TIME OR THE PEDAL

delay

delay 1000

4000

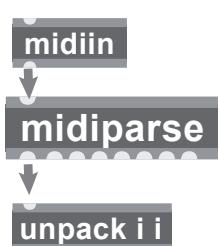
delay 1000

stop

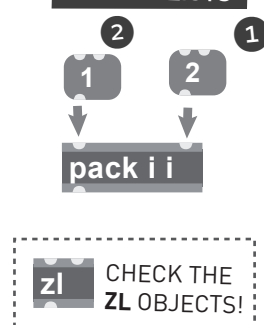
delay 1000

SOME RANDOM REMINDERS

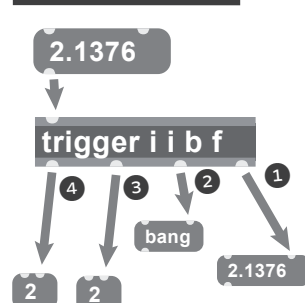
UNPACK LISTS



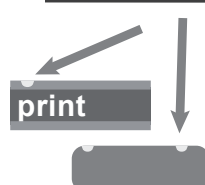
UNPACK LISTS



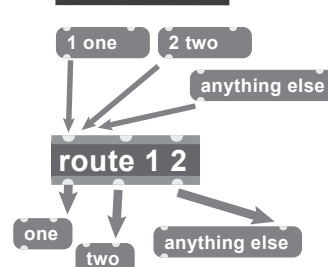
ORDER MESSAGES



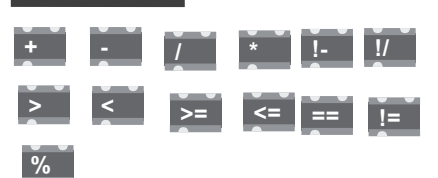
DEBUGGING



ROUTING



MATH & LOGIC



GATES & SWITCHES

