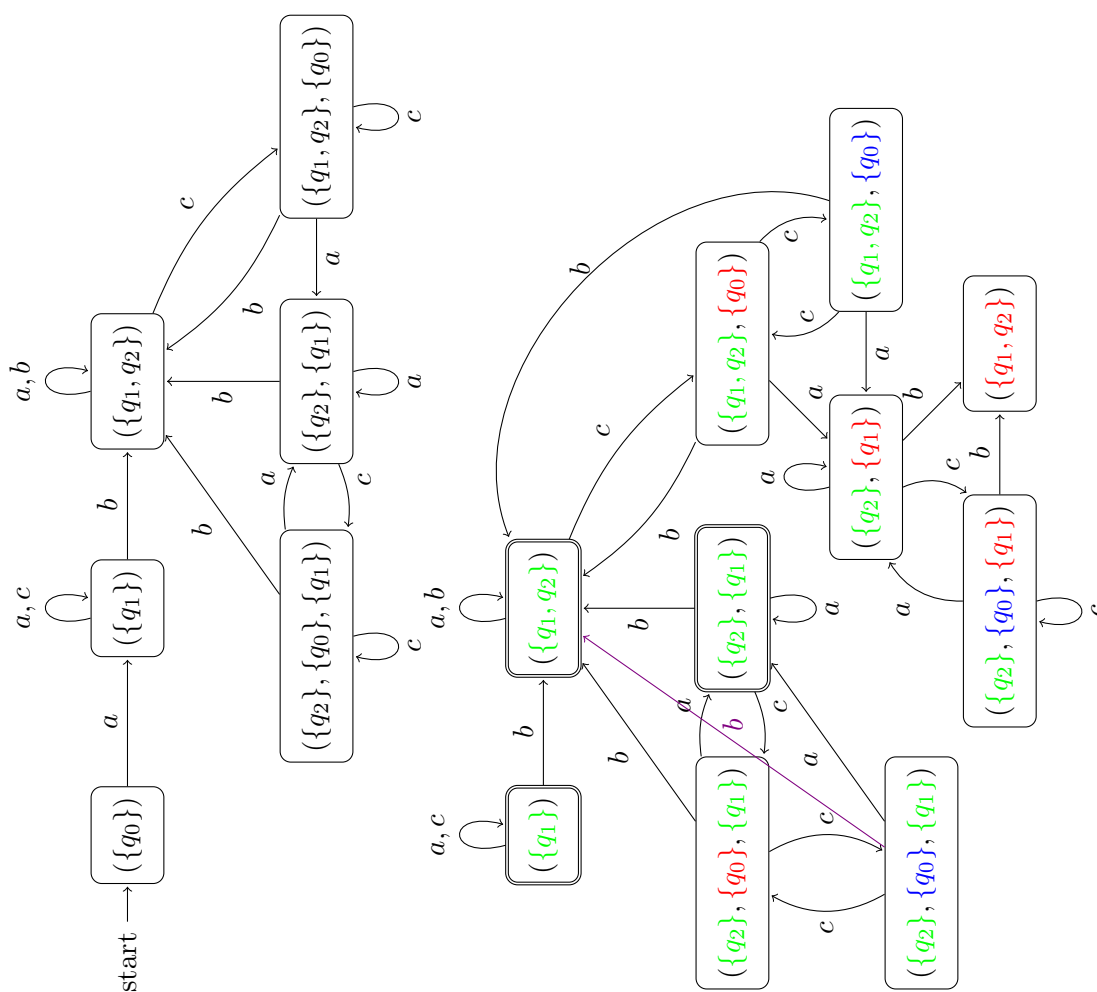Exercice Sheet 7

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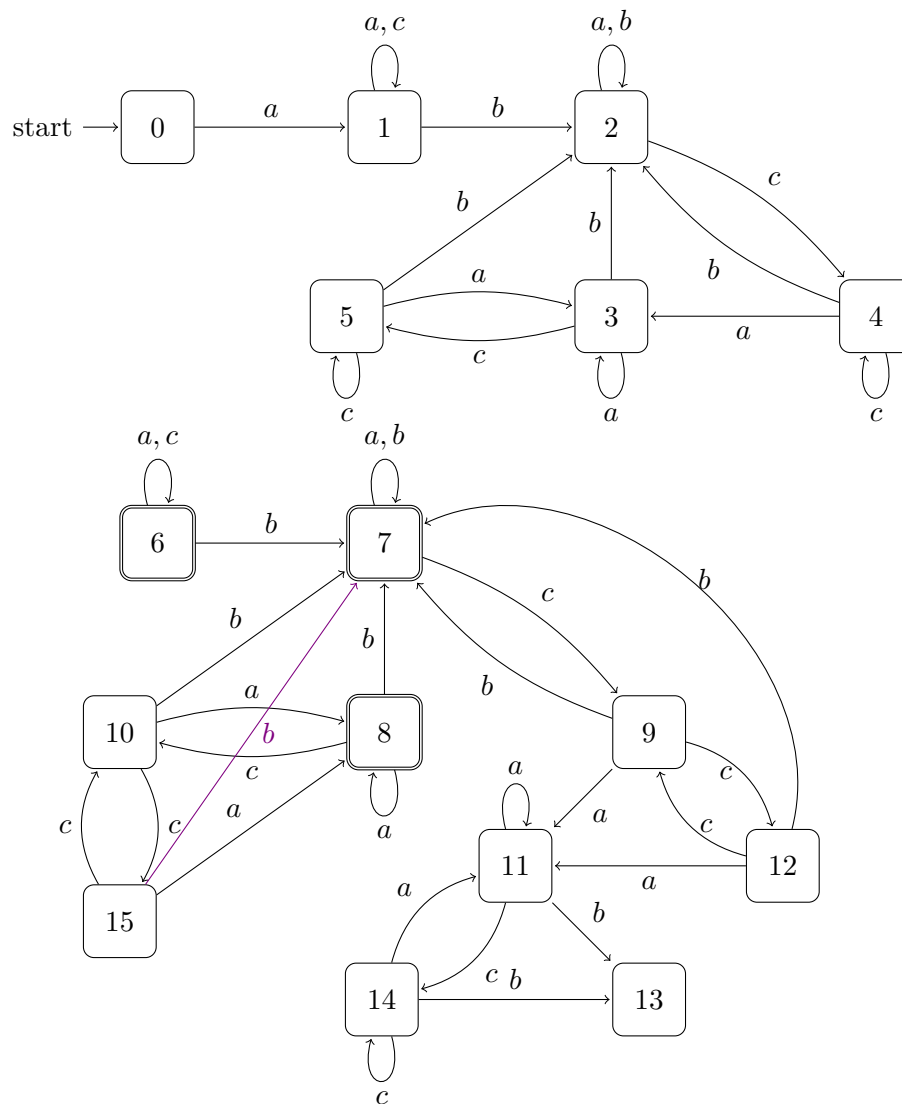Assistant : Stammet Christophe

Exercise 1

Runs

We use the followig automaton for the runs (to simplify the reading and writing...) :

Run for $(aabbcc)^\omega$

$(aabbcc)^\omega$ is accepted by the original automaton : 012220 012220 012220 . . . so it should not be accepted by its complement.

Run 1

$$0\ 6\ 6\ 7\ 7\ 9\ 12\ 11\ 11\ 13 \ldots$$

From the state 13, we can't accept any words since all of its components are red.

Run 2

$$0\ 1\ 1\ 2\ 2\ 4\ 9\ 12\ 11\ 11\ 13 \ldots$$

Run for $(abcb)^\omega$

$(aabbcc)^\omega$ is not accepted by the original automaton. So its complement should accept it.

Run 1

$$0\ 6\ 7\ 9\ 7\ 7\ 7\ 9\ 7\ 7\ 7\ 9\ 7\ 7\ 7\ \ldots$$

Run 2

$$0\ 1\ 2\ 4\ 2\ 2\ 2\ 4\ 2\ 2\ 2\ (\ldots)4\ 2\ 2\ 2\ 9\ 7\ 7\ 7\ 9\ 7\ 7\ 7\ \ldots$$

Both of those runs are accepting.