Contents

1 nexp Theory

Built: 05 March 2019
Parent Theories: indexedLists, patternMatches

1.1 Datatypes

nexp = Num num | Add nexp nexp | Sub nexp nexp | Mult nexp nexp

1.2 Definitions

[nexpVal_def]

$$\begin{aligned}\vdash\ & (\forall num.\ \texttt{nexpVal (Num } num\texttt{)} = num) \wedge \\ & (\forall f_1\ f_2.\ \texttt{nexpVal (Add } f_1\ f_2\texttt{)} = \texttt{nexpVal } f_1 + \texttt{nexpVal } f_2) \wedge \\ & (\forall f_1\ f_2.\ \texttt{nexpVal (Sub } f_1\ f_2\texttt{)} = \texttt{nexpVal } f_1 - \texttt{nexpVal } f_2) \wedge \\ & \forall f_1\ f_2.\ \texttt{nexpVal (Mult } f_1\ f_2\texttt{)} = \texttt{nexpVal } f_1 \times \texttt{nexpVal } f_2\end{aligned}$$

1.3 Theorems

[Add_0]

$$\vdash \forall f.\ \texttt{nexpVal (Add (Num 0) } f\texttt{)} = \texttt{nexpVal } f$$

[Add_SYM]

$$\vdash \forall f_1\ f_2.\ \texttt{nexpVal (Add } f_1\ f_2\texttt{)} = \texttt{nexpVal (Add } f_2\ f_1\texttt{)}$$

[Mult_ASSOC]

$$\begin{aligned}\vdash\ & \forall f_1\ f_2\ f_3. \\ & \texttt{nexpVal (Mult } f_1\ \texttt{(Mult } f_2\ f_3\texttt{))} = \\ & \texttt{nexpVal (Mult (Mult } f_1\ f_2\texttt{) } f_3\texttt{)}\end{aligned}$$

[Sub_0]

$$\begin{aligned}\vdash\ & \forall f. \\ & (\texttt{nexpVal (Sub (Num 0) } f\texttt{)} = 0) \wedge \\ & (\texttt{nexpVal (Sub } f\ \texttt{(Num 0))} = \texttt{nexpVal } f\texttt{)}\end{aligned}$$

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