

1. Consider the three languages

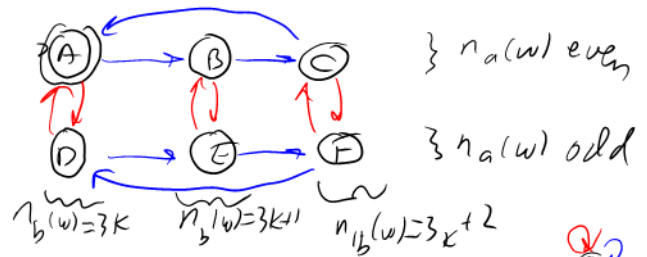
$$L_1 = \{w \in \{a, b\}^* \mid w = aaabbbw' \text{ or } w = aaaaaaw' \text{ or } w = aabbaaw'\}$$

$$L_2 = \{w \in \{a, b\}^* \mid n_a(w) = 2j; n_b(w) = 3k; j \geq 0; k \geq 0\}$$

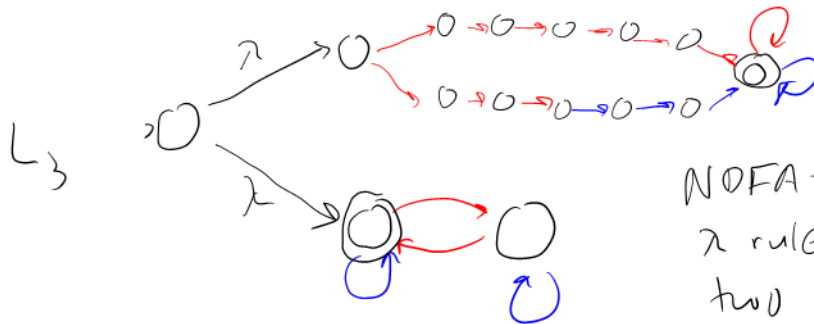
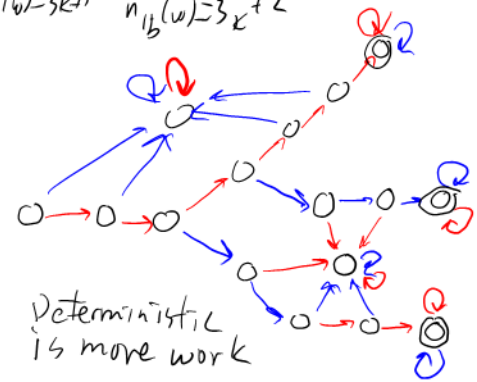
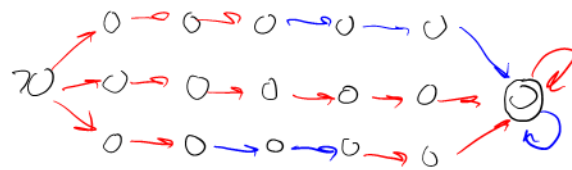
$$L_3 = \{w \in \{a, b\}^* \mid w = aaaaaaw' \text{ or } w = aaabbbw' \text{ or } n_a(w) = 2j; j \geq 0; \}$$

Design one automaton for each Language. (Just draw in the state diagram.) At least one Machine must be deterministic. At most one machine can have λ -rules.

L_2 will be deterministic!



L_1 NFA



NFA- λ
 λ rules help separate
two different designs