

Inference at \* 2 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.  $0 < \|L_1\|$
7.  $0 < \|L_2\|$
8.  $x = \text{last}(L_1)$
9.  $y = \text{hd}(L_2)$

$\vdash \exists i : \{0..(\|L_1 @ L_2\| - 1)\}^- . (x = (L_1 @ L_2)[i] \ \& \ y = (L_1 @ L_2)[(i+1)])$   
by ((InstConcl [ $\|L_1\| - 1$ ])  
CollapseTHEN (Auto')).

1:

$\vdash x = (L_1 @ L_2)[(\|L_1\| - 1)]$

2:

$\vdash y = (L_1 @ L_2)[((\|L_1\| - 1)+1)]$