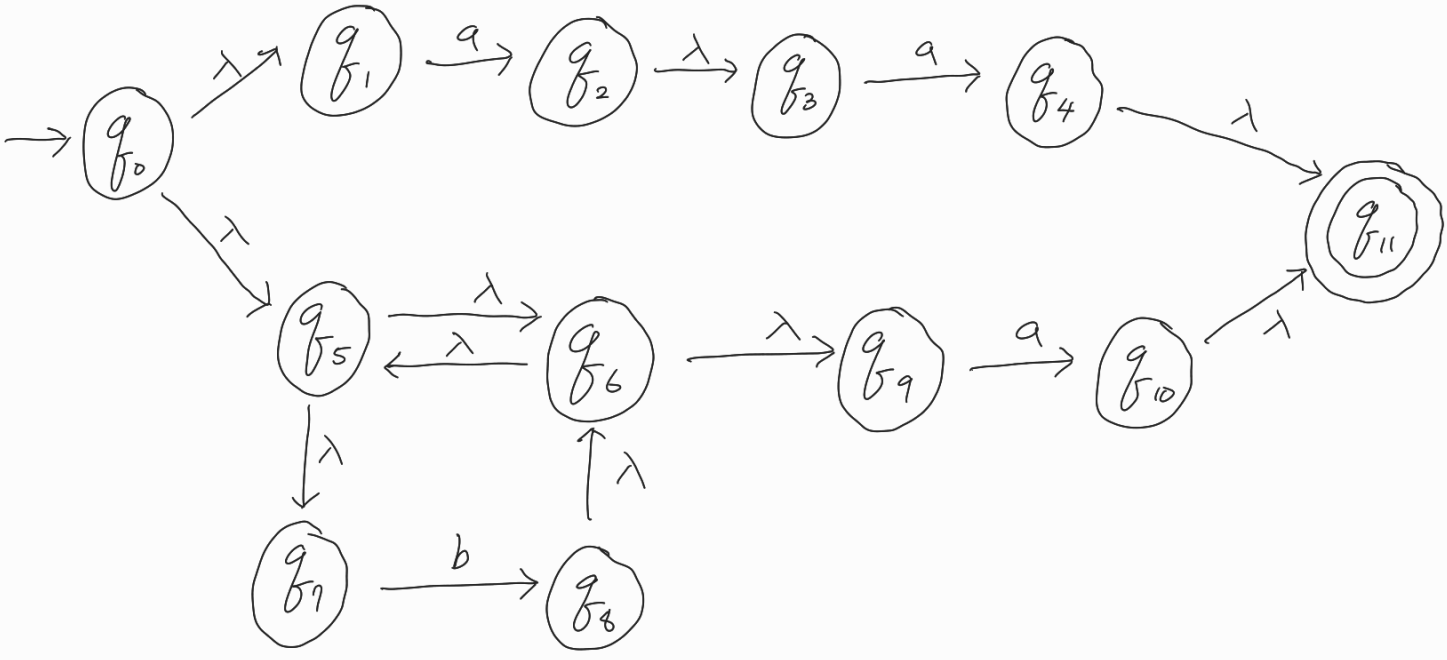
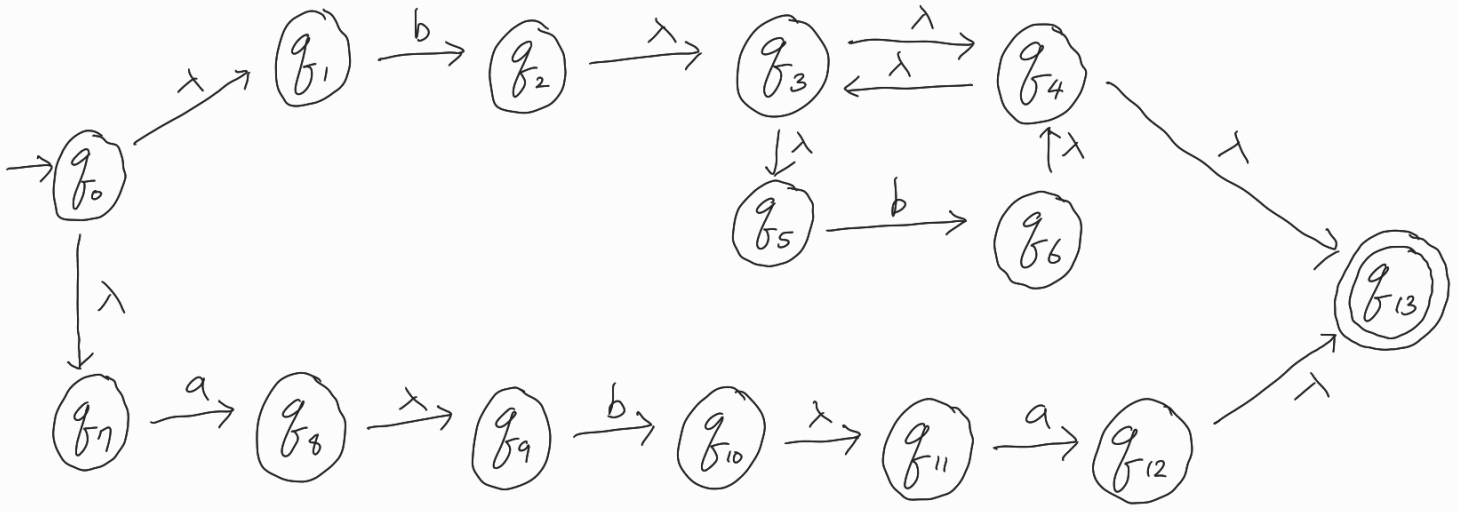
1. NFA for $\Sigma = \{a, b\}$ accepts $L(aa + b^*a)$



2. Regular expression for odd numbers of 'a' followed by 'bb'.

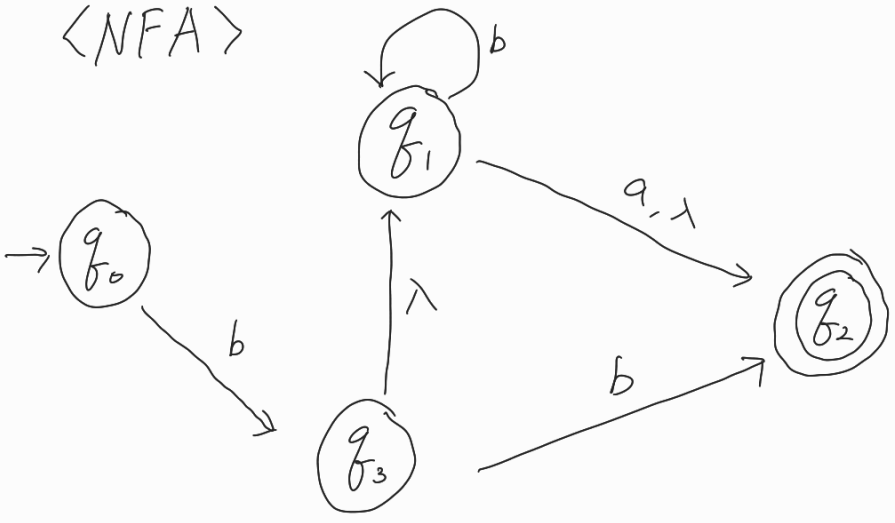
$\therefore (aa)^*abb$

3. NFA for $L(bb^* + aba)$



4.

<NFA>



In the path of $q_0 - q_3 - q_1 - q_2$, bb^*a or bb^* are accepted.

In the path of $q_0 - q_3 - q_2$, bb is accepted.

Regular expression of the language is $bb^*a + bb^* + bb$

$bb^*a + bb^* = bb^*(a+\lambda)$

$\therefore bb^*(a+\lambda) + bb$

5.

$S \to abbA \mid bbB$

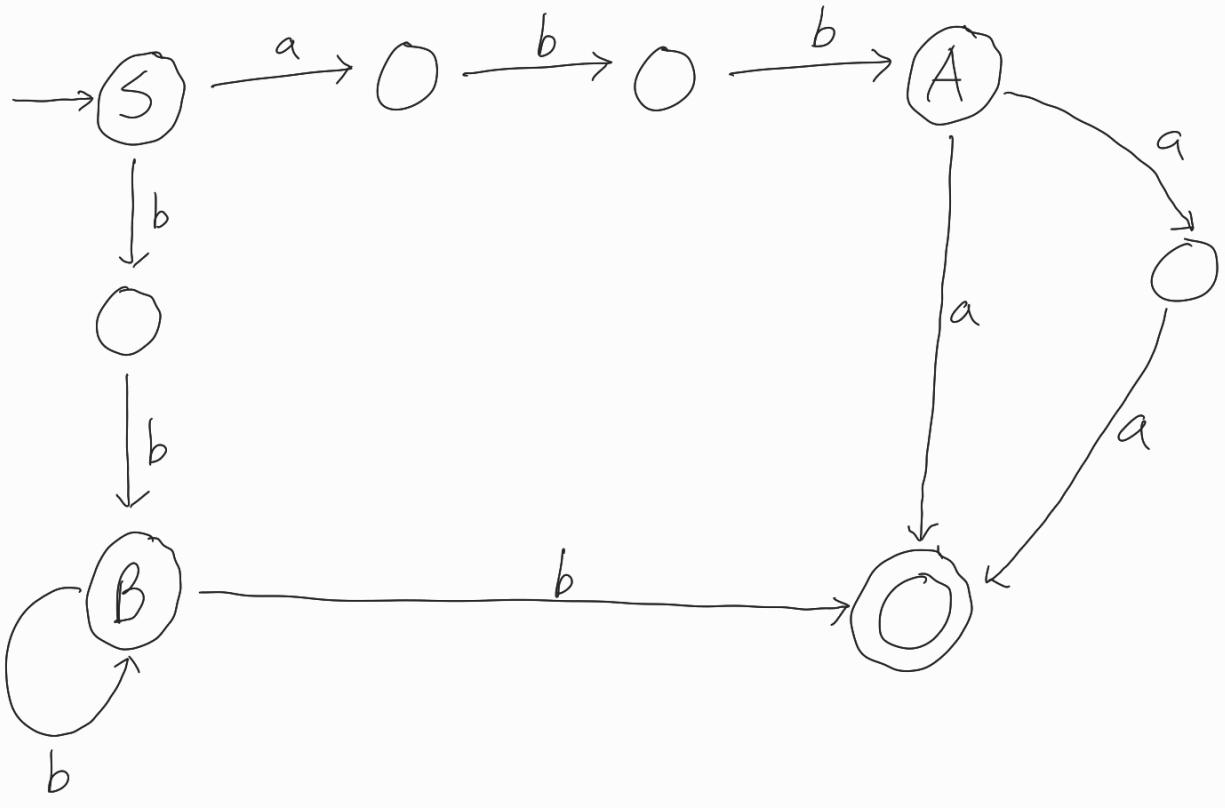
$A \to aa \mid a$

$B \to bB \mid b$

$\Rightarrow$ $S \to abbA$ or $S \to bbB$

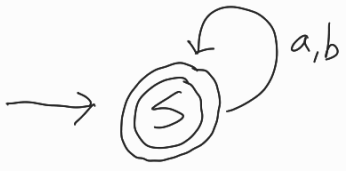
$A \to aa$ or $A \to a$

$B \to bB$ or $B \to b$



6. A right-linear grammar for $L((a+b)^*)$

We can construct a DFA for $\Sigma = \{a, b\}$ which accepts $L((a+b)^*)$.



i) $S \rightarrow \lambda$
ii) $S \rightarrow aS$
iii) $S \rightarrow bS$

$\therefore \quad S \rightarrow aS \mid bS \mid \lambda$