Inference at $*$ 1 2 2
of proof for Lemma append_overlapping_sublists:

1. T : Type
2. L_1 : T List
3. L_2 : T List
4. L : T List
5. x : T
6. $\forall i, j{:}\mathbb{N}.\ (i < \|L\|) \Rightarrow (j < \|L\|) \Rightarrow (\neg(i = j)) \Rightarrow (\neg(L[i] = L[j]))$
7. $f_1 : \{0..\|L_1 @ [x]\|^{-}\} \rightarrow \{0..\|L\|^{-}\}$
8. increasing(f_1;$\|L_1 @ [x]\|$)
9. $\forall j{:}\{0..\|L_1 @ [x]\|^{-}\}.\ (L_1 @ [x])[j] = L[(f_1(j))]$
10. $f : \{0..(\|L_2\|+1)^{-}\} \rightarrow \{0..\|L\|^{-}\}$
11. increasing(f;$\|L_2\|+1$)
12. $\forall j{:}\{0..(\|L_2\|+1)^{-}\}.\ [x\ /\ L_2][j] = L[(f(j))]$
13. $\|L_1 @ [x\ /\ L_2]\| = \|L_1\|+\|L_2\|+1$
14. $\|[]\| \geq 0$

$\vdash$increasing(λi.if $i \leq$z $\|L_1\|$ then $f_1(i)$ else $f(i - \|L_1\|)$ fi ;$\|L_1 @ [x\ /\ L_2]\|$)
& ($\forall j{:}\{0..\|L_1 @ [x\ /\ L_2]\|^{-}\}$.
($L_1 @ [x\ /\ L_2])[j] = L[((\lambda i$.if $i \leq$z $\|L_1\|$ then $f_1(i)$ else $f(i - \|L_1\|)$ fi)(j))])

by ((Reduce 0)
CollapseTHEN ((Auto_aux (first_nat 1:n) ((first_nat 1:n),(first_nat 3:n
)) (first_tok SupInf:t) inil_term)))·

1:

$\vdash$ increasing(λi.if $i \leq$z $\|L_1\|$ then $f_1(i)$ else $f(i - \|L_1\|)$ fi ;$\|L_1 @ [x\ /\ L_2]\|$)

2:

15. $j : \{0..\|L_1 @ [x\ /\ L_2]\|^{-}\}$
$\vdash (L_1 @ [x\ /\ L_2])[j] = L[$if $j \leq$z $\|L_1\|$ then $f_1(j)$ else $f(j - \|L_1\|)$ fi]

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