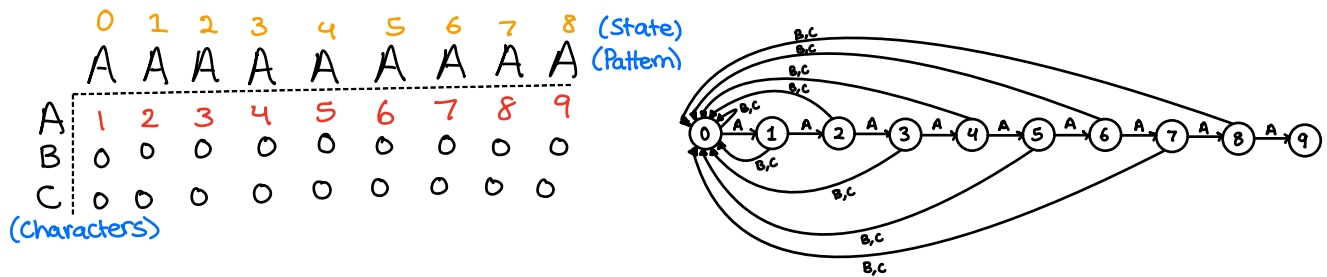


OCS 25 - Data Structures and Algorithms

Programming Assignment - 9

Substring Search

- 1) Give the `dfa[][]` array for the Knuth-Morris-Pratt algorithm for the pattern A A A A A A A A, and draw the DFA, in the style of the figures in the text.



Show the trace of the DFA states when you search the above pattern in the following text:

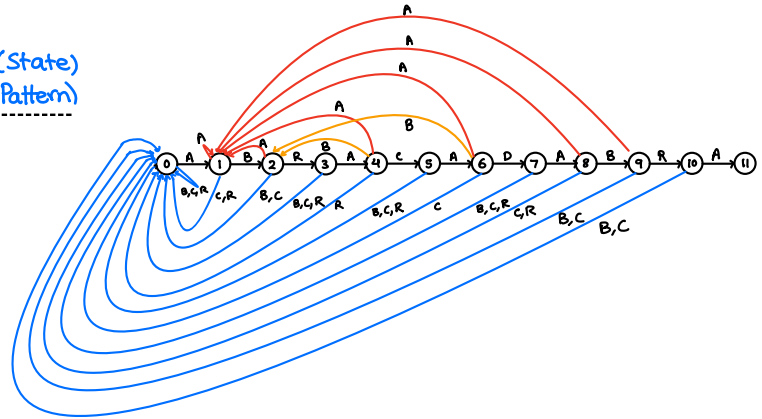
AAAABCAABAAAAAAB

[illegible]

2) Give the `dfa[][]` array for the Knuth-Morris-Pratt algorithm for the pattern A B R A C A D A B R A, and draw the DFA, in the style of the figures in the text.

	0	1	2	3	4	5	6	7	8	9	10	(State)
A	B	R	A	C	A	D	A	B	R	A		(Pattern)
A	1	1	1	4	1	6	1	8	1	1	11	
B	0	2	0	0	2	0	2	0	9	0	0	
C	0	0	0	0	5	0	0	0	0	0	0	
D	0	0	0	0	0	0	7	0	0	0	0	
R	0	0	3	0	0	0	0	0	0	10	0	

(characters)



Show the trace of the DFA states when you search the above pattern in the following text:

ABRACABRABRADABRACADABRA

[illegible]

3) Give the right[] array computed for the pattern A B R A C A D A B R A.

		A	B	R	A	C	A	D	A	B	R	A
		0	1	2	3	4	5	6	7	8	9	10
A	-1	0	0	0	3	3	5	5	7	7	7	10
B	-1	-1	1	1	1	1	1	1	1	8	8	8
C	-1	-1	-1	-1	-1	4	4	4	4	4	4	4
D	-1	-1	-1	-1	-1	-1	-1	6	6	6	6	6
:												
R	-1	-1	-1	2	2	2	2	2	2	2	9	9
:												
Z	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1

	<u>right[c]</u>
A	10
B	8
C	4
D	6
:	:
R	9
:	:
Z	-1

Show the trace of the Boyer-Moore algorithm when you search the above pattern in the following text:

ABRACABRABRADABRACADABRA
 ABRACADABRA
 ABRACADABRA
 ABRACADABRA
 ABRACADABRA