Exercise 5
Given an automation $A$ with state $S = \{A, B, C, D\}$, alphabet $\Sigma = \{a, b\}$, initial states $I = \{A, C\}$, the final states $F = \{B, D\}$, and transitions $T = \{(A, a, B), (A, a, C), (B, a, B), (C, a, C), \ldots\}$. Draw the power automaton $\mathbb{P}(A)$ for FA $A$. What is the maximum number of states $\mathbb{P}(A)$ can have in theory? Justify your answer.

Exercise 6
Draw the automaton $K$, which describes exactly the complement language described by the automaton of Exercise 5.

Exercise 7
Given FA $A$ where $\Sigma := \{a, b\}$ as shown on the right. Draw the oracle-automaton $\text{Oracle}(A)$ as defined on lecture slide 8. For making $\text{Oracle}(A)$ complete by introducing an error state, how many new transitions have to be added?

Exercise 8
Given FA $A$ from the previous exercise, draw the optimized oracle-automaton $\text{Oracle}(A)$. Is $\text{Oracle}(A)$ complete? Is it deterministic? Justify your answer.