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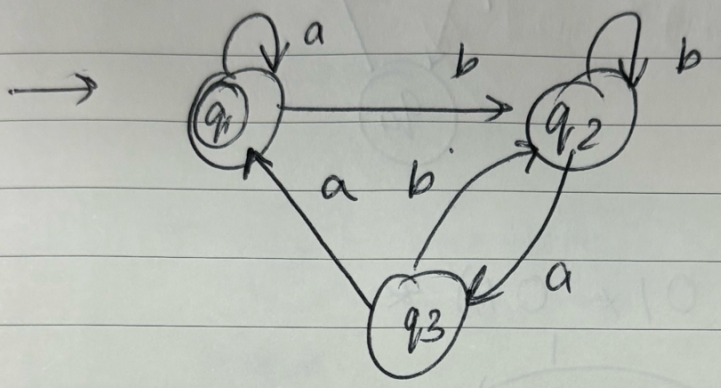
DATE 30 · 09 · 24

Tutorial 6 –

1). Convert FA to RE using Arden's theorem.



$q_1 = \varepsilon + q_1 a + q_3 a$

$q_2 = q_1 b + q_2 b + q_3 b$

$q_3 = q_2 a$

$q_2 = q_1 b + q_2 b + q_2 ab$

$\therefore q_2 = q_1 b + q_2 (b + ab)$

$q_2 = q_1 b (b + ab)^*$ ... $R = Q + RP$

$R = QP^*$

$q_1 = \varepsilon + q_1 a + q_2 aa$

$\therefore q_1 = \varepsilon + q_1 a + q_1 b (b + ab)^* aa$

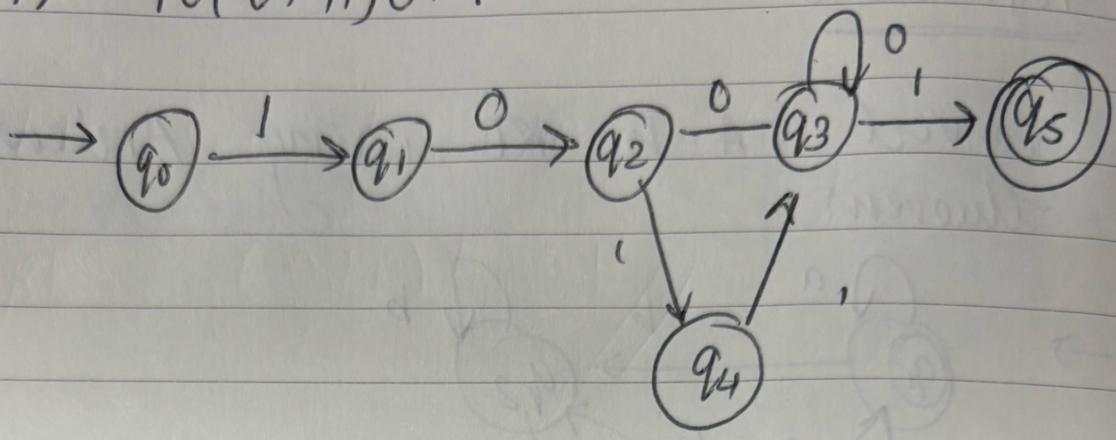
$q_1 = \varepsilon + q_1 (a + b (b + ab)^* aa)$

$q_1 = \varepsilon (a + b (b + ab)^* aa)^*$

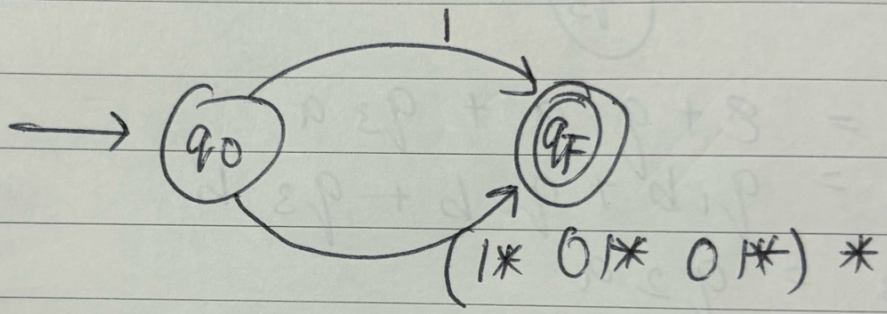
--- $R = QP^*$

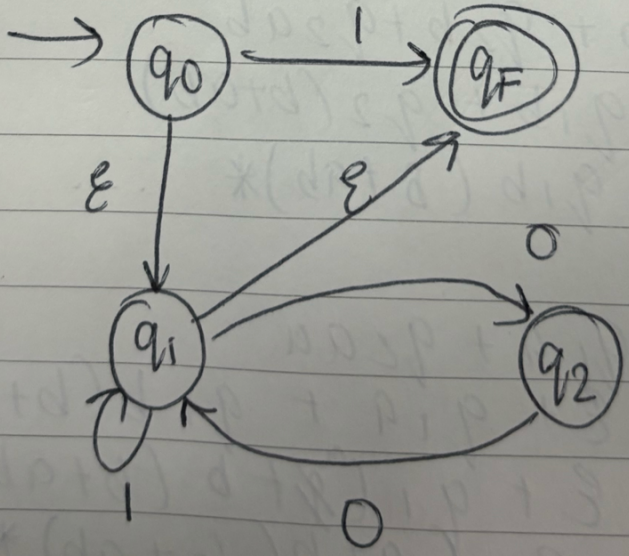
DATE

Q2. (i). $10(0+11)0^*1$



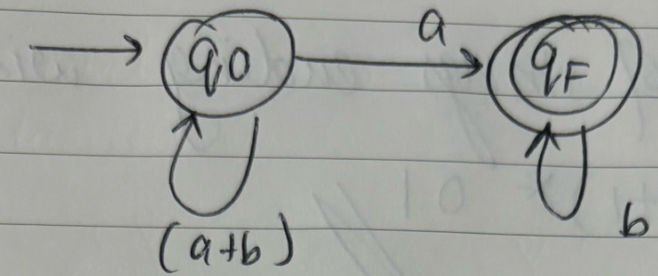
(ii). $1+(1^*01^*01^*)^*$

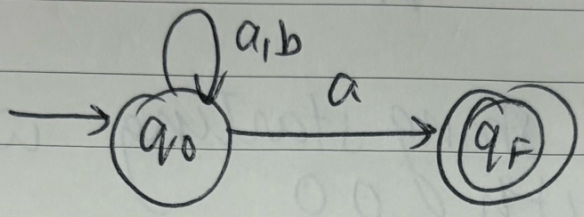




DATE

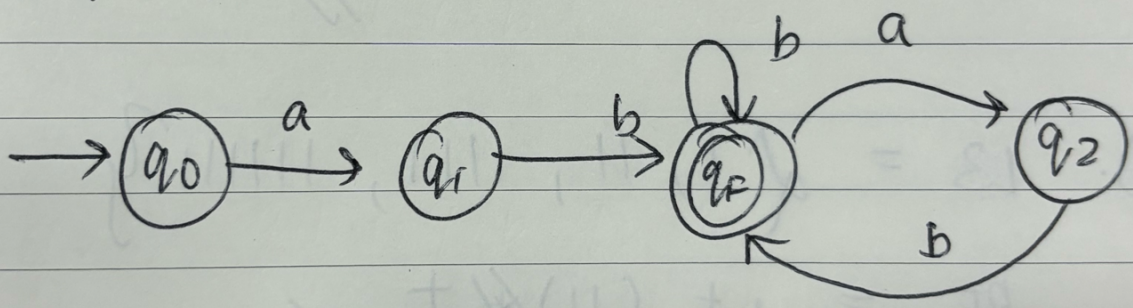
(iii). $(a+b)^* ab^*$



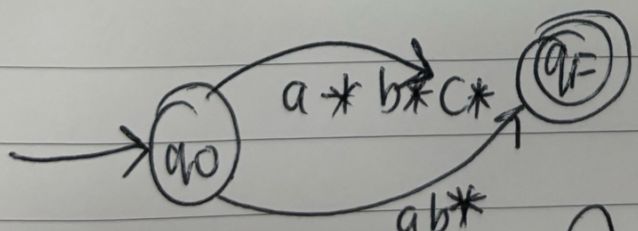


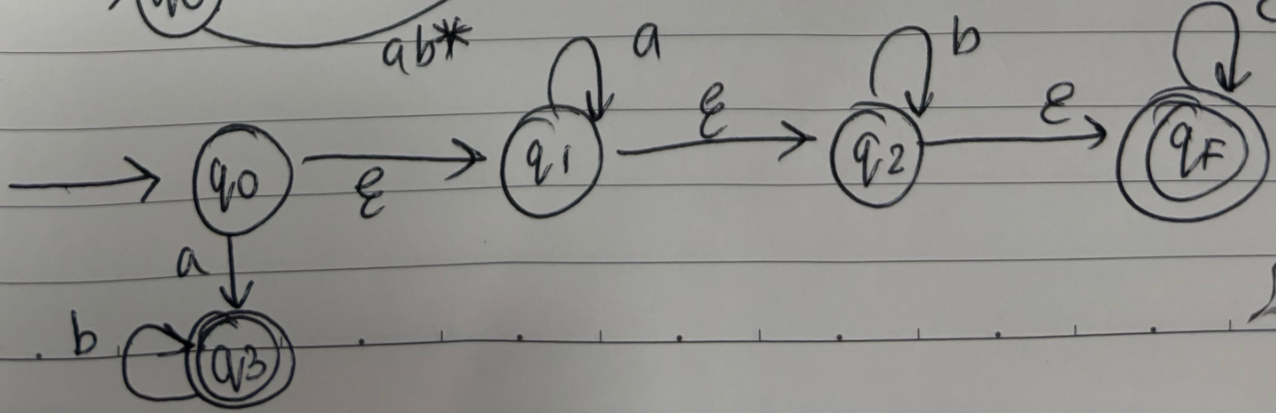
abb^*

(iv). $(ab)^*$



(v). $a^* b^* c^* + ab^*$





DATE

Q.3.

(i). L1 = set of strings ending with 01

RE = (0+1)* 01 //

(ii). L2 = set of string starting with 1 & ending with 00

RE = 1(0+1)* 00 //

(iii). L3 = {1, 11, 1111, 111111}

RE = 1 + (11)* + //