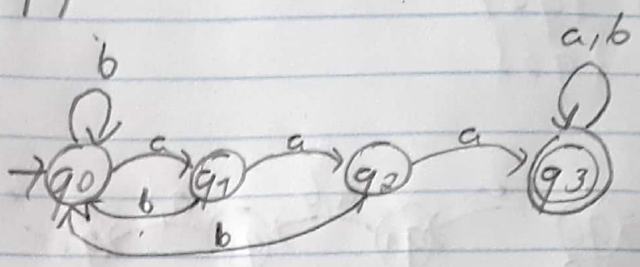
Lista 2

1) Dentre as aplicações para as quais linguagens regulares são importantes, podemos citar a fase de análise léxica dentro do processo de compilação.

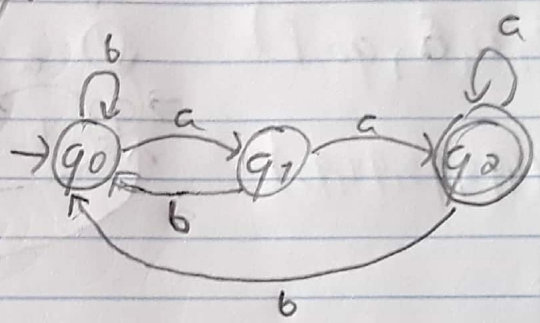
2)a) $M = (\Sigma, Q, \delta, q_0, F)$

$\Sigma = \{a, b\}$
$Q = \{q_0, q_1, q_2, q_3\}$
$q_0 = \{q_0\}$
$F = \{q_3\}$



b) $M = (\Sigma, Q, \delta, q_0, F)$

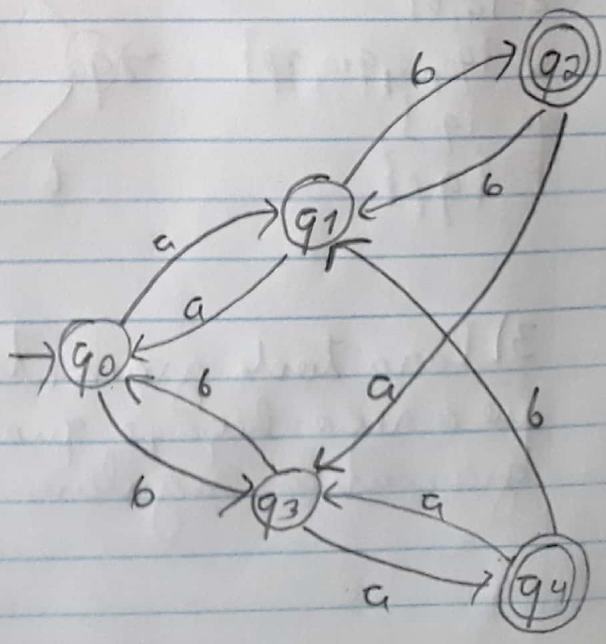
$\Sigma = \{a, b\}$
$Q = \{q_0, q_1, q_2\}$
$q_0 = \{q_0\}$
$F = \{q_2\}$



c) $M = (\Sigma, Q, \delta, q_0, F)$

$\Sigma = \{a, b\}$
$Q = \{q_0, q_1, q_2, q_3, q_4\}$
$q_0 = \{q_0\}$
$F = \{q_2, q_4\}$

Obs. q_1: a ímpares, b pares
q_3: b ímpares, a pares



d) Para esse só consegui pensar em um AFN, e o AFD equivalente ficou com muitos estados e transições

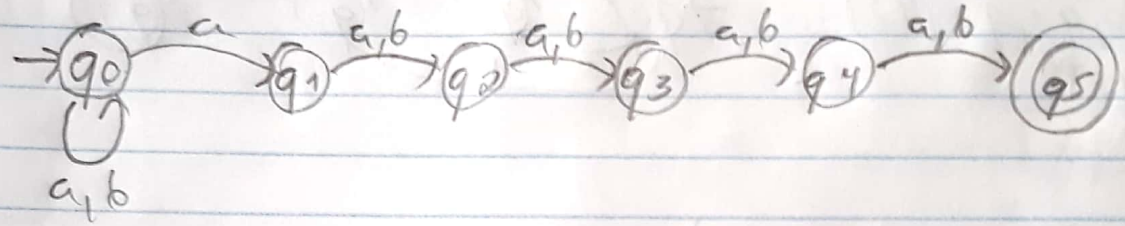
$M = (\Sigma, Q, \delta, q_0, F)$

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

$Q = \{q_0, q_1, q_2, q_3, q_4, q_5\}$

$q_0 = \{q_0\}$

$F = \{q_5\}$



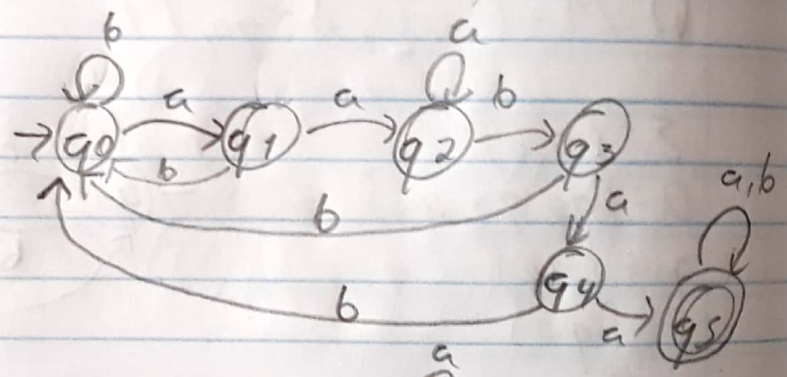
e) $M = (\Sigma, Q, \delta, q_0, F)$

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

$Q = \{q_0, q_1, q_2, q_3, q_4, q_5\}$

$q_0 = \{q_0\}$

$F = \{q_5\}$



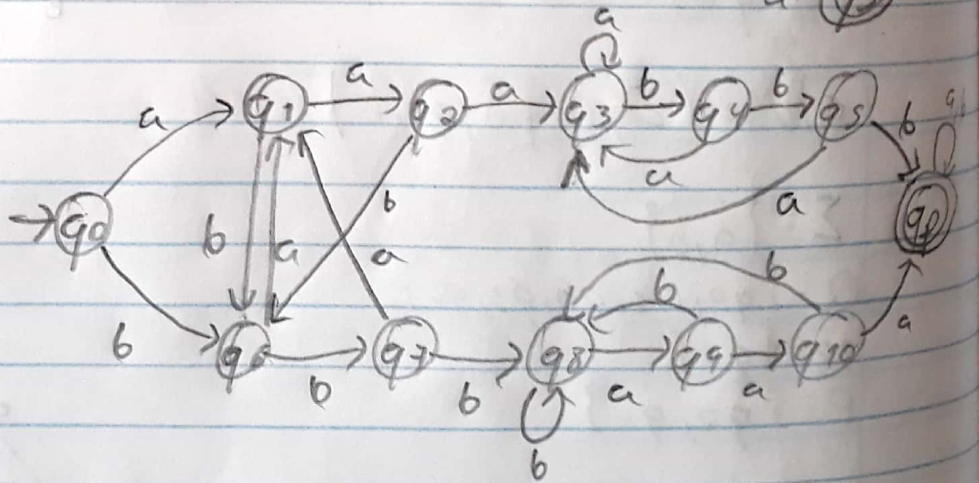
p) $M = (\Sigma, Q, \delta, q_0, F)$

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

$Q = \{q_0, \ldots, q_{10}, q_p\}$

$q_0 = \{q_0\}$

$F = \{q_p\}$



3) Para toda gramática regular existe um AFD que o reconheça, e qualquer AFD reconhece apenas gramáticas regulares