

## 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:

$$\boxed{\begin{array}{l} [T]\text{identity} : T \\ \text{identity} = \text{identity} \end{array}}$$

Generic schema for a Stack data structure:

$$\boxed{\begin{array}{l} \text{Stack}[X] \\ \text{items} : X \\ \text{top} : X \\ \text{top} \in \text{items} \end{array}}$$

Generic schema with multiple parameters:

$$\boxed{\begin{array}{l} \text{Relation}[X, Y] \\ \text{domain} : X \\ \text{range} : Y \\ \text{domain} \in \text{range} \in Y \end{array}}$$

Non-generic definitions still work as before:

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

$$\boxed{\begin{array}{l} \text{zero} : \mathbb{N} \\ \text{zero} = 0 \end{array}}$$

$$\boxed{\begin{array}{l} \text{Counter} \\ \text{value} : \mathbb{N} \\ \text{value} \geq 0 \end{array}}$$