

Inference at * 1 1 2
of proof for Lemma adjacent-append:

1. $T : \text{Type}$
2. $x : T$
3. $y : T$
4. $L_1 : T \text{ List}$
5. $L_2 : T \text{ List}$
6. $i : \{0..(\|L_1 @ L_2\| - 1)^-\}$
7. $x = (L_1 @ L_2)[i]$
8. $y = (L_1 @ L_2)[(i+1)]$
9. $i < \|L_1\|$
10. $\neg(i < (\|L_1\| - 1))$

$\vdash (\exists i:\{0..(\|L_1\| - 1)^-\}. (x = L_1[i] \ \& \ y = L_1[(i+1)]))$
 $\vee ((0 < \|L_1\|) \ \& \ (0 < \|L_2\|) \ \& \ x = \text{last}(L_1) \ \& \ y = \text{hd}(L_2))$
 $\vee (\exists i:\{0..(\|L_2\| - 1)^-\}. (x = L_2[i] \ \& \ y = L_2[(i+1)]))$
by (((OrRight)
THENM (OrLeft)).
CollapseTHENA (MaAuto.)).

1:

$\vdash (0 < \|L_1\|) \ \& \ (0 < \|L_2\|) \ \& \ x = \text{last}(L_1) \ \& \ y = \text{hd}(L_2)$