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YOUVA

String Matching Algorithm

(1) Knuth - Morris Pratt Algo.

Text a b c d a b _ a b c d a b c d a b d e

Pattern a b c d a b d

Step-1 Make Prefix table

q	1	2	3	4	5	6	7
Pattern	a	b	c	d	a	b	d
$\pi(q)$	0	0	0	0	1	2	1

Step-2 String matching

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	a	b	c	d	a	b	_	a	b	c	d	a	b	c	d	a	b	d	e
p	a	b	c	d	a	b	d												

matches

→ 6 char matches, So check 6th index of prefix table i.e. $\begin{bmatrix} 6 \\ b \\ 2 \end{bmatrix}$.

Thus compute 6 - 2 = 4. So shift 4

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	a	b	c	d	a	b	_	a	b	c	d	a	b	c	d	a	b	d	e
p				a	b	c	d	a	b	d									

→ 2 char matches, So, check 2nd index of

prefix table i.e. $\begin{bmatrix} 2 \\ 5 \\ 0 \end{bmatrix}$. Thus compute

2 - 0 = 2. Shift 2.

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	a	b	c	d	a	b	–	a	b	c	d	a	b	c	d	a	b	d	e
p								a	b	c	d	a	b	d					

So, here no character matches, so shift to one.

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	a	b	c	d	a	b	–	a	b	c	d	a	b	c	d	a	b	d	e
p								a	b	c	d	a	b	d					

matches.

→ 6 character matches. Check 6th index of prefix table. It $\begin{bmatrix} 6 \\ b \\ 2 \end{bmatrix}$ so compute 6 - 2 = 4.

Shift to 4,

i	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	a	b	c	d	a	b	–	a	b	c	d	a	b	c	d	a	b	d	e
p												a	b	c	d	a	b	d	

Complete match.