

Syntax Environment Examples

[*NAME*]

Example 1 : Simple Enumeration

For simple free types with several branches, syntax provides column-aligned layout:

$$OP1 ::= plus \mid minus \mid times \mid divide$$

This generates aligned columns with the `::=` separator clearly visible.

Example 2 : Parameterized Constructors

Constructors can have type parameters using angle brackets:

$$Tree ::= leaf \langle \mathbb{N} \rangle \mid branch \langle Tree \times Tree \rangle$$

Parameters are rendered with special data delimiters in LaTeX.

Example 3 : Multiple Definitions with Grouping

Blank lines between definitions create visual groups using `\also`:

$$\begin{aligned} Status2 &::= active2 \mid inactive2 \mid pending2 \\ Response &::= ok \mid error \langle \mathbb{N} \rangle \mid timeout \end{aligned}$$

The blank line causes the `also` command to be generated, creating vertical separation between the two type definitions.

Example 4 : Complex BNF - Style Definitions

Syntax environment is ideal for BNF-style grammar definitions:

$$\begin{aligned} Expr &::= const \langle \mathbb{N} \rangle \mid var \langle NAME \rangle \mid binop \langle OP1 \times Expr \times Expr \rangle \\ Stmt &::= assign \langle NAME \times Expr \rangle \mid seq \langle Stmt \times Stmt \rangle \mid skip \end{aligned}$$

This creates a professionally formatted grammar specification.

Comparison : Syntax vs Zed Blocks

Standard zed blocks work for simple types:

$$Color1 ::= red1 \mid green1 \mid blue1$$

But syntax environment provides better alignment for complex types:

$$\begin{aligned} Color2 &::= red2 \mid green2 \mid blue2 \\ Shape &::= circle \langle \mathbb{N} \rangle \mid rectangle \langle \mathbb{N} \times \mathbb{N} \rangle \mid polygon \langle seq \mathbb{N} \rangle \end{aligned}$$

The column alignment makes the structure more readable.