

Inference at \*  
of proof for Lemma branch\_wf2:

$\vdash \forall P:\mathbb{P}, d:\text{Dec}(P), T:\text{Type}, A:(P \rightarrow T), B:(\cap q:\neg P.T). \text{ if } p:P \text{ then } A(p) \text{ else } B \text{ fi} \in T$   
by ((Unfold 'branch' ( 0).)  
CollapseTHEN (Auto.)).

1: .....subterm..... T:t1:n

1.  $P : \mathbb{P}$
2.  $d : \text{Dec}(P)$
3.  $T : \text{Type}$
4.  $P \rightarrow T$
5.  $\cap q:\neg P.T$
- $\vdash d \in (P + (\neg P))$

2: .....subterm..... T:t3:n

1.  $P : \mathbb{P}$
2.  $d : \text{Dec}(P)$
3.  $T : \text{Type}$
4.  $P \rightarrow T$
5.  $B : \cap q:\neg P.T$
6.  $x : \neg P$
7.  $d = (\text{inr } x)$
- $\vdash B \in T$