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: ${}^{T}D$

$m \leftarrow |v|, n \leftarrow |V| - k + 1$;
$A \leftarrow \mathrm{O}^{m \times n}$; ▷ `empty matrix of strings`
for $i \leftarrow 1$ **to** n **do**
  for $j \leftarrow 1$ **to** m **do**
    $A_{i,j} \leftarrow v_i[j : j + k]$; ▷ `end index included`
$W \leftarrow 0_m$
for $j \leftarrow 1$ **to** m **do**
  $w_j \leftarrow (\sum [P(X \in A_j)]^q)^{1/1-q}$
${}^{S}D \leftarrow w_b$
$N \leftarrow \frac{1}{m-k-1} \sum_{j \notin [b,b+k]} w_j$
${}^{T}D \leftarrow {}^{S}D/N$
return ${}^{T}D$