

SAMPLE PROGRAMMING LANGUAGE DIMENSIONS

	Pascal	C	Java	Logo	Scheme	OCaml	Haskell
Paradigm	Imperative	Imperative	Object-Oriented	Imperative/ Functional	Mostly functional	Mostly functional	Purely functional
Grammar	Context free	Context free	Context free	Context sensitive	Context free	Context free	Mostly context free, but whitespace matters
Functional Values	As arguments	yes	no	no	yes	yes	yes
Block Structured	yes	no ¹	No (but inner classes help) ¹	no	yes	yes	yes
Scoping	Static	Static	Static	Dynamic	Static	Static	Static
Parameter Passing	Call-by-value & Call-by- reference	Call-by-value (but addresses are values)	Call-by-value	Call-by-value	Call-by-value	Call-by-value	Call-by-need
Typing	Strong static (but has holes)	Weak static	Strong static	Strong dynamic	Strong dynamic	Strong static	Strong static
Parametric Polymorphism	no	For datatypes of same size ²	Class-based ^{2,3}	Tagged data	Tagged data	Hindley/Damas/ Milner	Hindley/Damas/ Milner
Properly tail recursive	no	no	no	no	yes	some implementations	no
Dynamic Array Bounds Checking	no	no	yes	N/A	yes	yes	yes
Explicit pointers	yes	yes	no	no	no	no	no
Heap Storage Deallocation	Manual	Manual	Automatic (Garbage collected)	Automatic (Garbage collected)	Automatic (Garbage collected)	Automatic (Garbage collected)	Automatic (Garbage collected)

¹ Nested definitions restricted.

² Type loophole/coercion

³ Java 5 has restricted parametricity