

Home work for
Fundamental Algorithms
SS 2007
Sheet 13

Exercise 31: (Programming task: to be returned by email until July 13th)

Write a program that, given two files `<textfile>` and `<patternfile>`, computes the valid shifts of the pattern P (given in `<patternfile>`) in the text T (given in `<textfile>`) using the KMP-algorithm.

To complete this task you must send by email to `obelix@upb.de`

- 1) the source code of your program,
- 2) the command to compile your program, and
- 3) the command to start your program, with `<textfile>` as its first argument and `<patternfile>` as the second one.

Input specification:

`<textfile>` and `<patternfile>` both contain a string of ASCII characters followed by a single newline char. For our purposes the length of P will be bounded by, say, 10^6 chars, but no bound is given on the length of T (1GB or more is possible).

The program should be called with the command

`<program> <textfile> <patternfile>`

The output must be as follows: The first line consists of the string "Shifts:". Then every valid shift is given in a single line.

Example:

Patternfile `pattern.txt`

`ababa`

Textfile `text.txt`

`abbabaababababb`

The program may be called with

`kmp text.txt pattern.txt`

Output is the following

Shifts:

6

8

Test instances can be found in `mistel.cs.upb.de:/tmp/E31`.