

# Algorithms and Data Structures 1 — Summer term 2024 — Assignment 7

Aral Cincim, k11720457

*Artificial Intelligence, JKU Linz*

June 25, 2024

## 1. KMP (Pen & Paper)

a)

j	0	1	2	3	4	5	6
P[j]	a	a	b	a	a	b	b
f[j]	0	1	0	1	2	3	0

j = 0 P[0] = 0

f(0) = 0

j = 1 P[0 ... 1] = aa

P[1 ... 1] = a

f(1) = 1

j = 2 P[0 ... 2] = aab

P[1 ... 2] = ab

f(2) = 0

j = 3 P[0 ... 3] = aaba

P[1 ... 3] = aba

f(3) = 1

j = 4 P[0 ... 4] = aabaa

P[1 ... 4] = abaa

f(4) = 2

j = 5 P[0 ... 5] = aabaab

P[1 ... 5] = abaab

f(5) = 3

j = 6 P[0 ... 6] = aabaabb

P[1 ... 6] = abaabb

f(6) = 0

b)

b	a	a	a	b	b	a	a	b	a	a	b	a	a	b	b
a(1)															
	a(2)	a(3)	b(4)												
			a(5)	a(6)											
				a(7)											
					a(8)										
						a(9)	a(10)	b(11)	a(12)	a(13)	b(14)	b(15)			
												a(16)	a(17)	b(18)	b(19)

Total number of comparisons: 19