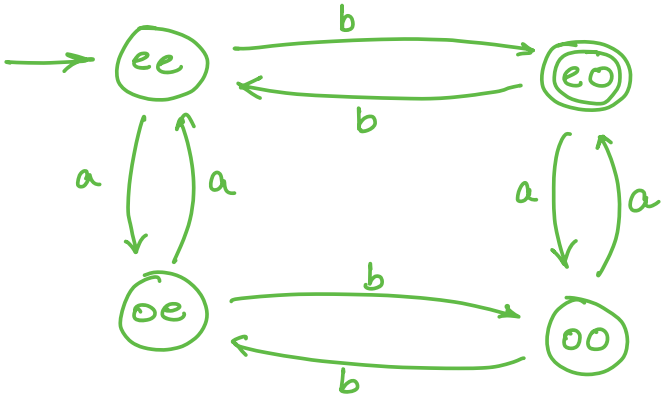
Q: $n_a(w) \cong 0 \bmod 2$

and

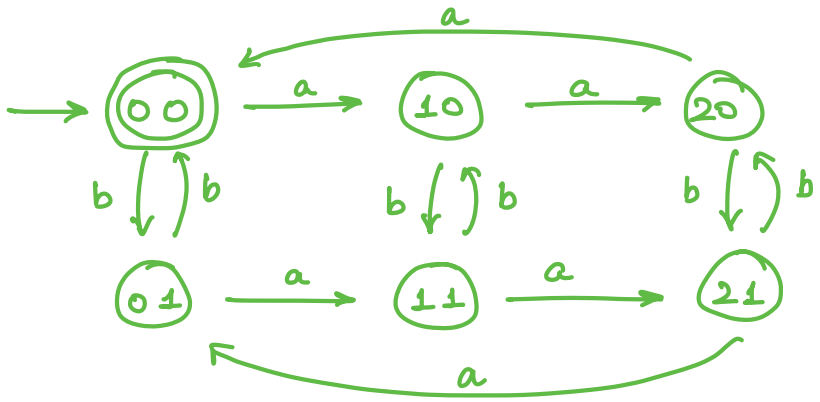
$n_b(w) \cong 1 \bmod 2$



Q: DFA $\Sigma = \{a, b\}$

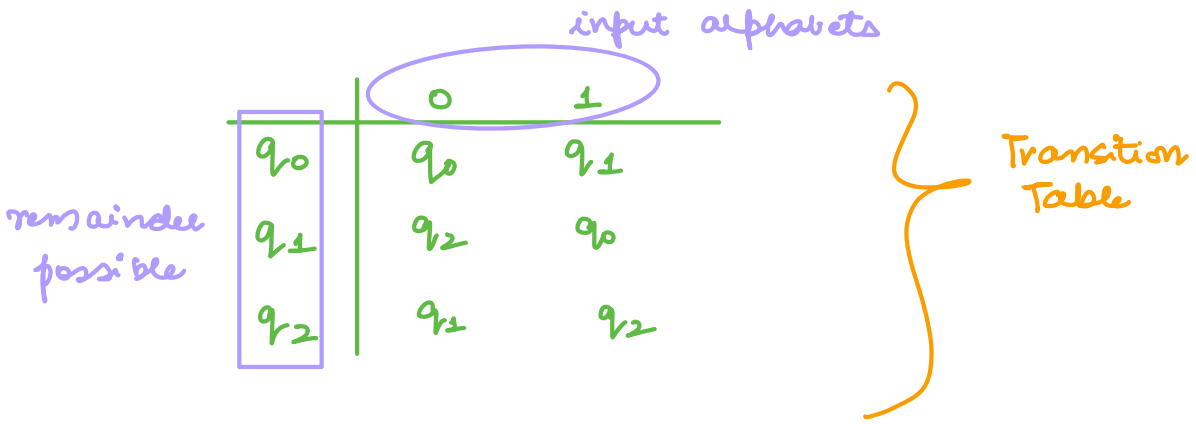
a's divisible by 3 → $n_a(w) \% 3 = 0$

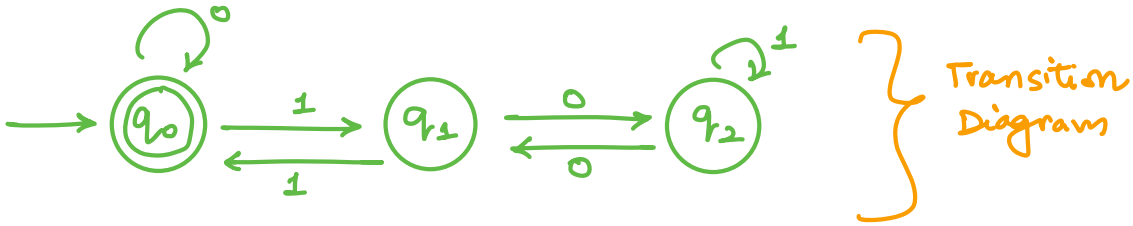
b's divisible by 2 → $n_b(w) \% 2 = 0$



Q: DFA for Strings of 0's and 1's where all binary strings are divisible by 3.

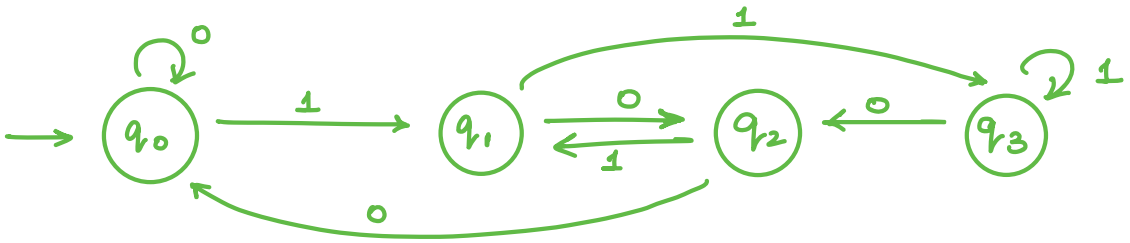
dividing by 3 → rems 0, 1, 2 } one state corresponding to each → q_0, q_1, q_2





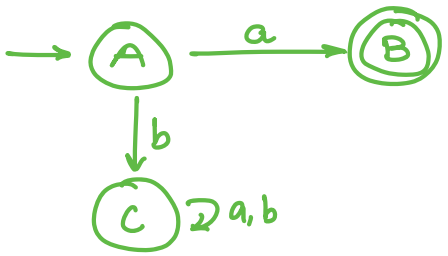
Q: DFA for strings of 0's and 1's where all binary strings are divisible by 4.

	0	1
q_0	q_0	q_1
q_1	q_2	q_3
q_2	q_0	q_1
q_3	q_2	q_3



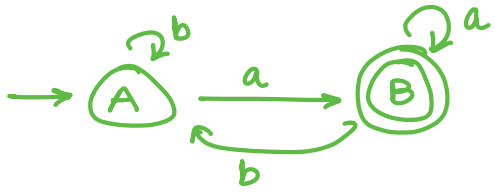
Type 5

Q: $\Sigma = \{a, b\}$
Strings starting with 'a'.

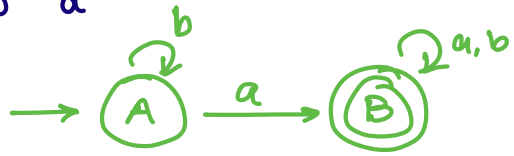


Q: $\Sigma = \{a, b\}$

Ending with 'a'

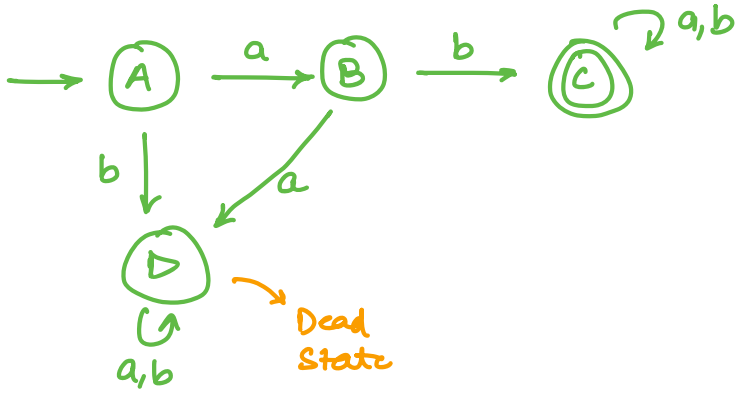


Q: contains 'a'

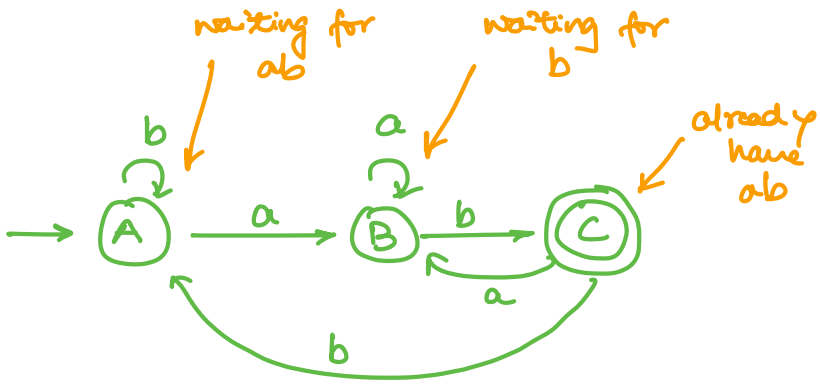


Q: $\Sigma = \{a, b\}$

DFA for strings starting with 'ab'



Q: Ending with 'ab'



Q: Contains 'ab'