Anonymous Functions

let $y = 5$ in
$(fun \ x \to x+y) \ 4$

name? { $\underbrace{(fun \ x \to x+1)}_{expr}$ $\underset{expr}{5}$

def $f1 x =
$x+1$
end

$f1 5

$(fun \ f \to fun \ x \to f \ (f \ x)) \ (fun \ y \to y-1) \ 2$

Magic Cloud

error

closure
conversion

snake

Parser

WF

expr → expr

closure conversion

Part of

A-norm

Compile

instructions

Assemble

.o
01010

.run 010010
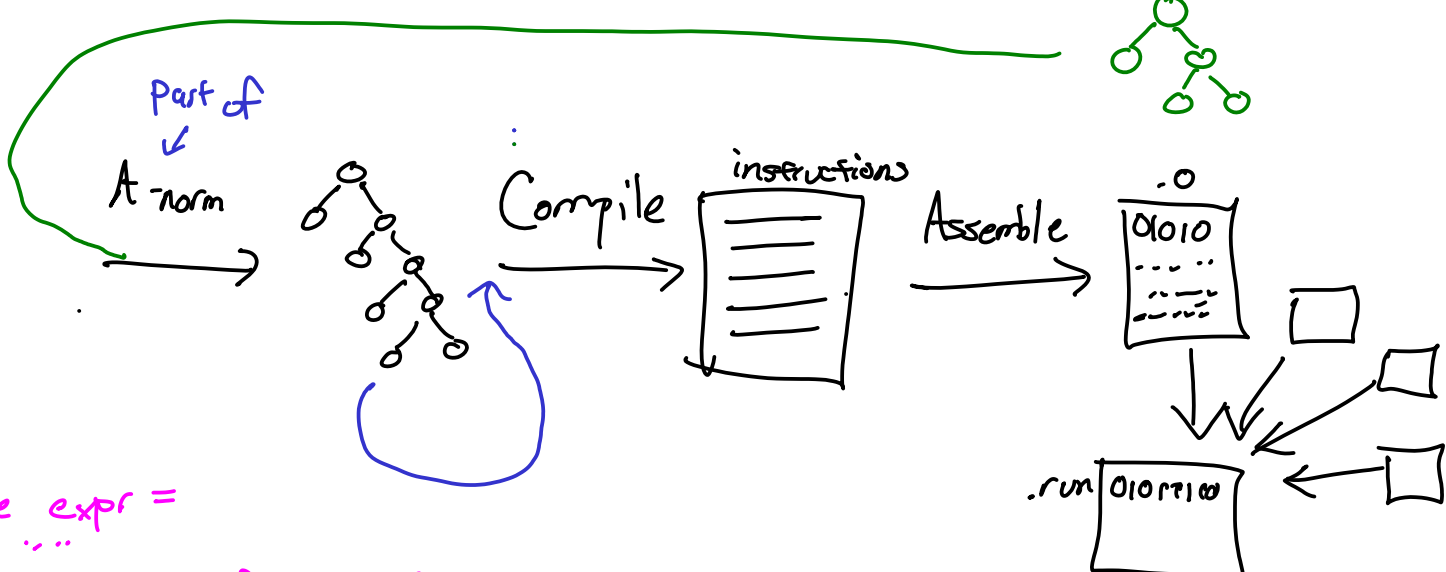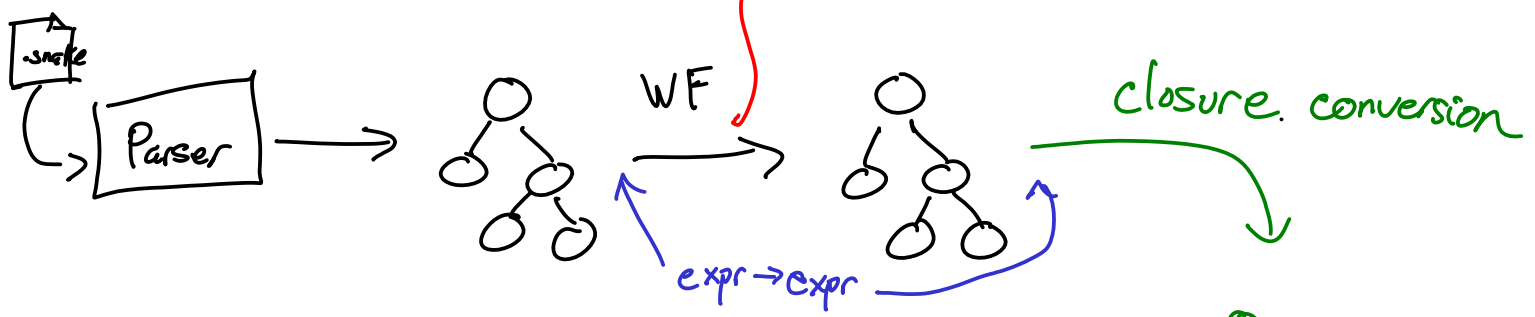
type expr =
  | ...
  | E Lambda of string & expr

let rec closure_conv (e: expr) : expr * declaration list.

(fun x → x + 1) 5

(def $f1 x =
    x + 1
  end)

($f1 · 5)
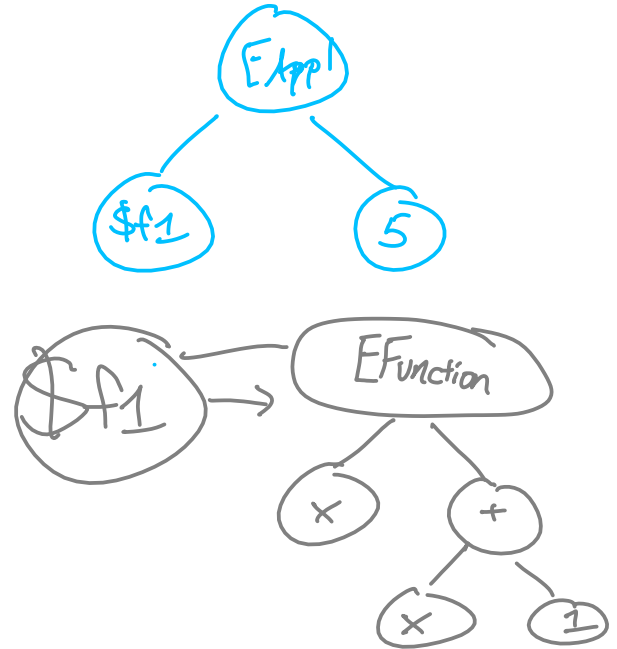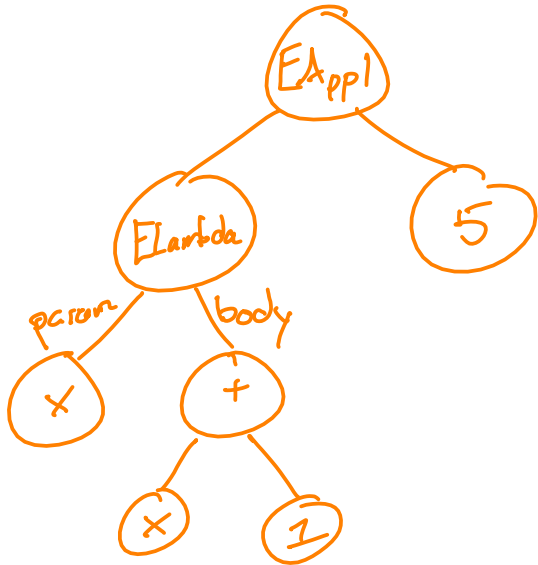
let y = 5 in
(fun x -> x+*y*) 1

$\Longrightarrow$

def $f1 x =
end $^{x+}$*y*

let y = 5 in
$f1 1

fun x -> let z = x in
        z+y.   *non-local*

FV(e)   "free variables"

FV("x+y") = {x, y}

FV("let x=1 in x+y") = {y}

Answer: FV(e) \ {x}

def $f1 y x =
end $^{x+y}$

let y = 5 in
$f1 y 1