Phase 18 Demo : Partial Function Operators

Example 1 : Partial injection operator

Basic function type with partial injection ($\rightarrowtail\!\!\!\rightarrow$) operator:

$$
\begin{array}{|l}
f : \mathbb{N} \rightarrowtail\!\!\!\rightarrow \mathbb{N} \\
\hline
\operatorname{dom} f = \{1, 2, 3\} \\
f(1) = 10 \\
f(2) = 20 \\
f(3) = 30
\end{array}
$$

Example 2 : Partial function operator

Basic function type with partial function ($\nrightarrow$) operator:

$$
\begin{array}{|l}
g : \mathbb{N} \nrightarrow \mathbb{N} \\
\hline
\operatorname{dom} g = \{1, 2\} \\
g(1) = 100 \\
g(2) = 200
\end{array}
$$

Example 3 : Complex types with partial injection

Using partial injection ($\rightarrowtail\!\!\!\rightarrow$) with custom types:

$$Year == \mathbb{N}$$

$$[EntryAD]$$

$$TableAD == \operatorname{seq} EntryAD$$

$$
\begin{array}{|l}
recordsAD : Year \rightarrowtail\!\!\!\rightarrow TableAD \\
\hline
\operatorname{dom} recordsAD = \{1993, 1994, 1995\}
\end{array}
$$

Example 4 : Mixed function type operators

Different function type operators:

$$
\begin{array}{|l}
total : \mathbb{N} \longrightarrow \mathbb{N} \\
partial : \mathbb{N} \nrightarrow \mathbb{N} \\
injection : \mathbb{N} \rightarrowtail\!\!\!\rightarrow \mathbb{N}
\end{array}
$$