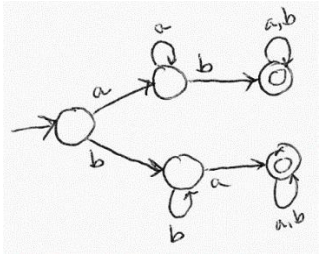
Theory of Computation, CSCI 438 spring 2022
Properties of regular languages, pg. 44-47, Jan. 19

Exercise 1.5 c, d & g (page 84) and 1.4 a (page 83)

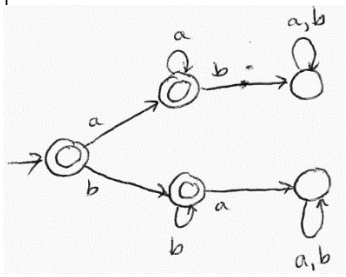
Exercise 1.5 For these first construct a DFAs for the complement of the language and then use the method presented in class to convert the DFA to one for the given language. For all Σ={a, b}.

c. {w | w contains neither the substrings ab nor ba}

DFA for {w | w contains either the substrings ab or ba}

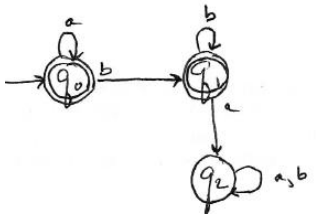


DFA for {w | w contains neither the substrings ab nor ba}

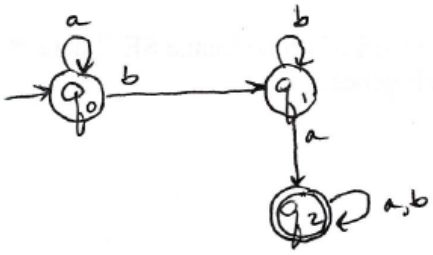


d. {w | w is any string not in a*b*}

DFA for {w | w is any string in a*b*}

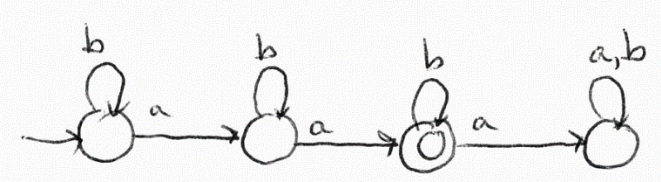


DFA for {w | w is any string not in a*b*}

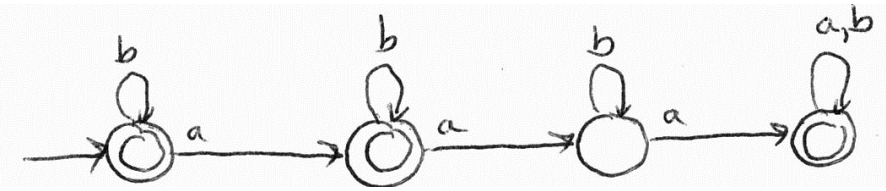


g. {w | w is any string that doesn't contain exactly two a's}

DFA for {w | w is any string that contains exactly two a's}



DFA for {w | w is any string that doesn't contain exactly two a's}



1.4 For these first construct DFAs for the two simpler languages, then combine them using the construction discussed to give the DFA for the language given. For all parts $\Sigma = \{a,b\}$.

a. {w | w has at least three a's and at least two b's}

{w | w has at least three a's}

{w | w has at least two b's}

Combined: