
Algorithm 1: Indexing barcode diversity by decomposition

Input: vector of strings V ; ▷ trimmed sequences
 $b, k \in \mathbb{N}$; ▷ barcode start and length
 $q \neq 1$
Output: ${}^T D$

1 $m \leftarrow |v|, n \leftarrow |V| - k + 1$;
2 $A \leftarrow O^{m \times n}$; ▷ empty matrix of strings
3 **for** $i \leftarrow 1$ **to** n **do**
4 **for** $j \leftarrow 1$ **to** m **do**
5 $A_{i,j} \leftarrow v_i[j : j + k]$; ▷ end index included
6 $W \leftarrow 0_m$
7 **for** $j \leftarrow 1$ **to** m **do**
8 $W_j \leftarrow (\sum [P(X \in A_j)]^q)^{1/1-q}$
9 ${}^S D \leftarrow W_b$
10 $N \leftarrow \frac{1}{m-k-1} \sum_{j \notin [b, b+k]} W_j$
11 ${}^T D \leftarrow {}^S D / N$
12 **return** ${}^T D$
