

5. Project in Text Indexing (WS 2016/17)

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Exercise 1 (*Precompute PSV*)

The previous smaller value (PSV) array for an array A of length n is defined as

$$PSV_A[i] = \max\{\{-1\} \cup \{j \mid 0 \leq j < i \wedge A[j] < A[i]\}\}$$

for all $0 \leq i < n$. Devise a linear time algorithm to compute PSV_A .

Exercise 2 (*Enclose*)

In Lecture 8 we have seen how the *find_close* operation can be solved in constant time with a data structure which just takes $o(n)$ extra space. Adapt the data structure to solve the *enclose* operation.

Exercise 3 (*Reconstruct LZ*)

Given the LZ factorization $(PrevOcc_0, LPS_0), \dots, (PrevOcc_{z-1}, LPS_{z-1})$ of a text \mathcal{T} . Devise a linear time algorithm to reconstruct \mathcal{T} from its LZ factorization.