Tutorial-4 AFL

U20CS110
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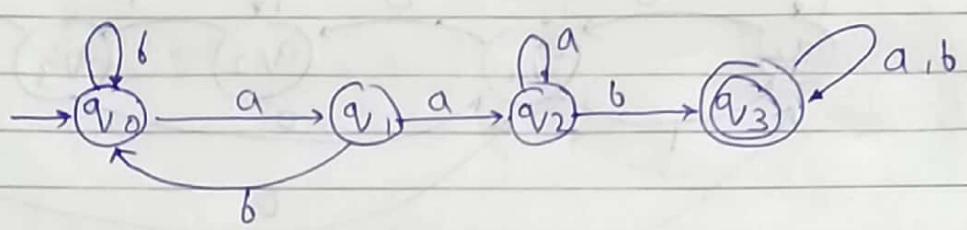
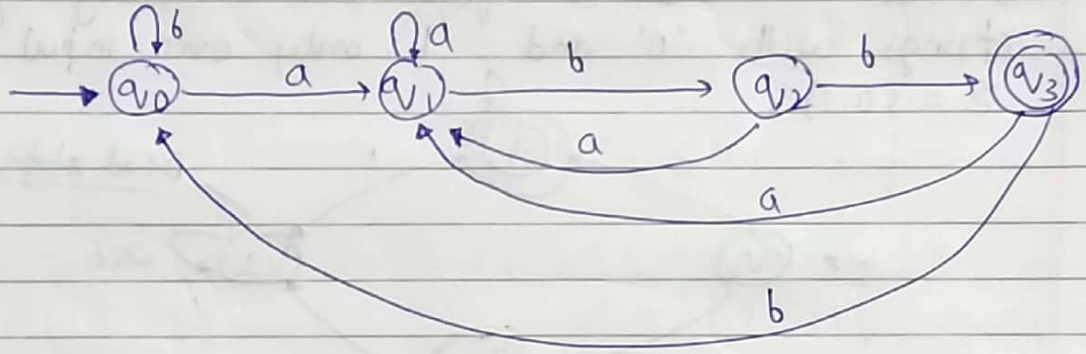
Ques1- Construct a DFA for $\Sigma = \{a, b\}$ that accepts
a) all strings with aab as a substring
b) all strings ending with abb

(a) aab as substring



(b) abb as a string ending



Ques-2 Design a DFA on alphabets $\Sigma = \{0, 1\}$ that accepts
a) all strings not ending with 010
b) All strings with exactly 2 1's
c) All strings with at least two 0's.

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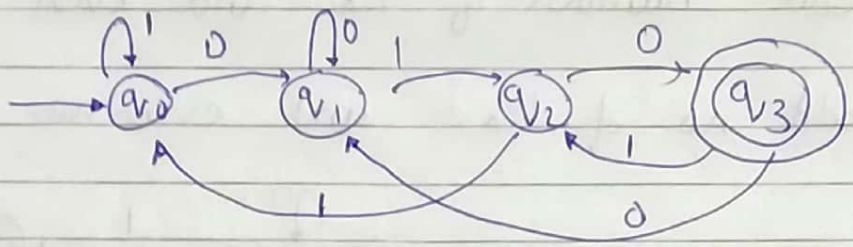
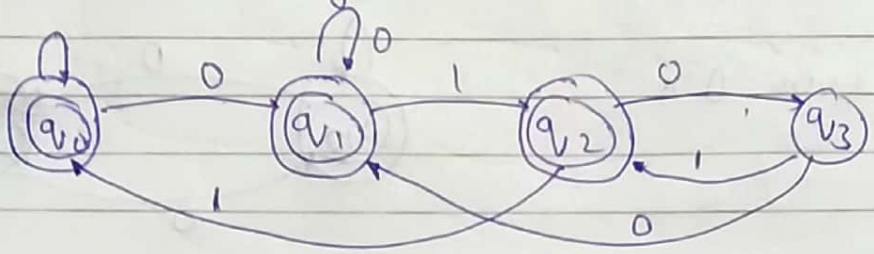
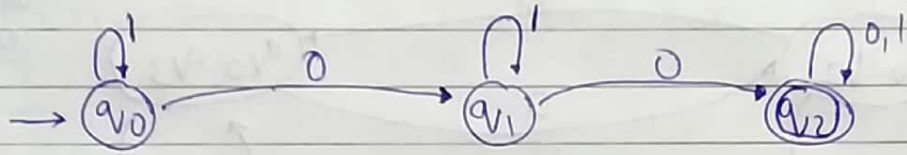
(a) – first



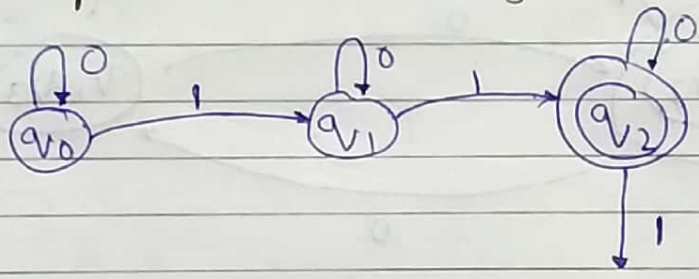
→ Now not ending with 0 1 0



(b) All strings with at least 2 0's



(b) All strings with exactly 2 1's

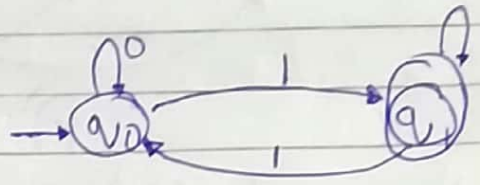


q_3 dead state

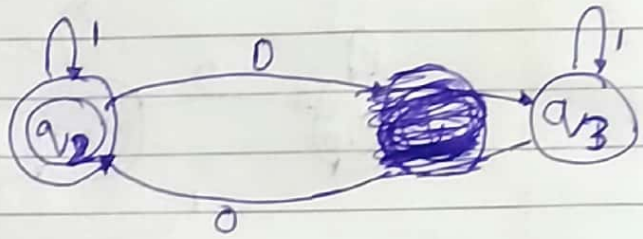
(3)- Construct a DFA for $\Sigma = \{0,1\}$ that have an odd number of 1's and even number of 0's

Sol- odd no of 1's and even no. of 0's

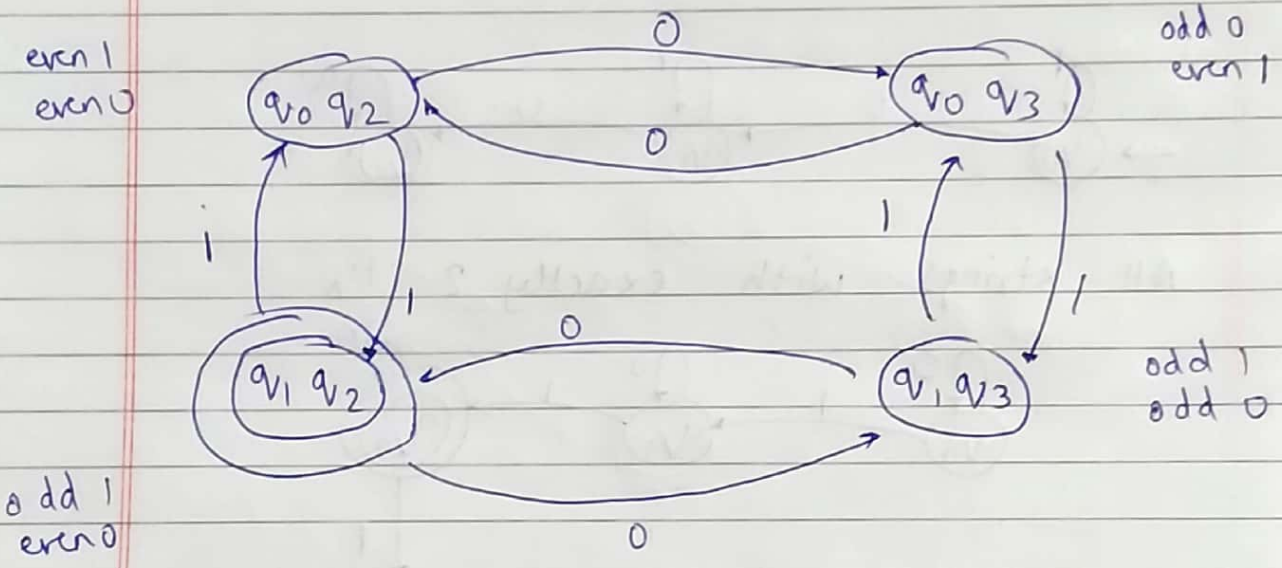
for odd 1's



for even 0's

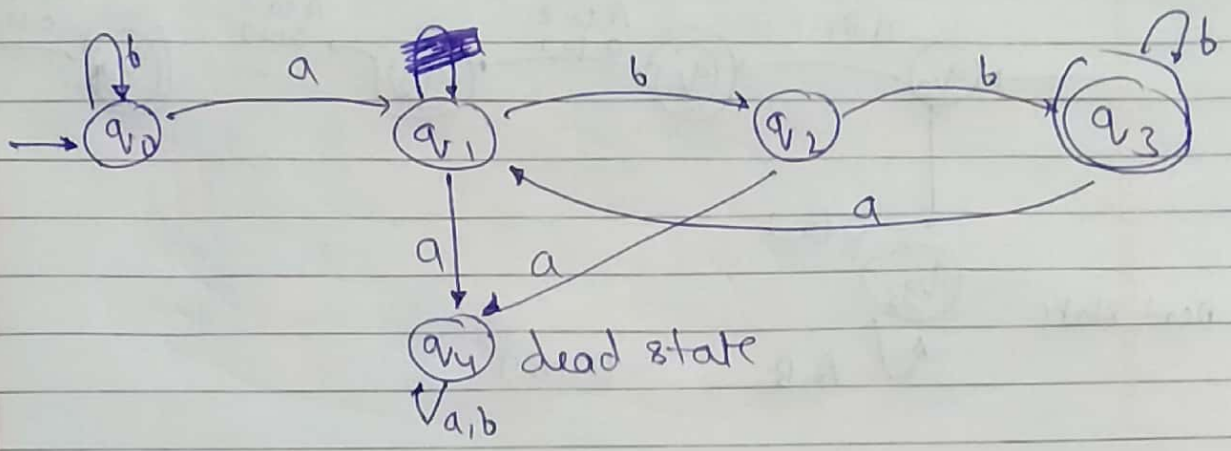


Now Cartesian product.



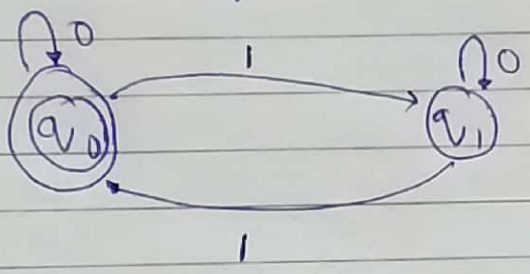
④ Construct a DFA which accepts all strings over $\Sigma = \{a, b\}$ in which every 'a' should be followed by 'bb'.

Sol:-



⑤ Construct a DFA which accepts all strings over $\Sigma = \{0, 1\}$, when parity flags is set.

parity flag is set when result contains even no's of 1's.



⑥ $\Sigma = \{A, B, \ldots, Z, 0, 1 \ldots 9\}$, Construct a DFA for language L, where L =
$L = \{w \in \Sigma^* \mid w \text{ is FORTAN identifier}\}$

* For fortran identifies, start with letter and at most 31 characters

→ at most 31 + start with letter