

Phase 9 : Generic Parameters

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

$[X, Y, Z]$

Basic generic abbreviation for a Pair type:

$[X] \text{Pair} == X$

Generic abbreviation with two type parameters:

$[X, Y] \text{Product} == X$

Generic axiomatic definition with constraints:

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

Generic schema for a Stack data structure:

$$\begin{array}{|c} \hline \text{Stack}[X] \\ \hline \text{items} : X \\ \hline \text{top} : \text{items} \\ \hline \end{array}$$

Generic schema with multiple parameters:

$$\begin{array}{|c} \hline \text{Relation}[X, Y] \\ \hline \text{domain} : X \\ \hline \text{range} : Y \\ \hline \end{array}$$

Non-generic definitions still work as before:

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

$$\begin{array}{|c} \hline \text{zero} : \mathbb{N} \\ \hline \text{zero} = 0 \\ \hline \end{array}$$
$$\begin{array}{|c} \hline \text{Counter} \\ \hline \text{value} : \mathbb{N} \\ \hline \text{value} \geq 0 \\ \hline \end{array}$$