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AT TUTORIAL NO: 1

Q.1] Give regular expression for:-

(a) set of all strings over {a, b, c} that start and end with different symbols.

Ans: $a(a+b+c)^* b \mid a(a+b+c)^* c \mid b(a+b+c)^* a \mid b(a+b+c)^* c \mid c(a+b+c)^* a \mid c(a+b+c)^* b$

(b) Set of all strings over {0,1} having odd number of 0's and any number of 1's.

Ans: $(1^* (00)^* 01^*)^*$

Q.2] Describe regular language for given Regular Expression:-

(a) $(ab + ba)^*$

Ans: $L_1 = \{ (a,b)^n / n \text{ is natural} \}$

$L_2 = \{ (b,a)^n / n \text{ is natural} \}$

$L = \{ L_1 \cup L_2 \}$

(b) $1(0+1)(0+1)(0+1)(0+1)^* 0$

Ans: $L_1 = \{1\}$

$L_2 = \{0\}$

$L_3 = \{ (0+1)^n / n >= 3 \}$

$L = \{ L_1 . L_2 . L_3 \}$

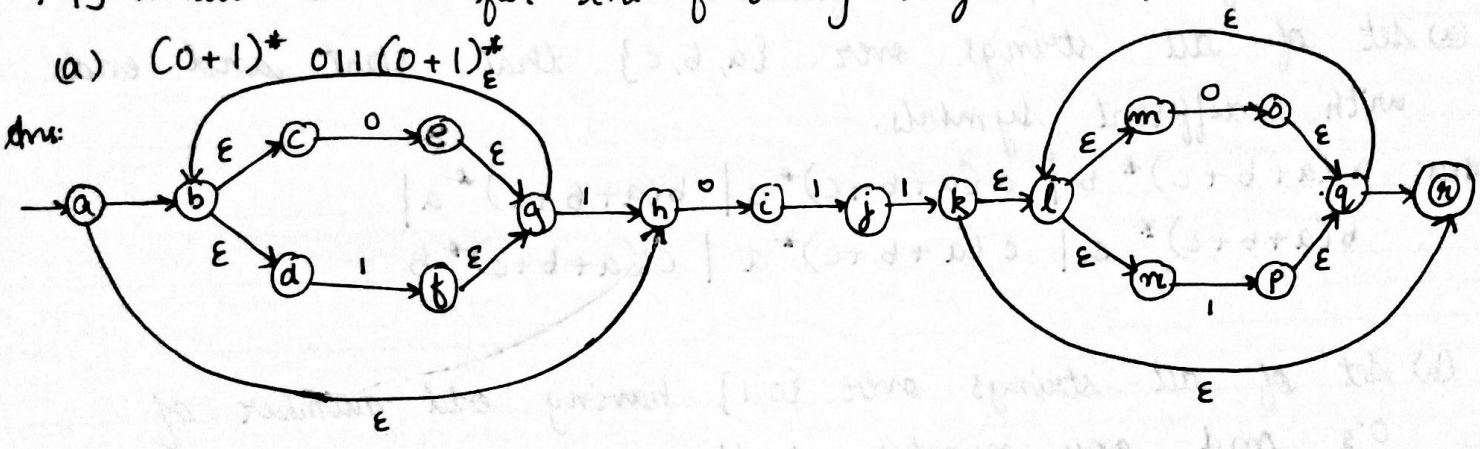
Q.3] If $L(r) = \{aaa, aab, aba, abb, baa, bab, bba, bbb\}$, find the regular expression r which represents $L(r)$.

Ans: R.E = $(a+b)(a+b)(a+b)$ or $(a+b)^3$

Q.4] Draw ϵ-NFA for the following regular expression :-

(a) $(0+1)^* 011 (0+1)^*$

Ans:



(b) $1^* 01 (0+11)^*$

Ans: