

Inference at \* 2  
of proof for Lemma order\_split:

1.  $T : \text{Type}$
2.  $R : T \rightarrow T \rightarrow \mathbb{P}$
3.  $\forall a:T. R(a,a)$
4.  $\forall a, b, c:T. R(a,b) \Rightarrow R(b,c) \Rightarrow R(a,c)$
5.  $\forall x, y:T. R(x,y) \Rightarrow R(y,x) \Rightarrow (x = y)$
6.  $\forall x, y:T. \text{Dec}(x = y)$
7.  $a : T$
8.  $b : T$
9.  $(R(a,b) \ \& \ (\neg R(b,a))) \vee (a = b)$
- $\vdash R(a,b)$   
by GenExRepD

1:

9.  $R(a,b)$
10.  $\neg R(b,a)$
- $\vdash R(a,b)$

2:

9.  $a = b$
- $\vdash R(a,b)$

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