Phase 9 : Generic Parameters

This example demonstrates Z notation definitions with generic (polymorphic) type parameters.

Basic generic abbreviation for a Pair type:

$$Pair[X] == X \times X$$

Generic abbreviation with two type parameters:

$$Product[X, Y] == X \times Y$$

Generic axiomatic definition with constraints:

$$\begin{array}{|l} [T] \\ \hline identity : T \\ \hline identity = identity \end{array}$$

Generic schema for a collection:

$$\begin{array}{|l} Collection[X] \\ \hline items : \operatorname{seq} X \\ count : \mathbb{N} \\ \hline count = \# items \end{array}$$

Generic schema with multiple parameters:

$$\begin{array}{|l} Tuple[X, Y] \\ \hline first : X \\ second : Y \end{array}$$

Non-generic definitions still work as before:

$$Naturals == \mathbb{N}$$

$$\begin{array}{|l} zero : \mathbb{N} \\ \hline zero = 0 \end{array}$$

$$\begin{array}{|l} Counter \\ \hline value : \mathbb{N} \\ \hline value \geq 0 \end{array}$$