# Ćwiczenia 3

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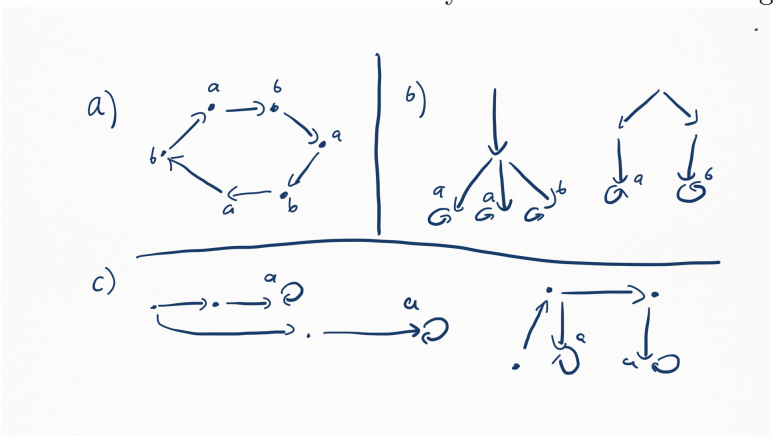
## 1 Exercise

**Exercise.** Construct an example of a Kripke structure, with $n$ states in which the algorithm that is looking for a bisimilarity relation in time $O(|V| \cdot |E|)$ will execute the main loop at least $\frac{2}{3}n$ times.

**Exercise.** Characterize the bisimilarity relation in the following Kripke structures.




**Exercise.** Try to define bisimulation if labels are on edges. So that if we transform a Kripke structure to automaton, then two states are bisimilar before the transformation if and only if they are bisimilar after the transformation.

**Exercise.** With the above definition we say that a non-deterministic automaton is bisimilarity-minimal if and only if each two states are not bisimilar.

Design a procedure that transforms a bisimilarity-non-minimal automaton into bisimilarity-minimal one, preserving the language of traces.