

Inference at *
of proof for Lemma before-adjacent:

$\vdash \forall T:\text{Type}, L:(T \text{ List}), x, y:T.$
no_repeats($T;L$)
 \Rightarrow adjacent($T;L;x;y$)
 $\Rightarrow (\forall z:T. z \text{ before } y \in L \Rightarrow (z \text{ before } x \in L \vee (z = x)))$
by ((InductionOnList)
CollapseTHEN (Auto.)).

1:

1. $T : \text{Type}$
2. $T \text{ List}$
3. $x : T$
4. $y : T$
5. no_repeats($T;[]$)
6. adjacent($T;[];x;y$)
7. $z : T$
8. $z \text{ before } y \in []$
- $\vdash z \text{ before } x \in [] \vee (z = x)$

2:

1. $T : \text{Type}$
2. $T \text{ List}$
3. $u : T$
4. $v : T \text{ List}$
5. $\forall x, y:T.$
no_repeats($T;v$)
 \Rightarrow adjacent($T;v;x;y$)
 $\Rightarrow (\forall z:T. z \text{ before } y \in v \Rightarrow (z \text{ before } x \in v \vee (z = x)))$
6. $x : T$
7. $y : T$
8. no_repeats($T;[u / v]$)
9. adjacent($T;[u / v];x;y$)
10. $z : T$
11. $z \text{ before } y \in [u / v]$
- $\vdash z \text{ before } x \in [u / v] \vee (z = x)$