

# Syntax of $P^+$

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## 1 Syntax

Programs	$P$	$::=$	$\{d\}$	definition
Definitions	$d$	$::=$	$(\text{val } x \ e)$	bind name to expression
Expressions	$e$	$::=$	$x$	name
			$(\text{case } e \ \{ [p \ e] \})$	case expression
			$K\{e\}$	value constructor application
Boolean expressions	$b$	$::=$	<i>placeholder</i>	any $e$ that evaluates to a boolean
Patterns	$p$	$::=$	$x$	name
			$K$	value constructor
			$(K \ \{p\})$	value constructor application
			$(p \ \text{when } e)$	side condition
			$(\text{oneof } p_1 \ p_2)$	or-pattern
			$(p; \{b   (p \leftarrow e)\})$	pattern guard
Value Constructors	$K$	$::=$	$::$	cons
			$[]$	empty list
			$\#x$	name beginning with $\#$
			$\text{A-Z}x$	name beginning with capital letter
			$[- +](0-9)^+$	signed integer literal

A *name* is any token that is not an integer literal, does not contain whitespace, a bracket, or parenthesis, and is not a value constructor name or a reserved word.

*rab: Would like help cleaning up the format on this, specifically with regards to the regex. The one downside of this nicer package is that descriptions will not wrap, so describing an integer literal in english isn't an option as far as I can tell.*