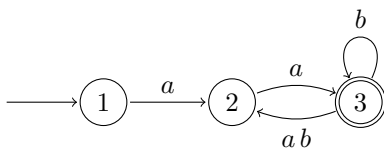


Solved exercises must be marked and solutions (as a single PDF file) uploaded in [OLAT](#). The (strict) deadline is 7 am on December 12.

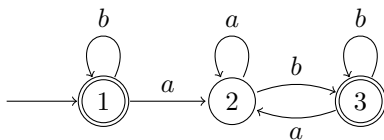
## Exercises

- ⟨4⟩ 1. Consider the NBA  $N$ :



Compute the equivalence classes of  $\sim_N$  and list all combinations of equivalence classes  $U$  and  $V$  such that  $U \cdot V^\omega \cap L(M) = \emptyset$ , cf. Corollary 1 from [slide 18 of lecture 9](#).

- ⟨2⟩ 2. Construct a WSMO formula  $\varphi$  such that  $L(\varphi) = L(M)$  for the following DFA  $M$ :



3. Determine whether the following sets over  $\Sigma = \{a, b\}$  are regular or not. Prove your answers.

⟨2⟩ (a)  $\{xax \mid x \in \{ab, ba\}^*\}$

⟨2⟩ (b)  $\{xay \mid x, y \in \Sigma^* \text{ and } x \neq y\}$