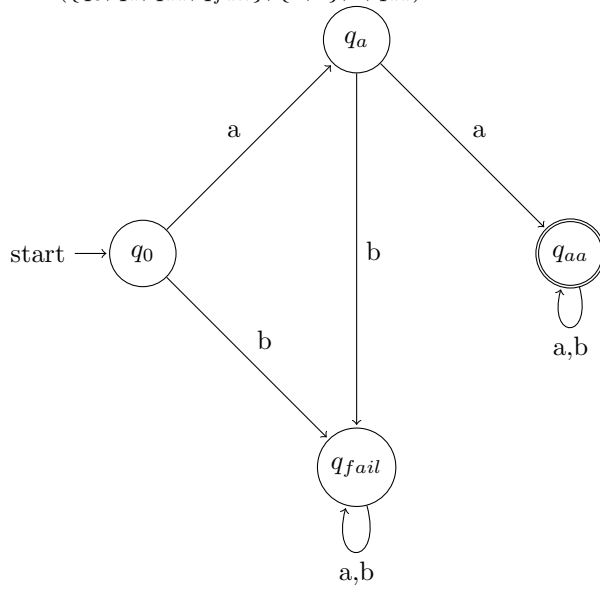


# 1 Automatas:

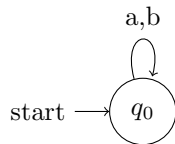
## 1.1 Accept words starting with two consecutive a's:

$$A = (\{q_0, q_a, q_{aa}, q_{fail}\}, \{a, b\}, \delta, q_{aa})$$



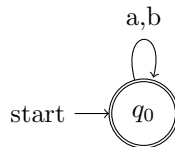
## 1.2 Accept no words:

$$A = (\{q_0\}, \{a, b\}, \delta, \emptyset)$$



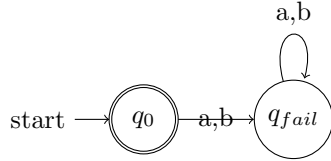
## 1.3 Accept all words:

$$A = (\{q_0\}, \{a, b\}, \delta, \Sigma^*)$$



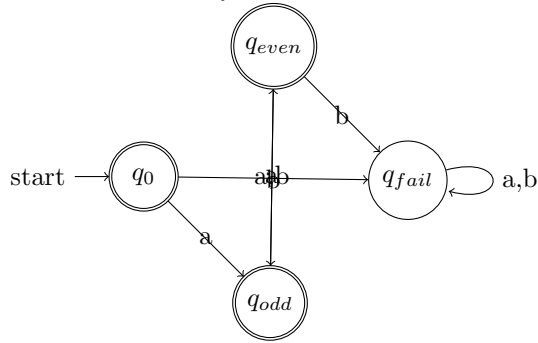
#### 1.4 Only accept empty words ( $\epsilon$ ):

$$A = (\{q_0, q_{fail}\}, \{a, b\}, \delta, \{\epsilon\})$$



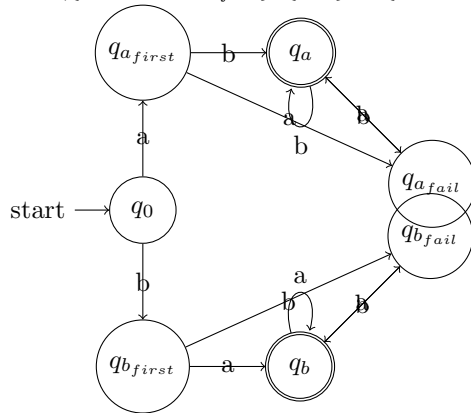
#### 1.5 Only accept words which have their odd characters set to a:

$$A = (\{q_{even}, q_{odd}, q_{fail}\}, \{a, b\}, \delta, \{\exists x \in \Sigma^* \exists y, z \in \Sigma \mid x = yz \wedge z = a\})$$

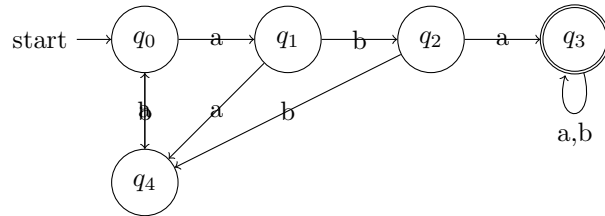


#### 1.6 Only accept words which have their first character set differently than the last:

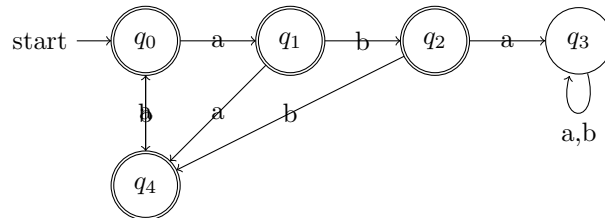
$$A = (\{q_{a\_first}, q_{a\_fail}, q_{b\_first}, q_{b\_fail}, q_0, q_a, q_b\}, \{a, b\}, \delta, \{x = wyz \mid w, z \in \Sigma \wedge y \in \Sigma^* \wedge w \neq z\})$$



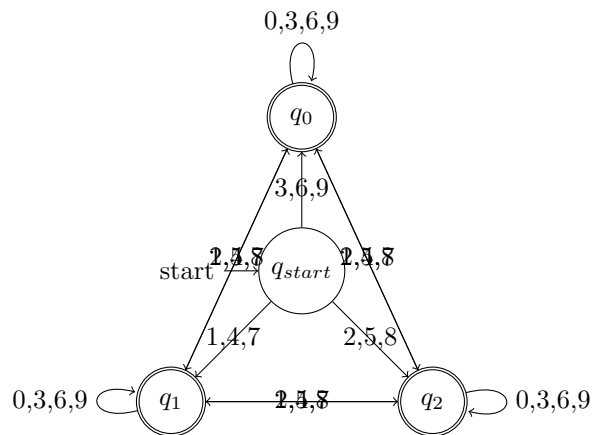
1.7 Only accept words which contain the string aba:



1.8 Only accept words which do not contain the string aba:



1.9 Only accept words which are numbers divisible by 3:



**1.10 Only accept words which's length is divisible by 3:**

