Inference at $*$ 1 1 2
of proof for Lemma complete_nat_ind_with_y:

1. $P : \mathbb{N} \to \mathbb{P}\{\mathrm{k}\}$
2. $g : \forall i{:}\mathbb{N}.\ (\forall j{:}\mathbb{N} i.\ P(j)) \Rightarrow P(i)$
3. $\mathrm{Y}(\lambda f,x.\ g(x,f)) \in \mathrm{Void}\to\mathrm{Void}$

$\vdash \mathrm{Y}(\lambda f,x.\ g(x,f)) \in (\forall i{:}\mathbb{N}.\ P(i))$
by Assert $\forall n{:}\mathbb{N}.\ \mathrm{Y}(\lambda f,x.\ g(x,f)) \in (\forall m{:}\mathbb{N} n.\ P(m))$

1: . . . . .assertion. . . . . NILNIL

$\vdash \forall n{:}\mathbb{N}.\ \mathrm{Y}(\lambda f,x.\ g(x,f)) \in (\forall m{:}\mathbb{N} n.\ P(m))$

2:

4. $\forall n{:}\mathbb{N}.\ \mathrm{Y}(\lambda f,x.\ g(x,f)) \in (\forall m{:}\mathbb{N} n.\ P(m))$

$\vdash \mathrm{Y}(\lambda f,x.\ g(x,f)) \in (\forall i{:}\mathbb{N}.\ P(i))$

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http://www.nuprl.org/FDLcontent/p0_942988_/p121_93198_{complete_nat_ind_with_y}1_1_2.html