

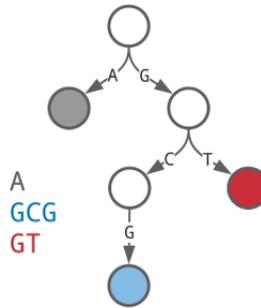
9 Construct a Trie from a Collection of Patterns

Trie Construction Problem

Construct a trie from a set of patterns.

Input: A collection of strings *Patterns*.

Output: $\text{TRIE}(\text{Patterns})$.



Formatting

Input: A space-separated list of strings *Patterns*.

Output: Each edge of $\text{TRIE}(\text{Patterns})$ will be newline-separated and encoded by a triple: the first two members of the triple must be the integers labeling the initial and terminal nodes of the edge, respectively; the third member of the triple must be the symbol labeling the edge.

Constraints

- The number of patterns in the string-set *Patterns* will be between 1 and 10^3 .
- The length of any one pattern in *Patterns* will be between 1 and 10^3 .
- No pattern is a prefix of another pattern.

Test Cases

Case 1

Description: The sample dataset is not actually run on your code.

Input:

T G TC G T

Output:

0 1

0 7 G

1 2 T

2 3

2 6 C

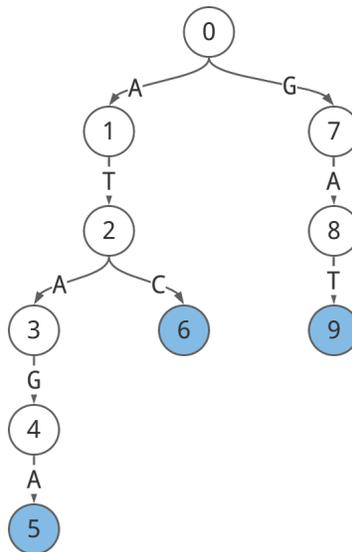
3 4 G

4 5

7 8

8 9 T

Figure:



Shown above is the trie containing the words T GC, TC, and G T. These words are outlined by the paths from the root node (labeled 0) to the leaf nodes (labeled 5, 6, and 9, colored blue).

Case 2

Description: No two patterns share the same prefix.

Input:

TCG TCG CG T

Output:

0 1
0 5 T
0 9 C
1 2 T
2 3 C
3 4 G
5 6 C
6 7 C
7 8
9 10 G
10 11
11 12 T

Case 3

Description: All patterns share a prefix, but have distinct suffixes.

Input:

G GC G G G GT

Output:

0 1 G
1 2
2 3 G
3 4 C
3 5
3 6 T

Case 4

Description: Patterns have common prefixes and suffixes.

Input:

T GC TGGC

Output:

0 1

1 2 T

2 3

3 4 G

4 5 C

2 6 G

6 7 G

7 8 C

Case 5

Description: Patterns comprised of repeats or palindromes.

Input:

T GG

Output:

0 1

1 2 T

2 3

1 4 G

4 5 G

5 6

Case 6

Description: A larger dataset of the same size as that provided by the randomized autograder. Check input/output folders for this dataset.