HOME WORK – PATTERN MATCHING

Group 2:

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

LPS ARRAY:

	A	B	A	A	B	C	A	B	A	A	B	C	B
INDEX	0	1	2	3	4	5	6	7	8	9	10	11	12
LPS	0	0	1	1	2	0	1	2	3	4	5	6	0

DFA TABLE:

STATE	0	1	2	3	4	5	6	7	8	9	10	11	12
A	1	1	3	4	1	3	7	1	9	10	0	3	1
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

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

Right array = [10, 8, 4, 6, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, 9, -1, -1, -1, -1, -1, -1, -1, -1]

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

3. Convert NFA to RE

Q3 = q1.E + q2.b +q3.a (1)

Q2 = q1.a (2)

Q1 = q0.a (3)

Q0 = q1.b +q2.a (4)

(1) => q3 = q0.a.E + q1.a.b + q3a = q0.a.E + q0.a.a.b + q3.a = [q0(a.E+a.a.b)]a* (5)

(2) => q0 = q1.b +q2.a = q0.a.b + q2.a = q0.a.b + q0.a.a.a = q0(a.b+a.a.a) = (a.b+a.a.a)* (6)

(5) & (6) => q3 = = (a.b+a.a.a)*(a.E+a.a.b)(a)*