Rholang Cheat Sheet

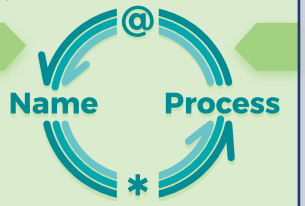
For more information
https://www.rchain.coop/learn-rholang
Updated 10.04.18

Sends and Receives

x!(P)	Send process P on name x
x!!(P)	Persistent send
for (y <- chan){P}	Receive name y on chan
for (@Q <- chan){P}	Receive Process Q (see pattern matching)
for (x <- chan1; y <- chan2){P}	Receive x and y simultaneously
for(y <= chan){P}	Persistent receive
contract chan(y) = {P}	Alternate persistent receive
for(y <! chan){P}	Peek at y on chan

Quoting and Unquoting

"Send processes, Receive names"



Unforgeable Names

new x, y, z in { P }	binds x, y, z in P
new print(`rho:io:stdout`)	use system powerbox

Pattern Matching

The patterns in:
- for(Pattern <- Name){ Body }
- for(Pattern <= Name){ Body }
- contract Name(Pattern){ Body }

Match against the processes in:
- Name!(Process)
- Name!!(Process)

Each Pattern_i in:
- for(Pattern_1 <- Name_1 ; ... ; Pattern_N <- Name_N){ Body }
- for(Pattern_1 <= Name_1 ; ... ; Pattern_N <= Name_N){ Body }

Matches against a Process_i in:
- Name_1!(Process_1) | ... | Name_N!(Process_N)
- Name_1!!(Process_1) | ... | Name_N!!(Process_N)

Tries to match Process against each Pattern_i until it finds a match (or doesn't):
- match Process { Pattern_1 => { Body_1 } ... Pattern_N => { Body_N } }

Arithmetic

addition	substraction	division	multiplication	mod coming soon
+	-	/	*	%

Patterns

A free variable
- x binds with anything, while @x matches to a name and binds x to the quoted process.

Bool Int String Uri ByteArray Type patterns
- @{Bool} matches to both @true and @false

[Head ... Tail] Set(Subset ... Tail) { Key : Value ... Tail }
- [1 , 2 ... x] matches any list starting with 1, 2 and binds x to the remainder

ProcessPattern /\ ProcessPattern Logical AND
- @{x /\ 100} matches to @100 and binds x to 100

ProcessPattern \/ ProcessPattern Logical OR
- @"age"!(21 \/ 22) matches to both @"age"!(21) and @"age"!(22), binds nothing

~ ProcessPattern Logical NOT
- ~ Nil matches to any process except Nil

Bundles

Cannot be destructured by pattern matching

	Can Read	Can Write
bundle- {proc}	YES	NO
bundle+ {proc}	NO	YES
bundle0 {proc}	NO	NO
bundle {proc}	YES	YES

RChain COOPERATIVE

Conditionals

if (x) { P } run process P iff x is true
else { Q } (optional) run process Q iff x is false

Data Structures

Strings

"Hello " ++ "World"	concatenation
"${greeting} World" %% {"greeting": "Hello"}	interpolation
"Hello World".slice(2, 8)"	"llo Wo"
"A402B6".hexToBytes( )	interpret hex string

Lists

[1, 2, Nil, "Hi"]	Output
list.nth(2)	Nil
list.length( )	4
list.slice(1, 3)	[2, Nil]

Tuples

(1, 2, Nil, "Hi")	Output
tuple.nth(2)	Nil

Sets

Set(1, 2, Nil, "Hi")	Output
set.union(Set(1, 4))	Set(1, 2, 4, Nil, "Hi")
set.delete(2)	Set(1, Nil, "Hi")
set.contains(5)	false
set.size( )	4

*Sets have no order or duplicates

Maps

{"a": 1, "b": 2}	Output
map.union({"c": 3})	{"a": 1, "b": 2, "c": 3}
map.delete("b")	{"a": 1}
map.contains("c")	false
map.get("b")	2
map.getOrElse("d", "fail")	fail
map.set("b", 4)	{"a": 1, "b": 4}
map.keys( )	Set("a", "b")
map.size( )	2

*All data structures have toByteArray( )