

## HOMEWORK

### TOPIC: PATTERN MATCHING

1. Construct the KMP **DFA** table and the **LPS** array for the following pattern string:

**ABAABCABAABCB**

*Bài giải*

**DFA table:**

j		0	1	2	3	4	5	6	7	8	9	10	11	12	
pat.charAt(j)		A	B	A	A	B	C	A	B	A	A	B	C	B	
dfa[][j]	A	1	1	3	4	1	3	7	1	9	10	1	3	7	
	B	0	2	0	2	5	0	0	8	0	2	11	0	13	
	C	0	0	0	0	0	6	0	0	0	0	0	12	0	
	...	0	0	0	0	0	0	0	0	0	0	0	0	0	
	value of X		0	0	1	1	2	0	1	2	3	4	5	6	0

*Step:*

- $dfa[][j] = dfa[][X]$
- $dfa[pat.charAt(j)][j] = j + 1$
- $X = dfa[pat.charAt(j)][X]$

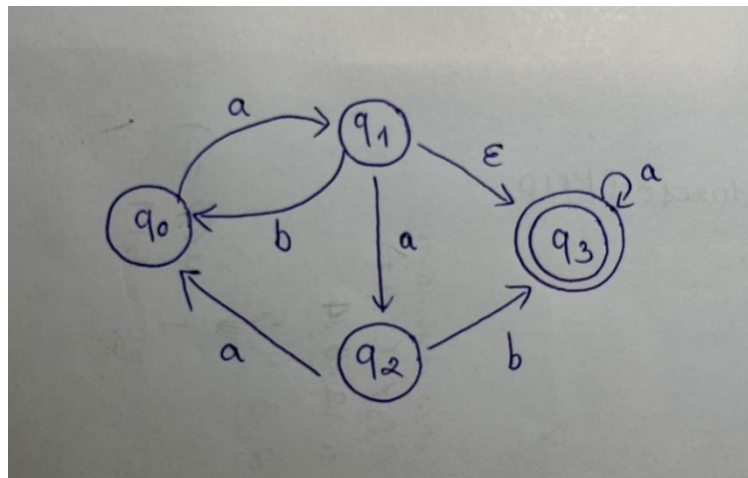
**LPS array:**

j	0	1	2	3	4	5	6	7	8	9	10	11	12
pat.charAt(j)	A	B	A	A	B	C	A	B	A	A	B	C	B
lps[j]	0	0	1	1	2	0	1	2	3	4	5	6	0

2. Compute the **right[]** array for the pattern: **ABRACADABRA**

c	A	B	C	D	...	R	...
right[c]	10	8	4	6	-1	9	-1

3. Convert the following **NFA** graph to the corresponding **RE**.



- Regular Expression corresponds to the NFA graph above is:  **$a((b|aa)a)^*(aba^*|a^*)$**