Lect 14

1) is_zero := $\lambda n. n (\lambda x. F)(T)$

2) Let $F(n,a)$ = plcm_fac (F, n, a) ~~nka~~. Then F = Ⓗ afac and n, a be church encoded natural number.

$F_{na} \to$ (afac F)(n)(a) → if_then_else (is zero n)(a)(F(pred(n), mult(n)(a)))

$F_{\overline{2}\overline{1}} \to$ (afac F)(2)(1) → if_then_else (is zero $\overline{2}$)($\overline{1}$)(F(pred($\overline{2}$), mult($\overline{2}$)($\overline{1}$)))

→ if_then_else(False)($\overline{1}$)(F(pred($\overline{2}$), mult($\overline{2}$)($\overline{1}$)))

→ F(pred($\overline{2}$), mult($\overline{2}$)($\overline{1}$))

→ F($\overline{1}$, $\overline{2}$)

→ (afac F)($\overline{1}$)($\overline{2}$)

→ if_then_else (is zero $\overline{1}$)($\overline{2}$)(F(pred($\overline{1}$), mult($\overline{1}$)($\overline{2}$)))

→ if_then_else(False)($\overline{2}$)(F(pred($\overline{1}$), mult($\overline{1}$)($\overline{2}$)))

→ F(pred($\overline{1}$), mult($\overline{1}$)($\overline{2}$))

→ if_then_else (is_zero $\overline{0}$)($\overline{2}$)(F(pred($\overline{0}$), mult($\overline{0}$)($\overline{2}$)))

→ if_then_else (True)($\overline{2}$)(F(pred($\overline{0}$), mult($\overline{0}$)($\overline{2}$)))

→ $\overline{2}$