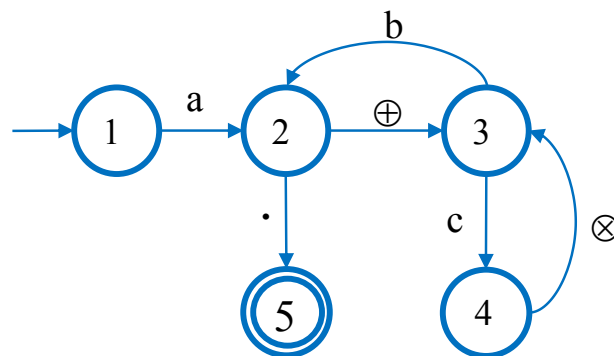# Challenge Activity 6 – Conversions between FAs and REs

A team needs to implement a function to convert between FAs and REs. The function must receive as input a graph representing the state diagram of the FA and must provide as output a string with a regular expression representing the language of the FA.

The team is considering to implement the state elimination method, but would like to devise a way to eliminate states by a ordering that may result in simpler regular expressions (e.g., with the goal to output regular expressions with shortest length as possible).

(a) Suggest a technique to select the ordering to eliminate states and that can be used by the team in the implementation they are going to provide;

(b) Apply the state elimination method using the technique you suggested to the DFA presented below and present the resultant regular expression;

(c) Was your heuristic able to provide the shortest regular expression[1] for the DFA presented?

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[1] Without considering regular expression simplifications using, e.g., algebraic laws.