Exercise 1 (PEX Algorithm).

The script (Chapter 13.4) gives the pseudo-codes of the preprocessing and search phase of the PEX algorithm.

Apply them to:

1. construct a search tree for the pattern BRAUN within edit distance $k = 2$.

2. use the above search tree to match the pattern in the text BLAUKRAUT.

Exercise 2.

Prove Lemma 1 from the script (Chapter 13.1).

Exercise 3.

Consider the alphabet $\Sigma = \{A, C, G, T\}$, a text of length $n = 3 \cdot 10^9$ and a pattern of length $m = 100$, both uniformly generated over Σ.

Given hamming distance $k = 5$, compute the expected number of verifications for:

1. filtration with exact seeds ($s = 6$);

2. filtration with 1-approximate seeds ($s = 3$).