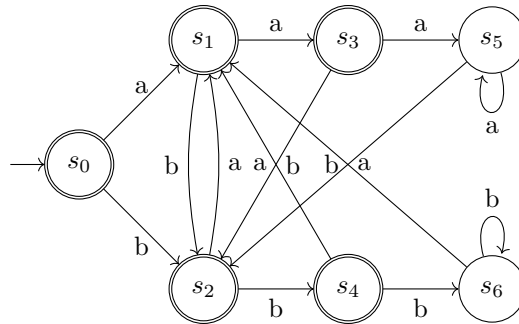


Exercise 1

$$\begin{aligned}
S &= \{s_0, s_1, s_2, s_3, s_4, s_5, s_6\} \\
I &= \{s_0\} \\
\Sigma &= \{a, b\} \\
T &= \{(s_0, a, s_1), (s_0, b, s_2), (s_1, b, s_2), (s_1, a, s_3), \\
&\quad (s_2, a, s_1), (s_2, b, s_4), (s_3, a, s_5), (s_3, b, s_2), (s_4, a, s_1), \\
&\quad (s_4, b, s_6), (s_5, a, s_5), (s_5, b, s_2), (s_6, b, s_6), (s_6, a, s_1)\} \\
F &= \{s_0, s_1, s_2, s_3, s_4\}
\end{aligned}$$



The automaton has one initial state and every state has exactly one successor state for every possible input. It is thus complete (at least one initial state and at least one successor) and deterministic (at most one initial state, at most one successor).

Exercise 2