

Algorithmen und Datenstrukturen in der Bioinformatik

Erstes Übungsblatt WS 09/10

Abgabe einen Tag vor der Übung 12:00

Name:

Übungsgruppe:

A B C

Matrikelnummer:

Ich kann Aufgabe _____ nicht vorrechnen.

Exercise 1: Algorithm illustration

For the following pattern and text:

$$P = \text{CGACG}$$
$$T = \text{TCGACGACGT}$$

Illustrate how the *Horspool algorithm* and the *Shift-Or algorithm* operate on this data. Give the number of necessary letter comparisons.

Exercise 2: Shift-Or algorithm extension

Extend the Shift-Or algorithm so that any number of '?' wildcards can occur in both text and pattern. A '?' matches any other symbol. Apply the modified algorithms to the following example:

$$P = \text{A?TT}$$
$$T = \text{CGAAGTCAGTTCA??TGA?}$$

Exercise 3: Parameters and running time

Illustrate how the size of the alphabet Σ , the length of the pattern m and the length of the text n influence the running time of the *Shift-And* and *Horspool* algorithm. In which cases does the Horspool algorithm yield better results?
