Inference at $*$ 2 0 0
of proof for Lemma before_last:

1. T : Type
2. T List
3. u : T
4. v : T List
5. $\forall x{:}T.\ (x \in v) \Rightarrow (\neg(x = \mathrm{last}(v))) \Rightarrow x \text{ before } \mathrm{last}(v) \in v$

$\vdash \forall x{:}T.\ (x \in [u\ /\ v]) \Rightarrow (\neg(x = \mathrm{last}([u\ /\ v]))) \Rightarrow x \text{ before } \mathrm{last}([u\ /\ v]) \in [u\ /\ v]$

by InteriorProof 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,
13:n,
14:n,
15:n,
16:n,
17:n,
1:n,
1:n,
3:n,
18:n,
4:n,
5:n,
19:n,
7:n,
7:n,
13:n,
17:n,
15:n,
14:n,
20:n,
1:n,
21:n}

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

$\vdash T \in \text{Type}$

2: . . . . .wf. . . . . NILNIL

$\vdash (\lambda x.(x \in [u \ / \ v]) \Rightarrow (\neg(x = \text{last}([u \ / \ v]))) \Rightarrow [x; \text{last}([u \ / \ v])] \subseteq [u \ / \ v])$
$\in T \rightarrow \mathbb{P}$

3: . . . . .wf. . . . . NILNIL

$\vdash (\lambda x.(x \in [u \ / \ v])$
$\Rightarrow (\neg(x = \text{last}([u \ / \ v])))$
$\Rightarrow ((x = u \ \& \ [\text{last}([u \ / \ v])] \subseteq v) \vee [x; \text{last}([u \ / \ v])] \subseteq v))$
$\in T \rightarrow \mathbb{P}$

4: . . . . .wf. . . . . NILNIL

$\vdash T = T$

5: . . . . .wf. . . . . NILNIL

6. $x : T$
$\vdash (x \in [u \ / \ v]) \in \mathbb{P}$

6: . . . . .wf. . . . . NILNIL

6. $x : T$
$\vdash ((\neg(x = \text{last}([u \ / \ v]))) \Rightarrow [x; \text{last}([u \ / \ v])] \subseteq [u \ / \ v]) \in \mathbb{P}$

7: . . . . .wf. . . . . NILNIL

6. $x : T$
$\vdash ((\neg(x = \text{last}([u \ / \ v])))$
$\Rightarrow ((x = u \ \& \ [\text{last}([u \ / \ v])] \subseteq v) \vee [x; \text{last}([u \ / \ v])] \subseteq v))$
$\in \mathbb{P}$

8: . . . . .wf. . . . . NILNIL

6. $x : T$
$\vdash (x \in [u \ / \ v]) = (x \in [u \ / \ v])$

9: . . . . .wf. . . . . NILNIL

6. $x : T$
$\vdash (\neg(x = \text{last}([u \ / \ v]))) \in \mathbb{P}$

10: . . . . .wf. . . . . NILNIL

6. $x : T$
$\vdash [x; \text{last}([u \ / \ v])] \subseteq [u \ / \ v] \in \mathbb{P}$

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

6. $x : T$
$\vdash ((x = u \ \& \ [\text{last}([u \ / \ v])] \subseteq v) \vee [x; \text{last}([u \ / \ v])] \subseteq v) \in \mathbb{P}$

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

6\. $x : T$
$\vdash (\neg(x = \mathrm{last}([u\ /\ v]))) = (\neg(x = \mathrm{last}([u\ /\ v])))$
13: .....wf..... NILNIL

6\. T
$\vdash T \in \mathrm{Type}$
14: .....wf..... NILNIL

6\. $x : T$
$\vdash x \in T$
15: .....wf..... NILNIL

6\. T
$\vdash u \in T$
16: .....wf..... NILNIL

6\. T
$\vdash [\mathrm{last}([u\ /\ v])] \in (T\ \mathrm{List})$
17: .....wf..... NILNIL

6\. T
$\vdash v \in (T\ \mathrm{List})$
18: .....wf..... NILNIL

$\vdash (\lambda x.((x = u) \vee (x \in v))$
$\quad \Rightarrow (\neg(x = \mathrm{last}([u\ /\ v])))$
$\quad \Rightarrow ((x = u\ \&\ [\mathrm{last}([u\ /\ v])] \subseteq v) \vee [x; \mathrm{last}([u\ /\ v])] \subseteq v))$
$\in T \rightarrow \mathbb{P}$
19: .....wf..... NILNIL

6\. $x : T$
$\vdash ((x = u) \vee (x \in v)) \in \mathbb{P}$
20: .....wf..... NILNIL

6\. $x : T$
$\vdash ((\neg(x = \mathrm{last}([u\ /\ v])))$
$\quad \Rightarrow ((x = u\ \&\ [\mathrm{last}([u\ /\ v])] \subseteq v) \vee [x; \mathrm{last}([u\ /\ v])] \subseteq v))$
$=$
$((\neg(x = \mathrm{last}([u\ /\ v])))$
$\quad \Rightarrow ((x = u\ \&\ [\mathrm{last}([u\ /\ v])] \subseteq v) \vee [x; \mathrm{last}([u\ /\ v])] \subseteq v))$
21:

$\vdash \forall x{:}T.$
$((x = u) \vee (x \in v))$
$\Rightarrow (\neg(x = \mathrm{last}([u\ /\ v])))$

$$\Rightarrow ((x = u \;\&\; [\text{last}([u\ /\ v])] \subseteq v) \vee [x; \text{last}([u\ /\ v])] \subseteq v)$$

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http://www.nuprl.org/FDLcontent/p0_963683_/p122_89337_{before_last}2_0_0.html