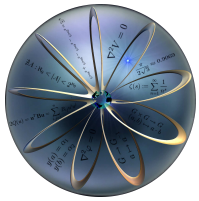

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trie

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A *trie* is a digital tree for storing a set of strings in which there is one node for every prefix of every string in the set. The name comes from the word re*trie*val, and thus is pronounced the same as *tree* (which leads to much confusion when spoken aloud). The word retrieval is stressed, because a trie has a lookup time that is equivalent to the length of the string being looked up.

If a trie is to store some set of strings $S \subseteq \Sigma^*$ (where Σ is an alphabet), then it takes the following form. Each edge leading to non-leaf nodes in the trie is labelled by an element of Σ. Any edge leading to a leaf node is labelled by \$ (some symbol *not* in Σ). For every string $s \in S$, there is a path from the root of the trie to a leaf, the labels of which when concatenated form $s{+\!\!+}\$$ (where $+\!\!+$ is the string concatenation operator). For every path from the root of the trie to a leaf, the labels of the edges concatenated form some string in S.

Example

Suppose we wish to store the set of strings $S := \{alpha, beta, bear, beast, beat\}$. The trie that stores S would be