

Inference at *
of proof for Lemma decidable-filter:

$\vdash \forall T:\text{Type}, L:(T \text{ List}), P:(\{x:T \mid (x \in L)\} \rightarrow \mathbb{P}).$
 $(\forall x \in L. \text{Dec}(P(x))) \Rightarrow (\exists L':T \text{ List}. (L' \subseteq L \ \& \ (\forall x:T. (x \in L') \iff ((x \in L) \ \& \ P(x))))$
by ((InductionOnList)
CollapseTHEN (Auto.)).

1:

1. $T : \text{Type}$
 2. $T \text{ List}$
 3. $P : \{x:T \mid (x \in [])\} \rightarrow \mathbb{P}$
 4. $\forall x \in []. \text{Dec}(P(x))$
- $\vdash \exists L':T \text{ List}. (L' \subseteq [] \ \& \ (\forall x:T. (x \in L') \iff ((x \in []) \ \& \ P(x))))$

2:

1. $T : \text{Type}$
 2. $T \text{ List}$
 3. $u : T$
 4. $v : T \text{ List}$
 5. $\forall P:(\{x:T \mid (x \in v)\} \rightarrow \mathbb{P}).$
 $(\forall x \in v. \text{Dec}(P(x)))$
 $\Rightarrow (\exists L':T \text{ List}. (L' \subseteq v \ \& \ (\forall x:T. (x \in L') \iff ((x \in v) \ \& \ P(x))))$
 6. $P : \{x:T \mid (x \in [u / v])\} \rightarrow \mathbb{P}$
 7. $\forall x \in [u / v]. \text{Dec}(P(x))$
- $\vdash \exists L':T \text{ List}. (L' \subseteq [u / v] \ \& \ (\forall x:T. (x \in L') \iff ((x \in [u / v]) \ \& \ P(x))))$
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