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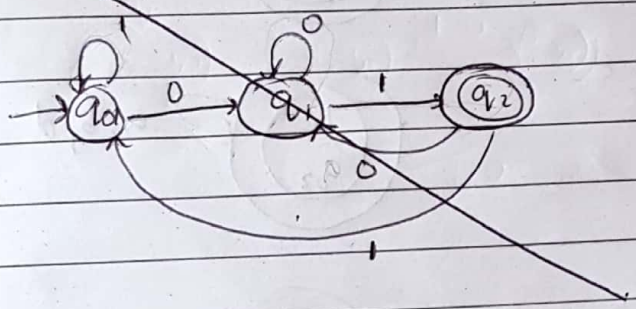
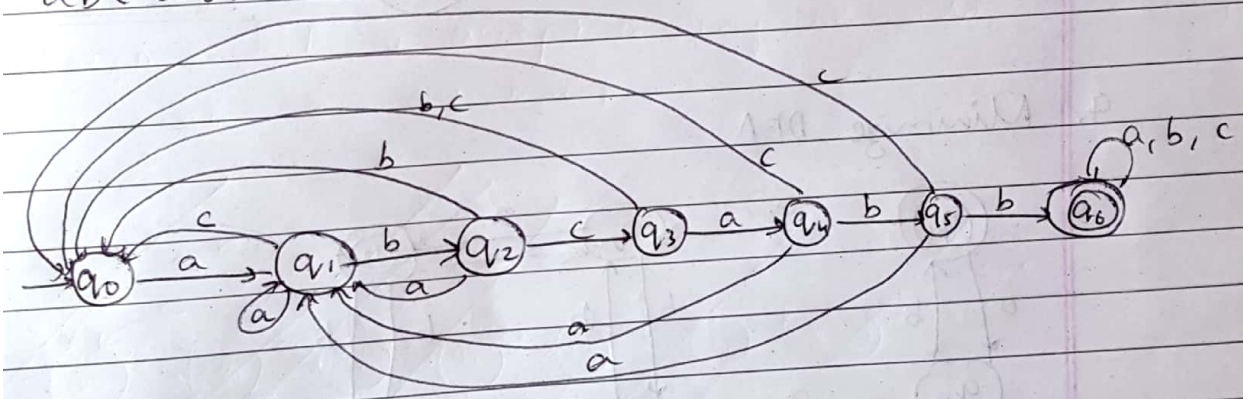
ASSIGNMENT-1

Design a DFSM to accept strings whose last-but-one digit is '0'. $\Sigma = \{0, 1\}$

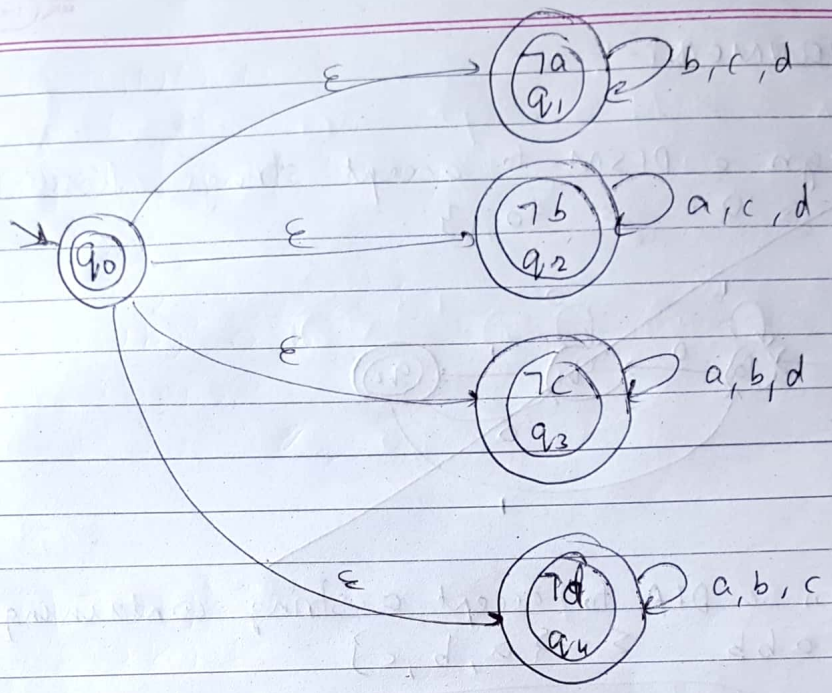


Design a DFA to accept a string containing sub-string abc abb $\Sigma = \{a, b, c\}$

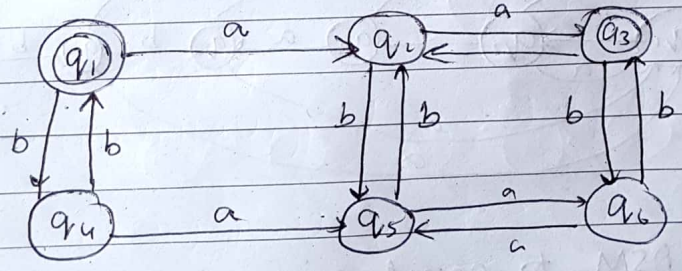


Design a NFDSM to accept missing language $\Sigma = \{a, b, c, d\}$

- M works by guessing which letter is going to be missing one, If any of its guesses is right, it will accept.
- If all of them are wrong, then all paths will fail and M will reject.



4. Minimize DFA



1. compute eps(q) for each state q in k-m

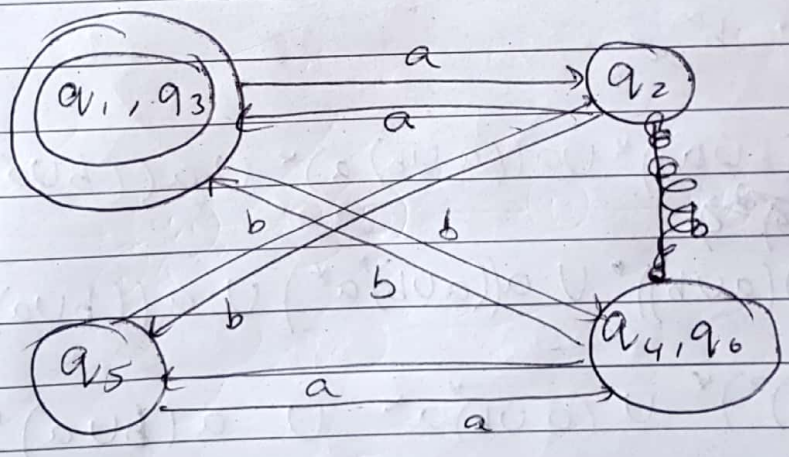
$[q_1, q_3]$ $[q_2, q_4, q_5, q_6]$

$[1, 3]$ $[2, 4, 5, 6]$

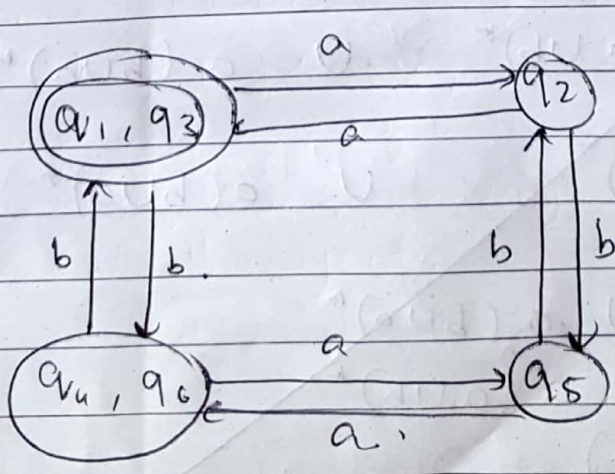
(1, a) [2, 4, 5, 6]	(2, a) [1, 3]
(1, b) [2, 4, 5, 6]	(2, b) [2, 4, 5, 6]
(3, a) [2, 4, 5, 6]	(4, a) [2, 4, 5, 6]
(3, b) [2, 4, 5, 6]	(4, b) [1, 3]
	(5, a) [2, 4, 5, 6]
	(5, b) [2, 4, 5, 6]
	(6, a) [2, 4, 5, 6]
	(6, b) [1, 3]

[1, 3] [2] [4, 6] [5]

$[q_1, q_3]$ $[q_2]$ $[q_4, q_6]$ $[q_5]$



Ans



ASSIGNMENT-2

Simplify the following

$(a \cup b)^* (a \cup \varepsilon) b^*$

$= (a \cup b)^* a b^*$; $(a \cup b)^* b^* = (a \cup b)^*$

$= (a \cup b)^* a$

$= a^* (a \cup b)^* a^*$

$(\phi^* \cup b) b^*$; $\phi^* = \varepsilon$

$= (\varepsilon \cup b) b^*$

$= b b^*$

$= b^*$

$a((a \cup b)(b \cup a))^* \cup a((a \cup b)a)^* \cup a((b \cup a)b)^*$

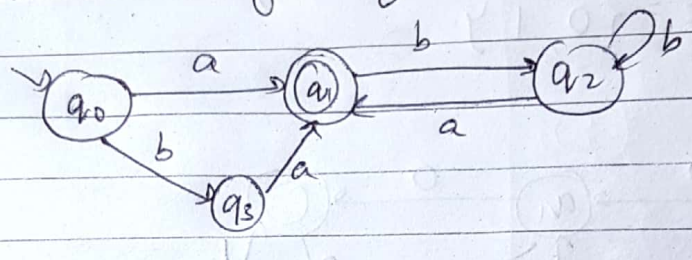
$= a((a \cup b)(a \cup b))^* \cup a(a \cup b)^* \cup a(b \cup a)^*$

$= a(a \cup b)^* \cup (a \cup b)^* \cup a(a \cup b)^*$

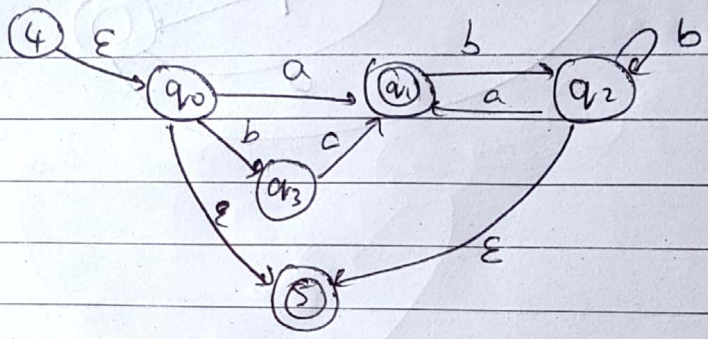
$= (a \cup b)^* \cup (a \cup b)^* \cup (a \cup b)^*$

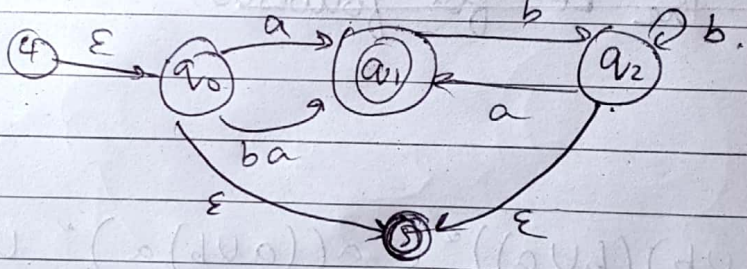
$= (a \cup b)^*$

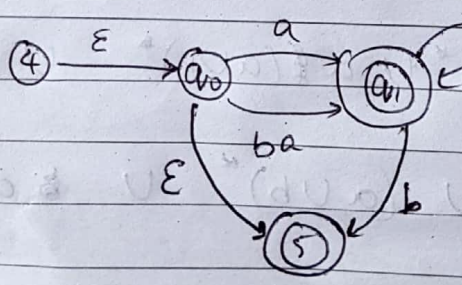
Give the RE for following

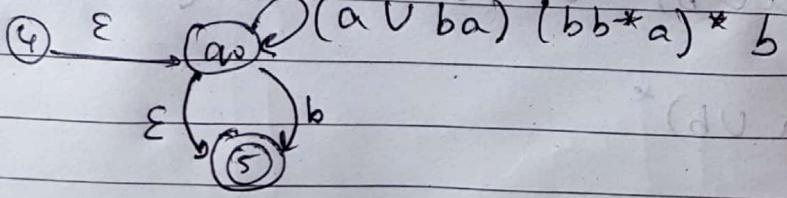


Step 1









④ $(a \cup ba)(bb^*a)^* b(b \cup \varepsilon)$ ⑤