2/20

CSC1 7000-11

Lamber Encodings

* tou, felm, ilz

* and, or, not

* Thm: and => a

* pair: (>f. >s. >b. bfs)

* Fimoint.

7 = pf. (2 2. f (2 m) (22. f (2 m))

Z= かた(>n. た(>g ルッカ)

(An. f (25.22)

of factoral

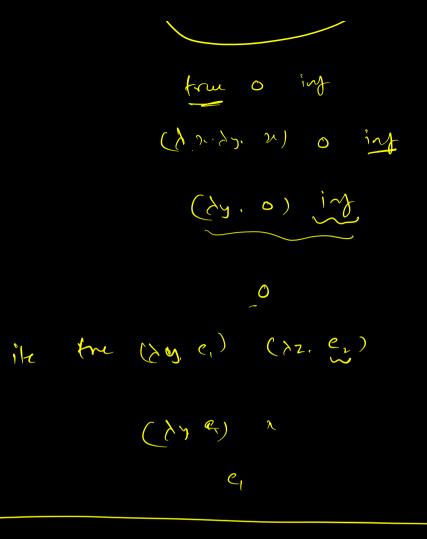
Gru = hx. hy. a

false : > x. > y

ite = Ab. An. Ay. b 2 3

ite (tru, c,, ev) = e,

The Cfelse, e., e.) = e2



Bodeen combinations)

For $a = \lambda b \cdot \lambda c \cdot b \cdot b \cdot c$ or $a = \lambda b \cdot \lambda c \cdot b \cdot b \cdot c$ or $b = \lambda b \cdot \lambda c \cdot b \cdot b \cdot c$ not $a = \lambda b \cdot b \cdot b \cdot c$

Recursion!

D = (An. n. n)

(An. n. n)

$$f((x,f(x,x))) = f(x,f(x,x))$$

$$f((x,f(x,x))) = f(x,f(x,x))$$

$$= f(x,f(x,x))$$

$$f(n) = 2^{n}$$

$$x = 2 \text{ or } x = 0 \quad f(21 = x)$$

$$fact = \lambda f. \lambda m. \quad if \quad m = 0 \quad then \quad 2$$

$$\xi(x) \quad m \neq f \quad (m-1)$$

$$factorial$$

$$factorial \quad 2$$

(Y fact) 1

fact (Y fact) 1

if 1 = 0 Thm 1

Str. 1x((Y fact) 0)

1 x ((Y fact) 0)

1 x ((Y fact) 0)

-> 1 * (y 0=0 tm 2 Elx 0 * (y fat)(-)

+ 1 1 - 1

Exercise: implement francei

(fbn): 21. 2n.

(f. 6 4) : (Y fib) 4

Josef (Y fact) 1

(fact (Y fact))

(fact (fact (Y fact)))

 $Z = \lambda f. (\lambda x. f(xx)) (\lambda x. f(xx))$ $\lambda z. (xxz) (\lambda 2. xxz)$ f (yf) $f (\lambda 2. y + 2)$

Let rev. $f = \frac{1}{12}$ $f = f(\lambda g) = \frac{1}{12}$ $f = f(\lambda g) = \frac{1}{12}$ $f = \frac{1}{12}$ $f = \frac{1}{12}$ $f = \frac{1}{12}$