Exercise 1:
Develop an algorithm which obtains a suffix tree for $x$ as input and constructs a position tree for $x$ in linear time.

Exercise 2:
Develop algorithms for the four operations which should be supported by the index of a text string $x$. Show that the suffix tree for a text string $x$ can be prepared in linear time such that the number of occurrences of any string $y \in \Sigma^+$ in $x$ can be determined in $O(|y|)$ time.

Exercise 3:

a) Work out the algorithm for the solution of the longest common substring problem.

b) Generalize the algorithm such that a longest common substring of $k$ strings $x_1, x_2, \ldots, x_k$ can be computed in $O(kn)$ time where $n := |x_1| + |x_2| + \ldots + |x_k|$. 