

Inference at *
of proof for Lemma wellfounded_functionality_wrt_implies:

$\vdash \forall T_1, T_2 : \text{Type}, r_1 : (T_1 \rightarrow T_1 \rightarrow \mathbb{P}), r_2 : (T_2 \rightarrow T_2 \rightarrow \mathbb{P}).$
 $(T_1 = T_2)$
 $\Rightarrow (\forall x, y : T_1. \{r_1(x, y) \Leftarrow r_2(x, y)\})$
 $\Rightarrow \{\text{WellFnd}\{i\}(T_1; x, y. r_1(x, y)) \Rightarrow \text{WellFnd}\{i\}(T_2; x, y. r_2(x, y))\}$
by (((Unfolds “wellfounded guard“ 0)
CollapseTHEN (UnivCD)).)
CollapseTHEN (UnivCD) (
(Auto_aux (first_nat 1:n) ((first_nat 1:n), (first_nat 3:n)) (first_tok :t) inil_term))).

1:

1. $T_1 : \text{Type}$
2. $T_2 : \text{Type}$
3. $r_1 : T_1 \rightarrow T_1 \rightarrow \mathbb{P}$
4. $r_2 : T_2 \rightarrow T_2 \rightarrow \mathbb{P}$
5. $T_1 = T_2$
6. $\forall x, y : T_1. r_1(x, y) \Leftarrow r_2(x, y)$
7. $\forall P : (T_1 \rightarrow \mathbb{P}). (\forall j : T_1. (\forall k : T_1. r_1(k, j) \Rightarrow P(k)) \Rightarrow P(j)) \Rightarrow \{\forall n : T_1. P(n)\}$
8. $P : T_2 \rightarrow \mathbb{P}$
9. $\forall j : T_2. (\forall k : T_2. r_2(k, j) \Rightarrow P(k)) \Rightarrow P(j)$
- $\vdash \forall n : T_2. P(n)$