standard enumeration

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Entry type	Definition
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Synonym	lexicographic enumeration
Defines	characteristic function
Defines	characteristic sequence

The *standard enumeration* of $\{0,1\}^*$ is the sequence of strings $s_0 = \lambda$, $s_1 = 0$, $s_2 = 1$, $s_3 = 00$, $s_4 = 01$, $\cdots$ in lexicographic order.

The *characteristic function* of a language A is $\chi_A : \mathbb{N} \to \{0,1\}$ such that

$$\chi_A(n) = \begin{cases} 1, & \text{if } s_n \in A \\ 0, & \text{if } s_n \notin A. \end{cases}$$

The *characteristic sequence* of a language A (also denoted as χ_A) is the concatenation of the values of the characteristic function in the natural order.