F - Funktor

$\oplus$: Either

$\otimes$: (,)

$(\to)$: $(\to)$

$F(X) = 1 + X \implies \mathbb{N} = \mu(F)$

$F_2(A, X) = 1 + A \times X$ Fix(F)

$\text{List}\,A = 1 + A \times \text{List}\,A = \ldots$

$1 + A \times (1 + A \times \text{List}\,A) = \ldots =$

$1 + A + A \times A + A \times A \times A + \ldots =$

$1 + A^1 + A^2 + A^3 + A^4 + \ldots$

$0 + 1 + 2A + 3A^2 + \ldots$

[] [_a] [a_] [a, _]

$\longrightarrow 0 + A' \times \text{List}\,A + \text{List}\,A' \times A$

$\text{List}\,A + A \times \text{List}\,A'$

(Bool, A)

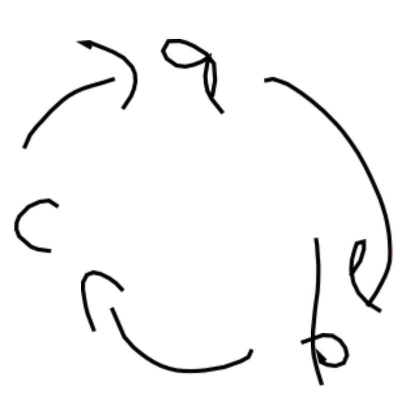
(Fin 3, A, A)

$\overbrace{[a, b, \ldots, d]}^{n}$

[a|b, c]

der

[|a, b, c]



$e^x = 1 - X + \frac{x^2}{2!} + \frac{x^3}{3!} + \ldots$

$\frac{X^n}{n!} = \overbrace{X \times X \times \ldots X}^{n}$

$f : \text{Fin}\,n \to \text{Fin}\,n$

$\wedge\ g\ \text{Fin}\,n \to \text{Fin}\,n$

$f \circ g = id \wedge g \circ f = id$

data MS A : Set where

$[\,] : MS\ A$

$\_::\_ : A \to MS\ A \to MS\ A$

eq : $x :: y :: xs = y :: x :: xs$

SET:

eq' : $x :: x :: xs = x :: xs$

$1 + 1 + A^2 + A^3 + \ldots$

$A + \frac{A^2}{2} + \frac{A^3}{3} + \frac{A^4}{4} \ldots + \frac{A^n}{n}$

abc
cab
bac

bac
cba
acb

data CL A

$\eta : A \to CL\,A$

$\_+\_ : CL\,A \to CL\,A$

$0 : CL\,A$

ass $(x+y)+z = x+(y+z)$

idl: $0 + x = x$

idr: $x + 0 = x$

circ $\eta a + x = x + \eta a$

$\eta a + x + y = x + \eta a + y$

data CL A : Set

η List $A \to CL\,A$

cicl $\eta(x :: xs) = \eta(xs +\!\!+ [x])$

$\eta(xs +\!\!+ ys) = \eta(ys +\!\!+ xs)$

$\eta[a, b, c] = \eta[b, c, a]$

$\eta[b, c, a] = \eta[c, a, b]$

Derivates of containers

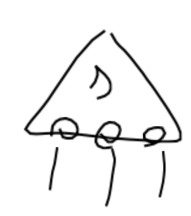
Container $(S \lhd P)\,X = \Sigma(s : S).\,(P_s \to X)$

$S : \text{Set}$

$P : S \to \text{Set}$

$\partial(S \lhd P) = (s : S) \lhd (P_s \times (P_s - 1))$

$= \Sigma(p : P_s).\,\Sigma(p' : P_s).\,p \neq p'$



$\text{List}\,A = ((n : \mathbb{N}) \lhd \text{Fin}\,n)\,A =$

$\Sigma(n : \mathbb{N}).\,(\text{Fin}\,n \to A) =$

A^n

$0 + 1 + A + A^2 + \ldots$