Inference at $*$ 2 0 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 PERMUTE{1:n,
1:n,
2:n,
3:n,
4:n,
5:n,
5:n,
6:n,
7:n,
8:n,
9:n,
9:n,
10:n,
11:n,
12:n,
13:n,
14:n,
15:n,
16:n,
17:n,
1:n,
18:n}

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

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

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

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

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

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

$\in T \rightarrow \mathbb{P}$

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

$\vdash T = T$

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

6. $x : T$

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

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

6. $x : T$

$\vdash ((\neg(x = \mathrm{last}([u\ /\ v]))) \Rightarrow [x;\ \mathrm{last}([u\ /\ v])] \subseteq [u\ /\ v]) \in \mathbb{P}$

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

6. $x : T$

$\vdash ((\neg(x = \mathrm{last}([u\ /\ v])))$
$\quad \Rightarrow ((x = u\ \&\ [\mathrm{last}([u\ /\ v])] \subseteq v) \vee [x;\ \mathrm{last}([u\ /\ v])] \subseteq v))$
$\quad \in \mathbb{P}$

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

6. $x : T$

$\vdash (x \in [u\ /\ v]) = (x \in [u\ /\ v])$

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

6. $x : T$

$\vdash (\neg(x = \mathrm{last}([u\ /\ v]))) \in \mathbb{P}$

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

6. $x : T$

$\vdash [x;\ \mathrm{last}([u\ /\ v])] \subseteq [u\ /\ v] \in \mathbb{P}$

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

6. $x : T$

$\vdash ((x = u\ \&\ [\mathrm{last}([u\ /\ v])] \subseteq v) \vee [x;\ \mathrm{last}([u\ /\ v])] \subseteq v) \in \mathbb{P}$

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

6. T
$\vdash v \in$ (T List)
18:

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