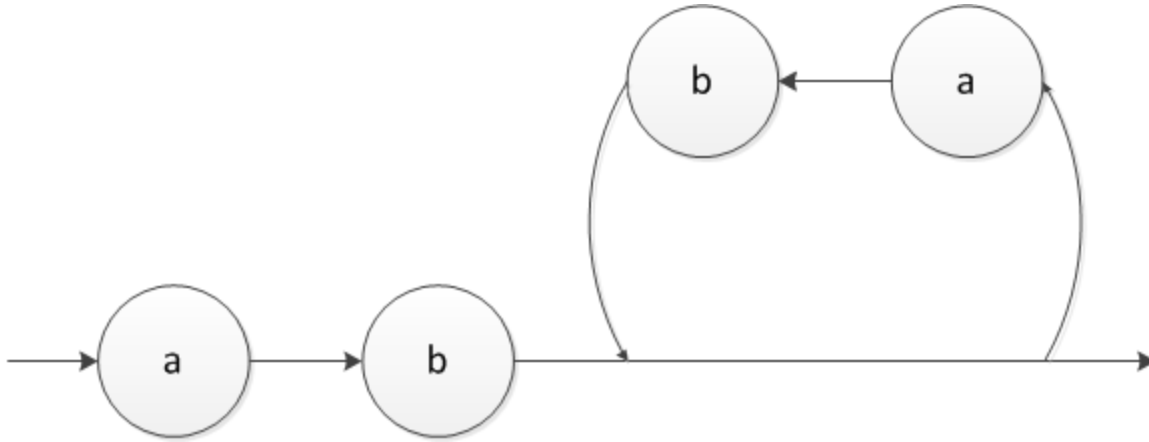
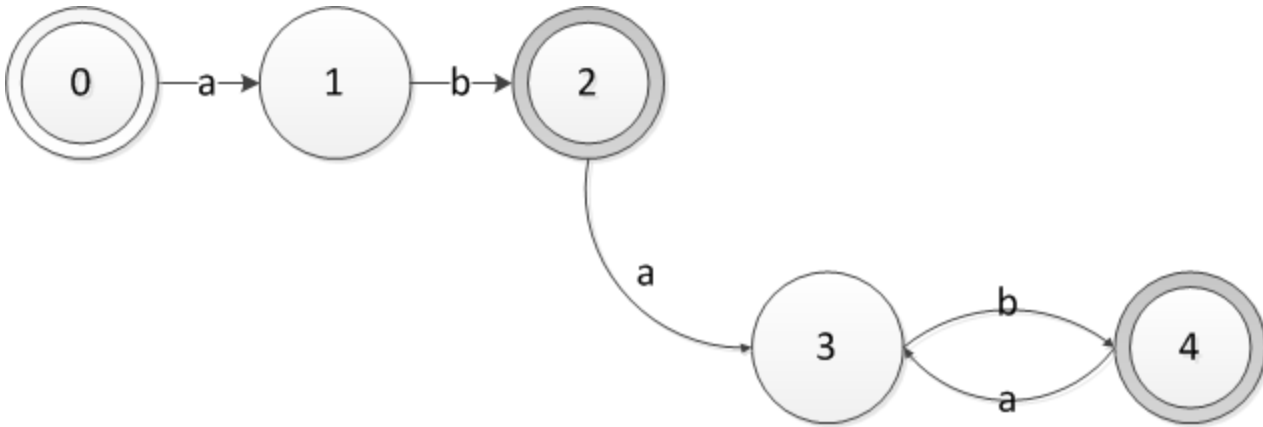


Question 1

The syntax diagram for the first regex is:



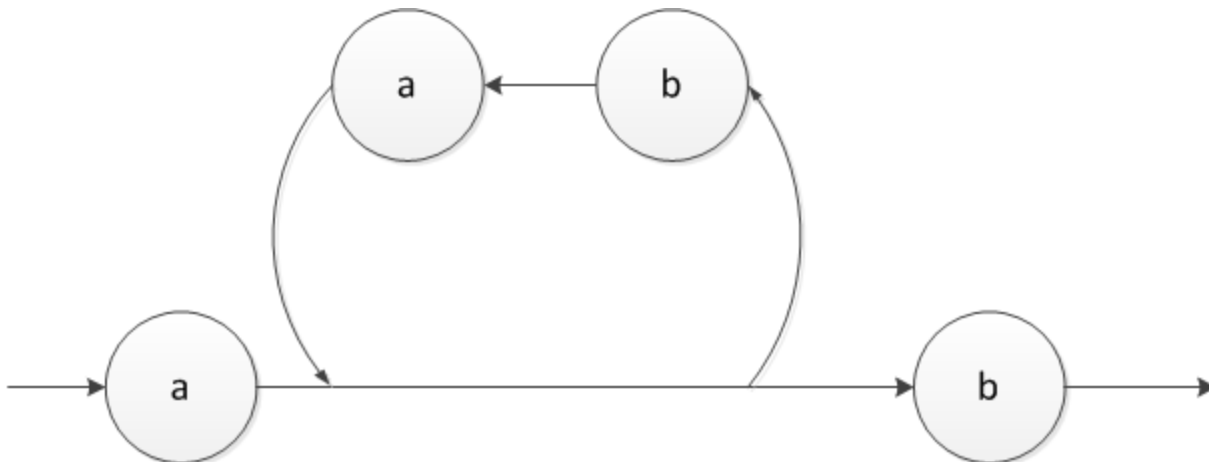
Converting this to a DFA by eliminating common paths:



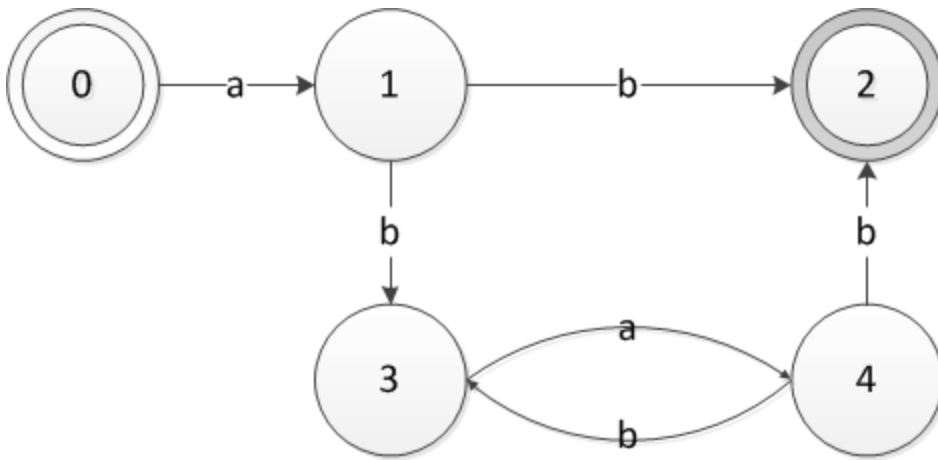
And finally, minimizing:



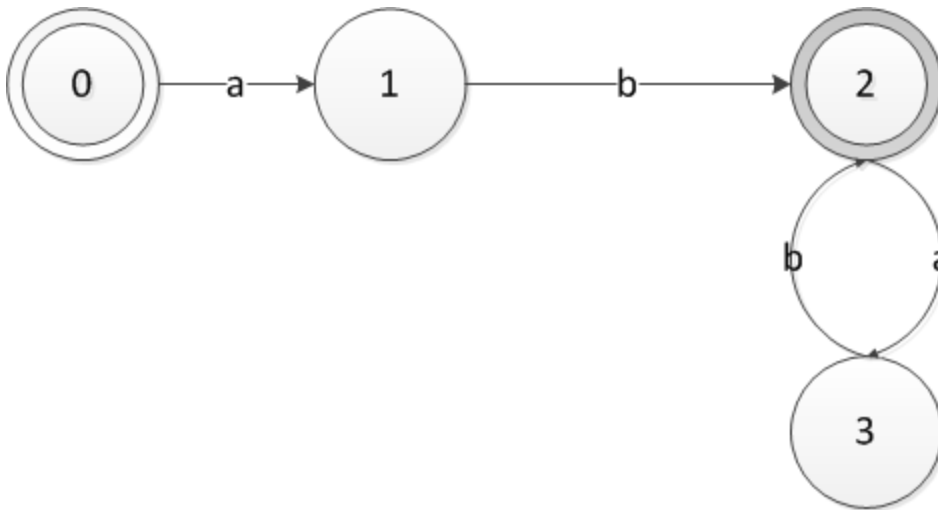
The syntax diagram for the second regex is:



The corresponding NFA is:



Once we convert this NFA to a DFA, we obtain the following DFA (covering by writing :



Minimizing this DFA, we obtain the same DFA as from the previous regex:



Thus, the two regexes describe the same language.