Why

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

Definition

A *bit string* (or *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

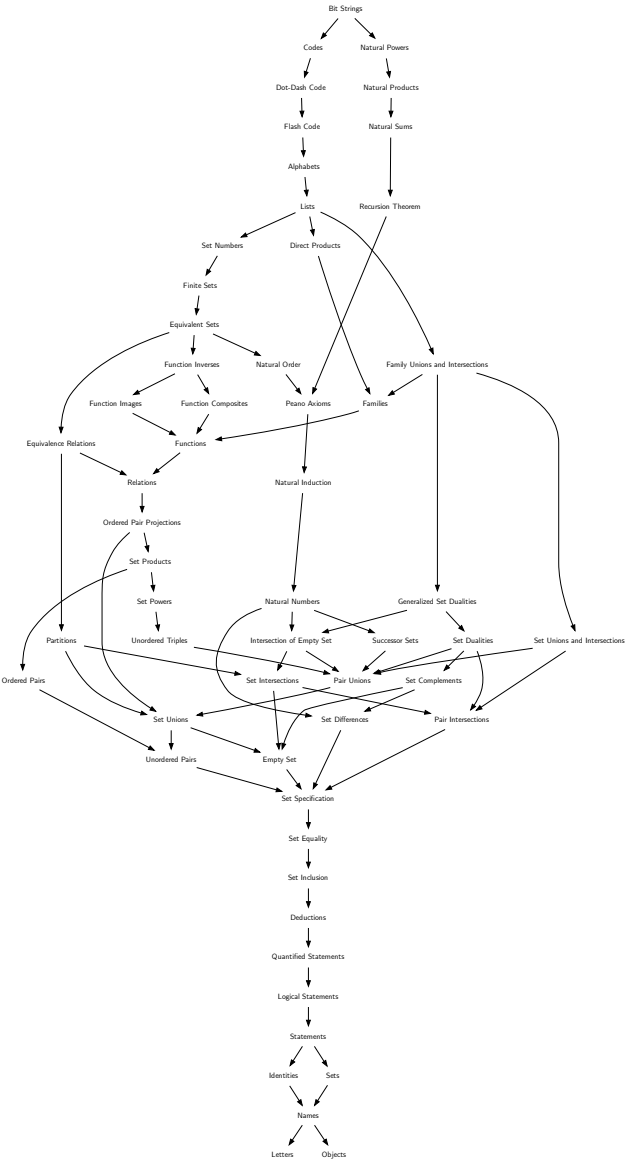
We often denote the set $\{0, 1\}$ by $\mathbf{B}$. Using this notation, we denote the length n bit strings by $\mathbf{B}^n$.

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] .

[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.

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


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