

Inference at \* 2  
of proof for Lemma member-zip:

1.  $A : \text{Type}$
  2.  $B : \text{Type}$
  3.  $A \text{ List}$
  4.  $u : A$
  5.  $v : A \text{ List}$
  6.  $\forall ys:(B \text{ List}), x:A, y:B. (<x, y> \in \text{zip}(v;ys)) \Rightarrow \{(x \in v) \ \& \ (y \in ys)\}$
- $\vdash \forall ys:(B \text{ List}), x:A, y:B. (<x, y> \in \text{zip}([u / v];ys)) \Rightarrow \{(x \in [u / v]) \ \& \ (y \in ys)\}$   
by InductionOnList

1:

7.  $B \text{ List}$
- $\vdash \forall x:A, y:B. (<x, y> \in \text{zip}([u / v];[])) \Rightarrow \{(x \in [u / v]) \ \& \ (y \in [])\}$

2:

7.  $B \text{ List}$
  8.  $u_1 : B$
  9.  $v_1 : B \text{ List}$
  10.  $\forall x:A, y:B. (<x, y> \in \text{zip}([u / v];v_1)) \Rightarrow \{(x \in [u / v]) \ \& \ (y \in v_1)\}$
- $\vdash \forall x:A, y:B. (<x, y> \in \text{zip}([u / v];[u_1 / v_1])) \Rightarrow \{(x \in [u / v]) \ \& \ (y \in [u_1 / v_1])\}$
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