1. (Gusfield, Ex. 3.19) Show how to modify the wild-card matching method by replacing array $C$ (which is of length $m > n$) by a list or an array of length $n$, while keeping the same asymptotic running time.

2. Consider applying Shift-And to search exact occurrences of the pattern $AATAAT$ on DNA sequences. Present the occurrence masks for the pattern, and simulate the search on the target $AACAATAATAAT$.

3. Explain an extension of the Shift-And method to handle wild-cards efficiently (both in the pattern and in the text). Present the algorithms for preprocessing and searching, and analyse their complexity.

4. Present the suffix tree for the string $S = \text{OMALOMA}$, and explain how it would be used to locate occurrences of the patterns

   (a) “ALA”,
   (b) “ALO”, and
   (c) “OMA”

in string $S$.

5. (Gusfield, Ex. 6.1) Construct an infinite family of strings over a fixed alphabet, where the total length of the edge-labels on their suffix trees grows faster than $\Theta(m)$ (where $m$ is the length of the string). That is, show that linear-time suffix tree algorithms would be impossible if edge-labels were written explicitly on the edges.