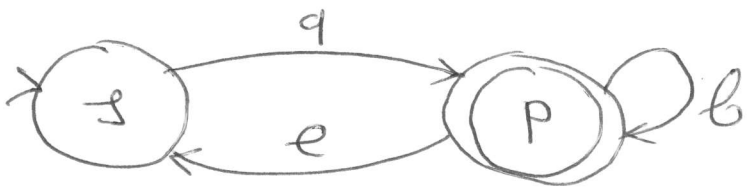
Problem class 2, 2019

1) NFA ⟶ DFA

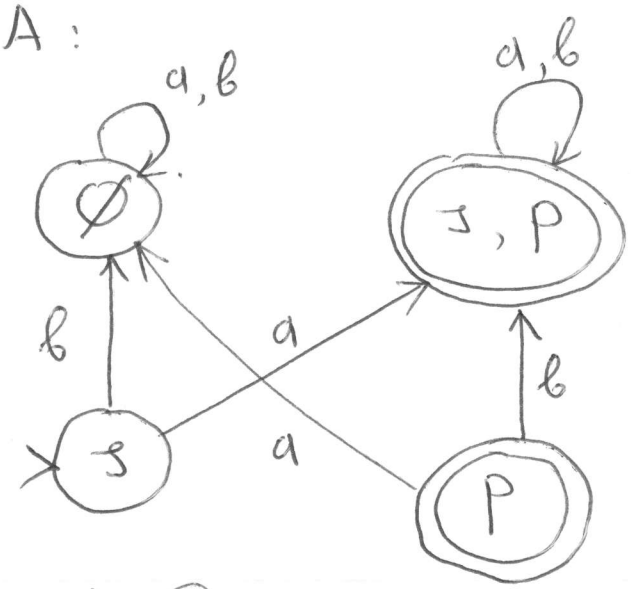
NFA:

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



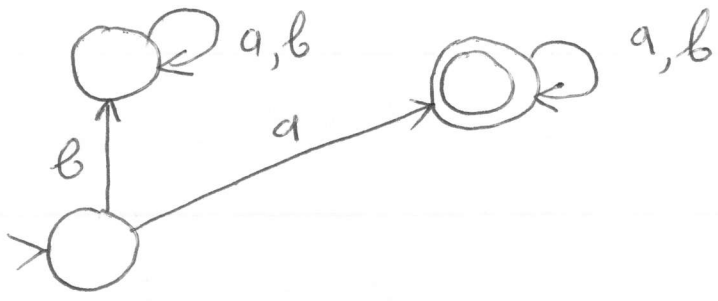
Language of all words of the kind aw where w is any word in Σ^*.

DFA:



$E(s) = \{s\}$

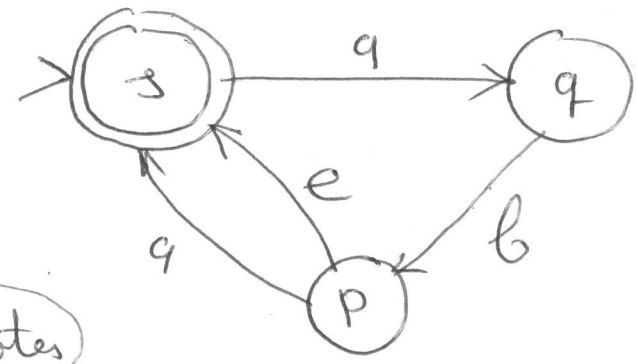
state (p) is redundant:



2) Language from lectures:

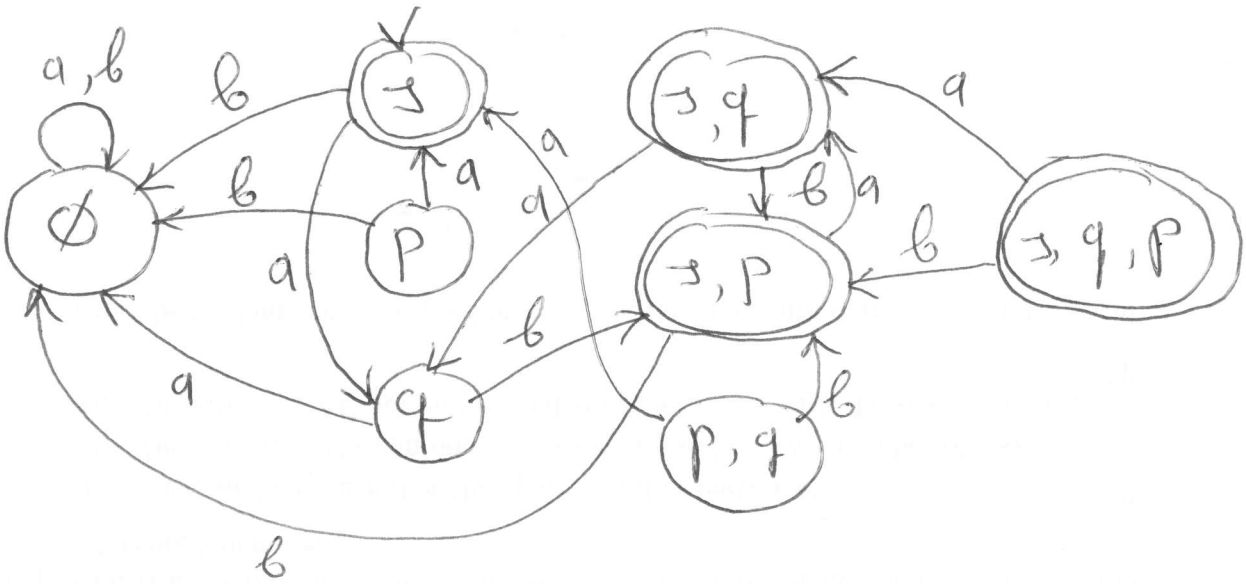
$\{ w \in \{a, b\}^* \mid w = w_1 \cdots w_n$ for some n, where $w_i \in \{ ab, aba \}$

NFA:

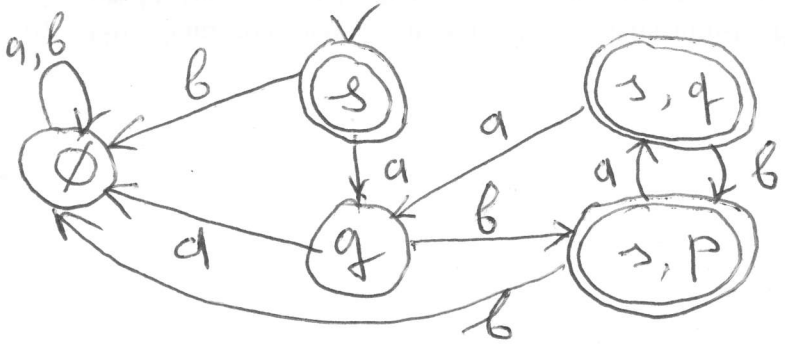


$2^3 = 8$ states

DFA:



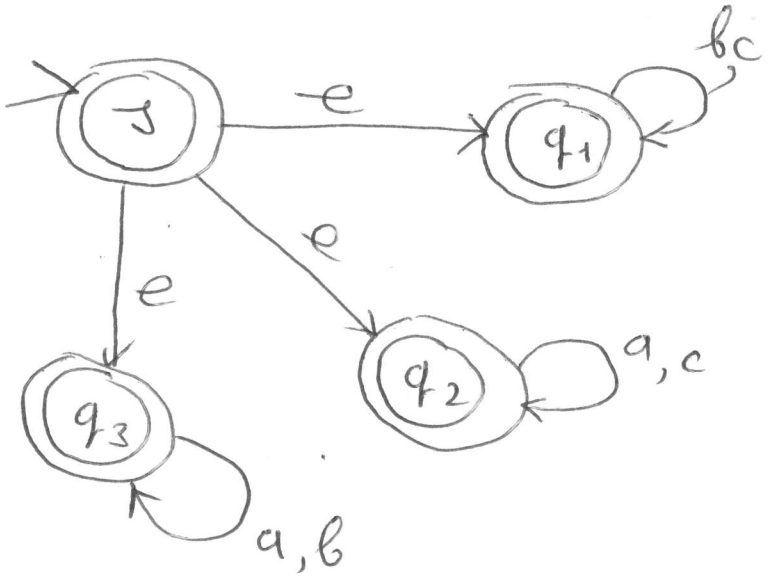
(p), (p,q), (s,q,p) are redundant:



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

$L = \{ w \in \Sigma^* \mid$ there is a letter in Σ not in $w \}$

NFA:



DFA: