### Why

We name sequences in $\{0,1\}$ to easily discuss codes in this set.[1]

### Definition

A *bit string* (*binary string*) is a finite sequence in the set $\{0,1\}$.

If a bit string has length one, we refer to it as a *bit*. Using this terminology, it is natural to call the sequence terms *bits*. Other terminology for bit strings includes *binary sring*, *bit sequence* and *digital datum*.

If the bit string has length eight, we refer to it as a *byte*. Using this terminology, a *kilobyte* is a length $8 \cdot 2^{10}$ bit string. In other words, a kilobyte is $2^{10} = 1024$ bytes, or roughly one thousand bytes. Likewise a *megabyte* is a length $8 \cdot 2^{20}$ bit string. A megabyte is $2^{20} = 1048576$ bytes, or roughly one million bytes. Similarly a *gigabyte* is $2^{30}$ bytes and a *terabyte* is $2^{40}$ bytes.[2]

### Notation

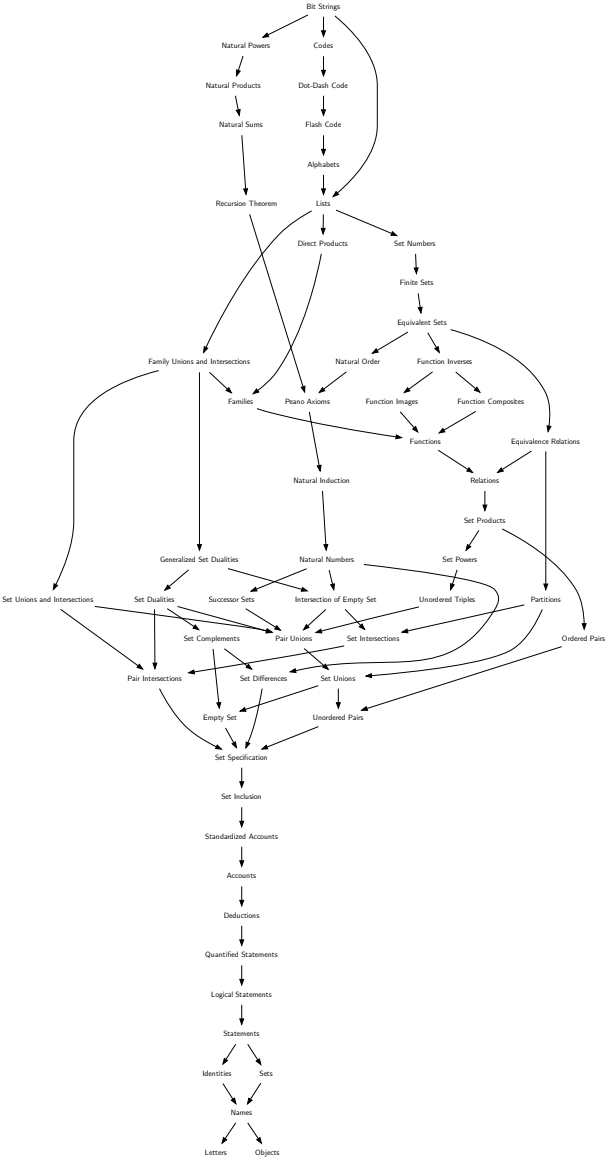
We often denote the set $\{0,1\}$ by $\mathbf{B}$. Using this notation, we denote the length $n$ bit strings by $\mathbf{B}^n$.

[1] Why we want to name these requires more explanation, to be included in future editions.

[2] Warning: some authors use these monikers with powers of ten. For example, a kilobyte is exactly one thousand bytes. etc.

We occasionally use `false` to denote the length-1 bit string $(0,)$ and `true` to denote the length-1 bit string $(1,)$. In this context, `bool` is another name for the set $\{\texttt{true}, \texttt{false}\}$[3] .

[3]Future editions might break this out into its own sheet.


Bit Strings
Natural Powers
Codes
Natural Products
Dot-Dash Code
Natural Sums
Flash Code
Alphabets
Recursion Theorem
Lists
Direct Products
Set Numbers
Finite Sets
Equivalent Sets
Family Unions and Intersections
Natural Order
Function Inverses
Families
Peano Axioms
Function Images
Function Composites
Functions
Equivalence Relations
Natural Induction
Relations
Set Products
Generalized Set Dualities
Natural Numbers
Set Powers
Set Unions and Intersections
Set Dualities
Successor Sets
Intersection of Empty Set
Unordered Triples
Partitions
Set Complements
Pair Unions
Set Intersections
Ordered Pairs
Pair Intersections
Set Differences
Set Unions
Empty Set
Unordered Pairs
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects