Reference

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1 Symbols

$\lambda\varnothing.\ \varnothing$ For any set A, the unique function from $\varnothing$ to A.

$[\,]$ The empty list.

$+\!\!+$ The append operator on lists, e.g. $[1,2,3]+\!\!+[\,]+\!\!+[4,5] = [1,2,3,4,5]$.

$\mathbb{B}$ The set of booleans, i.e. $\{\mathbb{f},\mathbb{t}\}$.

$\mathbb{L}A$ The set of lists of A.

$\mathbb{N}_n$ The set of natural numbers strictly less than n. (Has cardinality n.)

$\mathbb{P}A$ The power set of A, i.e. the set of all subsets of A.

$\mathbb{R}^{\leq,<,\neq,>,\geq}$ The set of real numbers that is (strictly) less/greater than (or not equal to) 0.

2 Definitions (and which lecture notes has more about them)

Circuit (Categories) A logical acyclic circuit comprised of and/or/nand/nor gates.

Endomorphism (Categories) A morphism from an object to itself, i.e. a morphism whose domain is the same as its codomain.

Group (Categories) A monoid with an inverse to the binary operator.

Monoid (Categories) A set with an associative binary operator with an identity element.

Preorder A binary relation that is reflexive and transitive (but not necessarily antisymmetric).

3 Categories (and which lecture notes has more about them)

Circ (Categories) The category of circuits (as morphisms).

Graph (Categories) The category of (directed) graphs and graph homomorphisms.

L-**Graph** (Categories) The category of (directed) graphs with L-labeled edges.

Grp (Categories) The category of groups and group homomorphisms.

Σ-**Lang** (Categories) The category of languages with alphabet Σ.

Mat (3.3) The category of real-valued matrices (as morphisms).

Mon (Categories) The category of monoids and monoid homomorphisms.

Rel (Categories) The category of relations (as morphisms). (Different from *The Joy of Cats*.)

Rel(2) (3.3) The category of binary relations and relation-preserving functions. (Denoted as **Rel** in *The Joy of Cats*.)

Σ-**Seq** (3.3) The category of deterministic automata with alphabet Σ.