Inference at $*$ 1 2 1 0
of proof for Lemma append_overlapping_sublists:

. . . . .wf. . . . . NILNIL

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. $\|[]\| \geq 0$

$\vdash$ (λi.if $i \leq$z $\|L_1\|$ then $f_1(i)$ else $f(i - \|L_1\|)$ fi)
$\in \{0..\|L_1 @ [x / L_2]\|^-\} \rightarrow \{0..\|L\|^-\}$
by PERMUTE{1:n,
2:n,
3:n,
4:n,
5:n,
6:n,
7:n,
8:n,
9:n,
10:n,
11:n,
12:n,
10:n,
13:n,
11:n,
14:n,
15:n,
16:n,
17:n,
18:n,
16:n,
15:n,
19:n}

1: . . . . .wf. . . . . NILNIL

15. $i : \{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
$\vdash i \leq\!z\ \|L_1\| \in \mathbb{B}$
2: .....wf..... NILNIL

15. $\{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
$\vdash \mathbb{B} \in \mathrm{Type}$
3: .....wf..... NILNIL

15. $i : \{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
16. $i \leq\!z\ \|L_1\| = \mathrm{tt}$
$\vdash (i \leq\!z\ \|L_1\| = \mathrm{tt}) \in \mathbb{P}_1$
4: .....wf..... NILNIL

15. $i : \{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
16. $i \leq\!z\ \|L_1\| = \mathrm{tt}$
$\vdash (\uparrow i \leq\!z\ \|L_1\|) \in \mathbb{P}_1$
5: .....wf..... NILNIL

15. $i : \{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
16. $i \leq\!z\ \|L_1\| = \mathrm{tt}$
$\vdash (i \leq \|L_1\|) \in \mathbb{P}_1$
6: .....wf..... NILNIL

15. $i : \{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
16. $i \leq\!z\ \|L_1\| = \mathrm{tt}$
$\vdash i \leq\!z\ \|L_1\| \in \mathbb{B}$
7: .....wf..... NILNIL

15. $i : \{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
16. $i \leq\!z\ \|L_1\| = \mathrm{tt}$
$\vdash i \in \mathbb{Z}$
8: .....wf..... NILNIL

15. $i : \{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
16. $i \leq\!z\ \|L_1\| = \mathrm{tt}$
$\vdash \|L_1\| \in \mathbb{Z}$
9: .....truecase..... NILNIL

15. $i : \{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
16. $i \leq \|L_1\|$
$\vdash f_1(i) \in \{0..\|L\|^-\}$
10: .....wf..... NILNIL

15. $i : \{0..\|L_1 \mathbin{@} [x \mathbin{/} L_2]\|^-\}$
16. $i \leq\!z\ \|L_1\| = \mathrm{ff}$

$\vdash (i \leq\mathrm{z} \; \|L_1\| = \mathrm{ff}) \in \mathbb{P}_1$

11: .....wf..... NILNIL

15. $i : \{0..\|L_1 \; @ \; [x \; / \; L_2]\|^{-}\}$
16. $i \leq\mathrm{z} \; \|L_1\| = \mathrm{ff}$

$\vdash (\uparrow\|L_1\| <\mathrm{z} \; i) \in \mathbb{P}_1$

12: .....wf..... NILNIL

15. $i : \{0..\|L_1 \; @ \; [x \; / \; L_2]\|^{-}\}$
16. $i \leq\mathrm{z} \; \|L_1\| = \mathrm{ff}$

$\vdash (\|L_1\| < i) \in \mathbb{P}_1$

13: .....wf..... NILNIL

15. $i : \{0..\|L_1 \; @ \; [x \; / \; L_2]\|^{-}\}$
16. $i \leq\mathrm{z} \; \|L_1\| = \mathrm{ff}$

$\vdash (\uparrow(\neg_b i \leq\mathrm{z} \; \|L_1\|)) \in \mathbb{P}_1$

14: .....wf..... NILNIL

15. $i : \{0..\|L_1 \; @ \; [x \; / \; L_2]\|^{-}\}$
16. $i \leq\mathrm{z} \; \|L_1\| = \mathrm{ff}$

$\vdash i \leq\mathrm{z} \; \|L_1\| \in \mathbb{B}$

15: .....wf..... NILNIL

15. $i : \{0..\|L_1 \; @ \; [x \; / \; L_2]\|^{-}\}$
16. $i \leq\mathrm{z} \; \|L_1\| = \mathrm{ff}$

$\vdash i \in \mathbb{Z}$

16: .....wf..... NILNIL

15. $i : \{0..\|L_1 \; @ \; [x \; / \; L_2]\|^{-}\}$
16. $i \leq\mathrm{z} \; \|L_1\| = \mathrm{ff}$

$\vdash \|L_1\| \in \mathbb{Z}$

17: .....antecedent..... NILNIL

15. $i : \{0..\|L_1 \; @ \; [x \; / \; L_2]\|^{-}\}$
16. $i \leq\mathrm{z} \; \|L_1\| = \mathrm{ff}$

$\vdash$ True

18: .....wf..... NILNIL

15. $i : \{0..\|L_1 \; @ \; [x \; / \; L_2]\|^{-}\}$
16. $i \leq\mathrm{z} \; \|L_1\| = \mathrm{ff}$
17. $(\uparrow(\neg_b i \leq\mathrm{z} \; \|L_1\|)) = (\uparrow\|L_1\| <\mathrm{z} \; i)$

$\vdash \mathbb{P}_1 = \mathbb{P}_1$

19: .....falsecase..... NILNIL

15. $i : \{0..\|L_1 \; @ \; [x \; / \; L_2]\|^{-}\}$
16. $\|L_1\| < i$

$\vdash f(i - \|L_1\|) \in \{0..\|L\|^-\}$

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