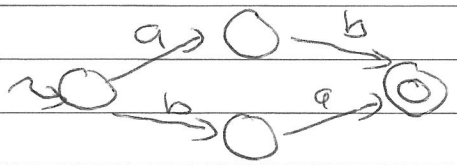
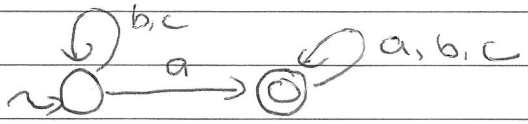
$\Sigma = \{a, b, c\}$

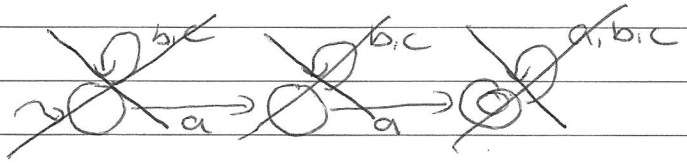
Ex 1: Strings that contain exactly 1a, 1b and no c's



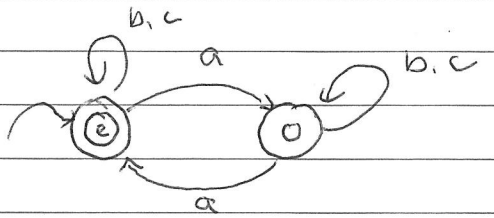
Ex 2: Strings that contain at least 1a.



Ex 3: Strings that contain an even number of a's.



incorrect

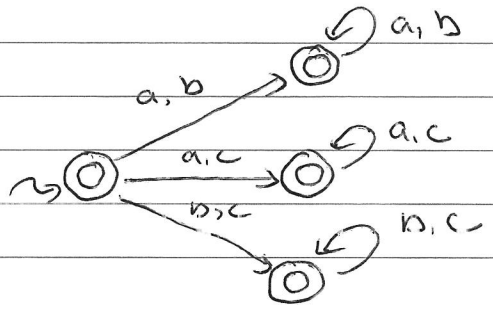


correct.

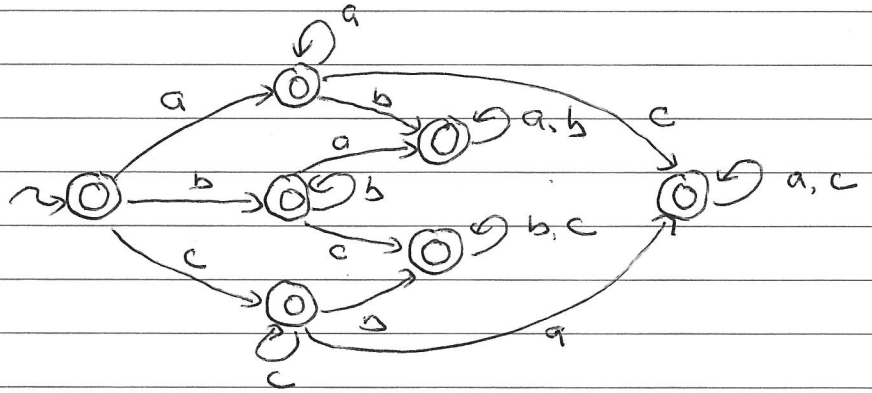
$\Sigma = \{a, b, c\}$

Strings contain at most two different letters.

NFA:



DFA:



$\Sigma = \{a, b, c, r\}$ $\mathcal{L}_1 = \{car, cab, ca-b\}$

$ca(b \mid r \mid rb)$

$\Sigma = \{a\}$ $\mathcal{L}_2 = \{w : w \text{ contains an even \# of a's}\}$

$(aa)^*$

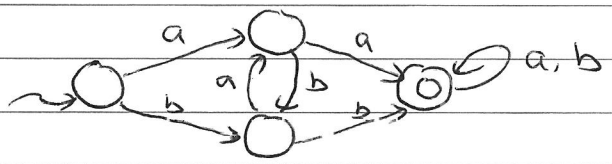
$\Sigma = \{a, b\}$ $\mathcal{L}_3 = \{w : w \text{ contains an even \# of a's}\}$

$b^*(ab^*ab^*)^*$

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

$L_1 = \{w : w \text{ contains either } aa \text{ or } bb\}$

$(a|b)^*(aa|bb)(a|b)^*$



$L_2 = \{w : w \text{ contains no occurrence of } aa \text{ or } bb\}$

$(b|\varepsilon)(ab)^*(a|\varepsilon)$