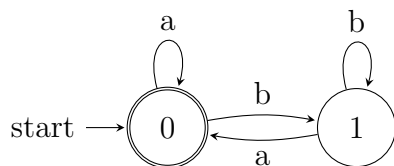


2. (30 points) The alphabet is $\{a, b\}$. Give a B-NFA for the following languages

(a) (15 points)

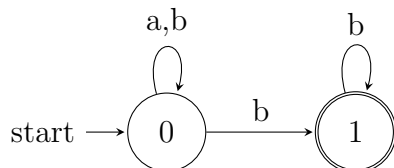
$$\{w \in \{a, b\}^\omega \mid w \text{ has an infinite number of } a\text{'s} \}$$



(b) (15 points)

$$\{w \in \{a, b\}^\omega \mid w \text{ has a finite number of } a\text{'s} \}$$

This B-NFA with two states accepts strings that "end" with an infinite number of b , meaning that there is a final (and finite number of) a .



(c) (0 points) Think about: For the above languages ponder if they could be done by a B-DFA which is a DFA where we say an infinite string accepts if it hits some final state infinitely often.