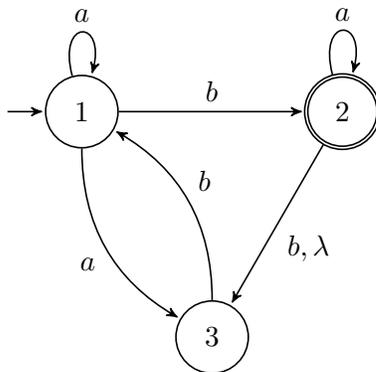


Directions: You may work to solve these problems in groups, but all written work must be your own. **Show your work;** See “Guidelines and advice” on the course webpage for more information.

- Let $\Sigma = \{0, 1\}$. Give state diagrams of DFAs for the following languages.
 - $\{w \mid w \text{ begins with a 1 and ends with a 0}\}$.
 - $\{w \mid w \text{ has an even number of 1s or contains the substring 101}\}$
- Let N be the NFA pictured below.



- Which of the following strings are accepted by N ? Explain. Strings: λ , b , bb , bbb , $bbbb$.
 - Convert N into an equivalent DFA.
- Let $\Sigma = \{0, 1\}$, let $A = \{w \mid w \text{ ends in a 1}\}$, and let $B = \{w \mid w \text{ has odd length}\}$. Construct a DFA with 4 states that recognizes the language AB . (Hint: it may be easier to first construct an NFA, convert to a DFA, and then simplify the DFA.)