

Challenge Activity 2 – DFAs

Consider that a software team needs to implement two algorithms able to transform DFAs according to the following. Each algorithm shall process as input a DFA accepting a set of strings and transforms it according to the following:

Algorithm a) This algorithm shall output a DFA that accepts all strings w accepted by the input DFA added by the symbol α as prefix (i.e., the output DFA shall accept αw for each string w accepted by the input DFA).

Algorithm b) This algorithm shall output a DFA that accepts all strings w accepted by the input DFA added by the symbol α as suffix (i.e., the output DFA shall accept $w\alpha$ for each string w accepted by the input DFA).

- Write the steps needed for each of the algorithms to transform each input DFA and considering that α does not belong to the alphabet of the input DFAs.
- Apply the steps you propose for each algorithm to the DFA shown below and draw the resultant two DFAs.

