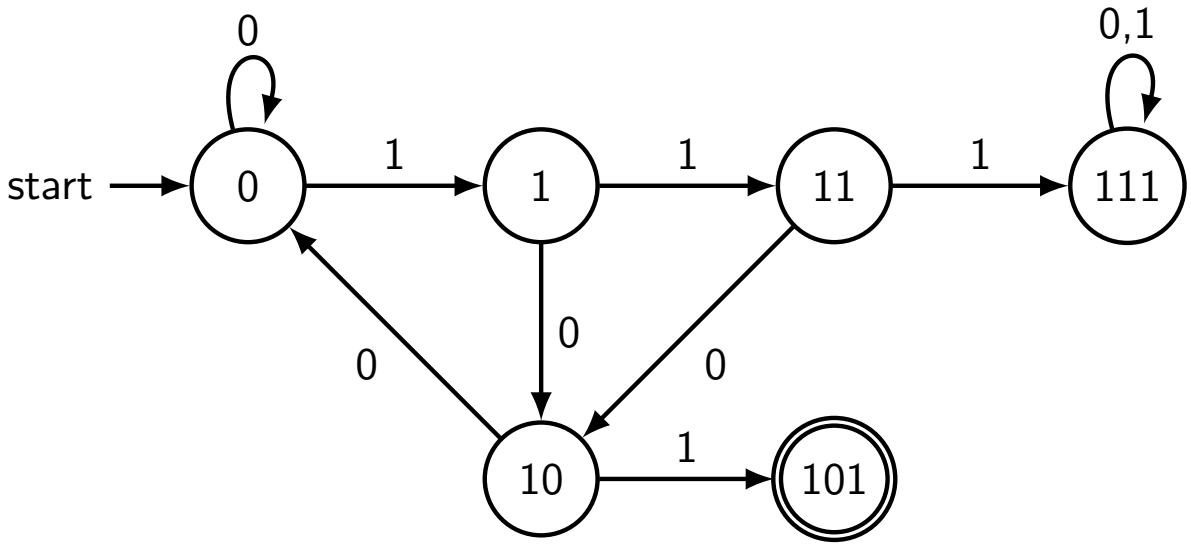
Introduction to Theory of Computation

Chapter 2

February 8, 2016

Find a DFA

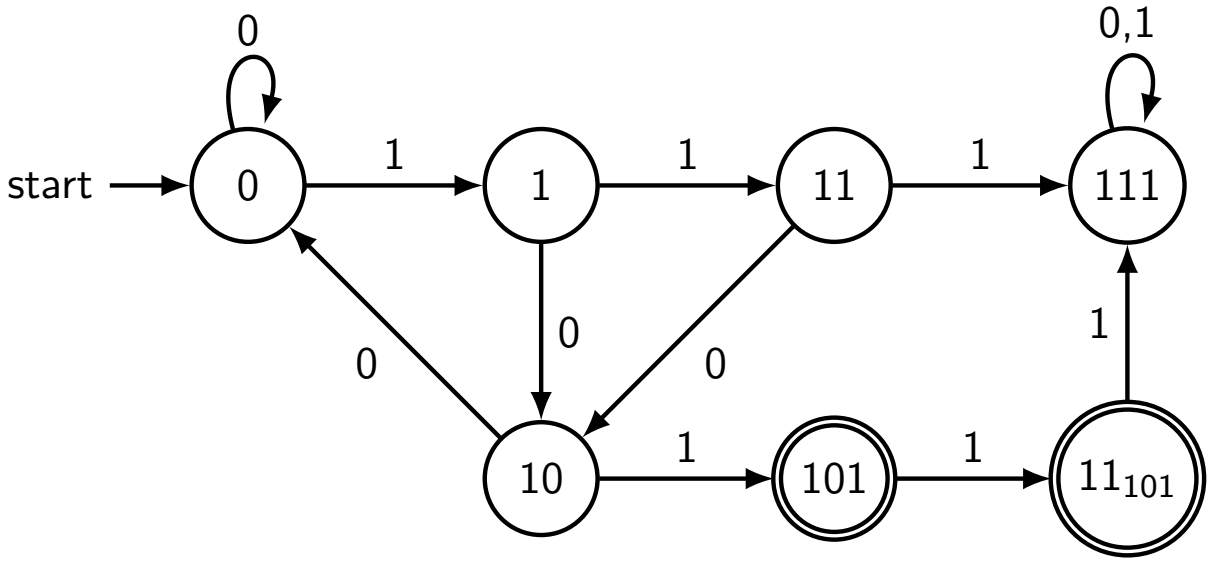
$\{w : w$ contains the string 101 but not the string 111$\}$
Start with the basics:



We know we can reject forever in state 111, but we cannot accept forever in state 101 because we still have to make sure we don't get a 111 later on.

Find a DFA

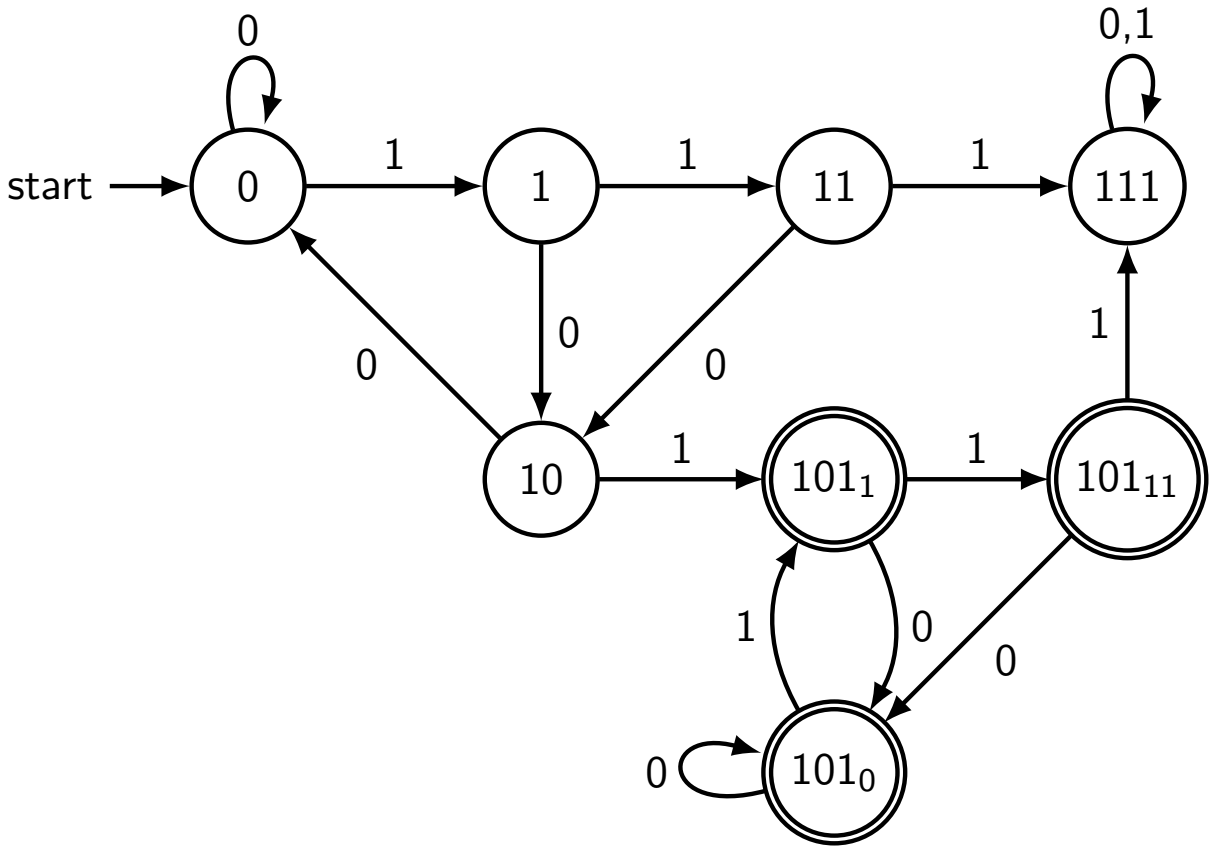
$\{w : w \text{ contains the string 101 but not the string 111}\}$



Now we just have to fill in the missing arcs.

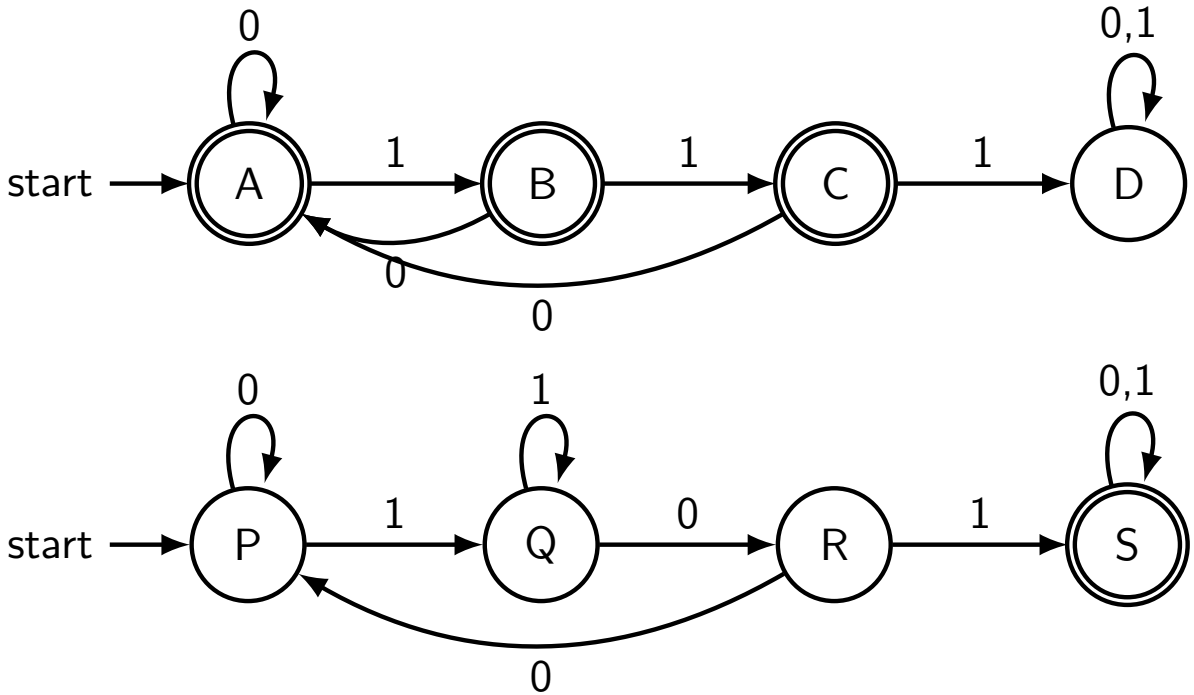
Find a DFA

$\{w : w \text{ contains the string 101 but not the string 111}\}$



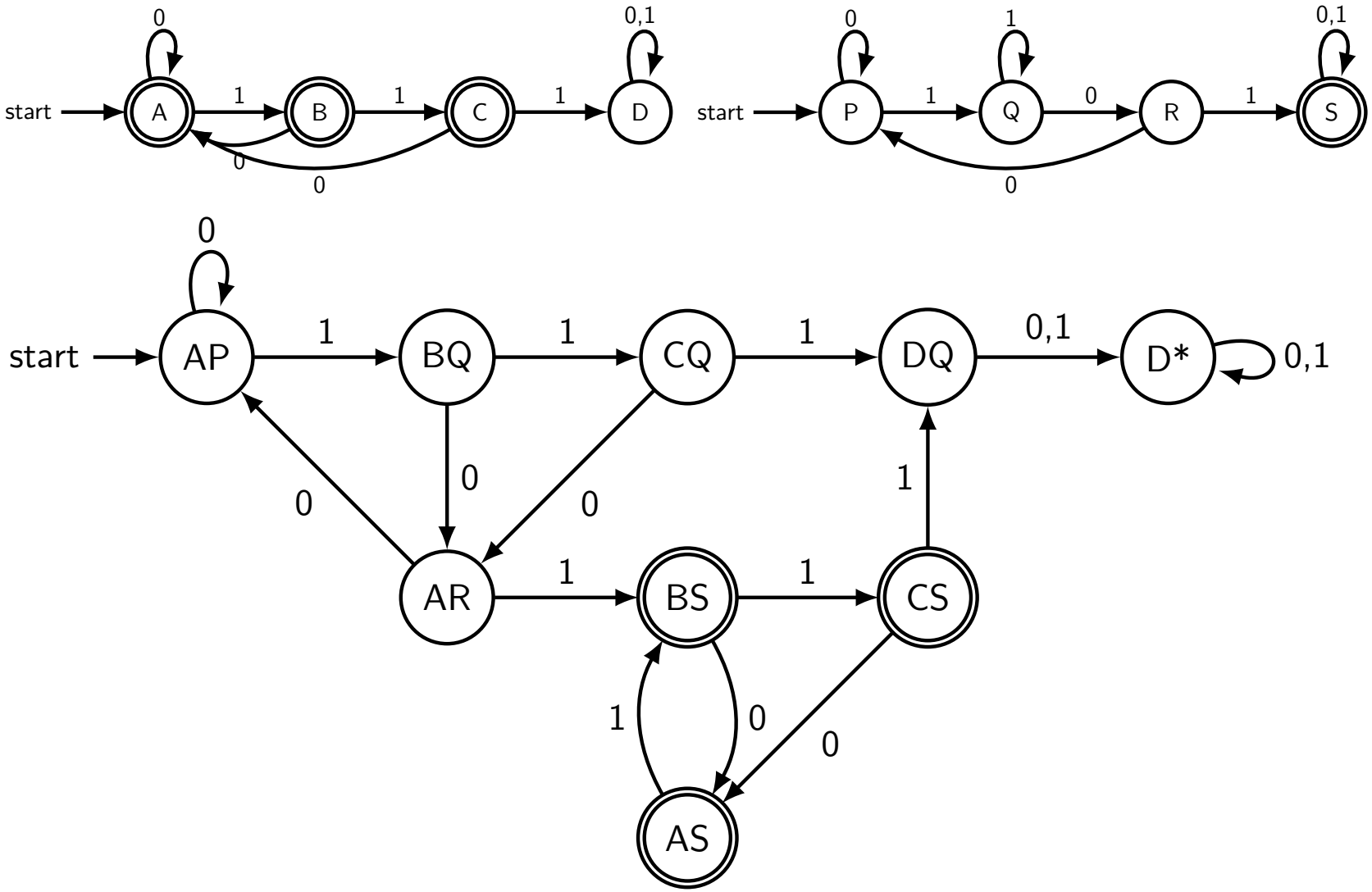
Find a DFA

$\{w : w$ contains the string 101 but not the string 111$\}$
Let's do the same thing by starting with the two base languages, and forming the intersection.

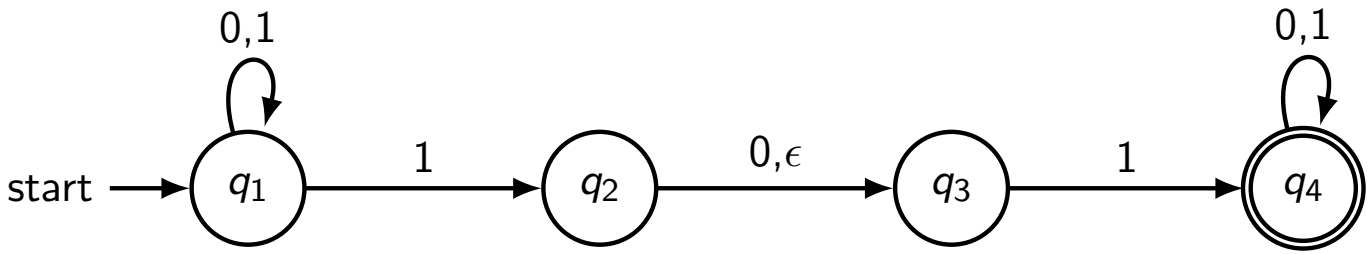


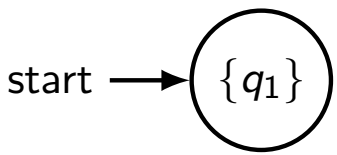
Find a DFA

$\{w : w \text{ contains the string 101 but not the string 111}\}$

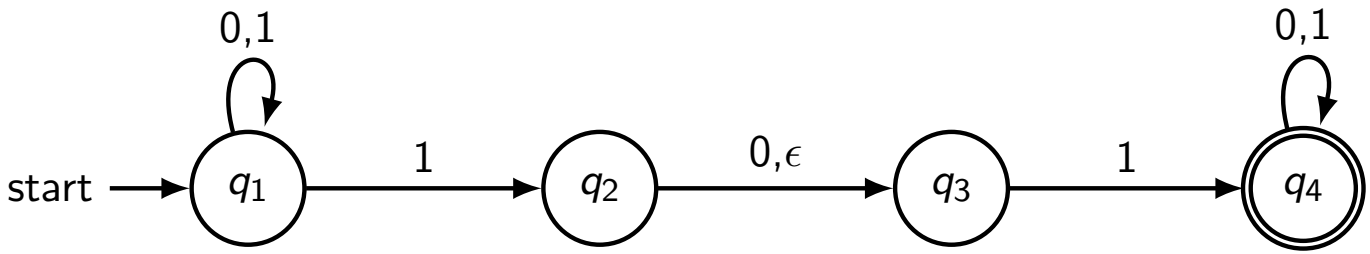


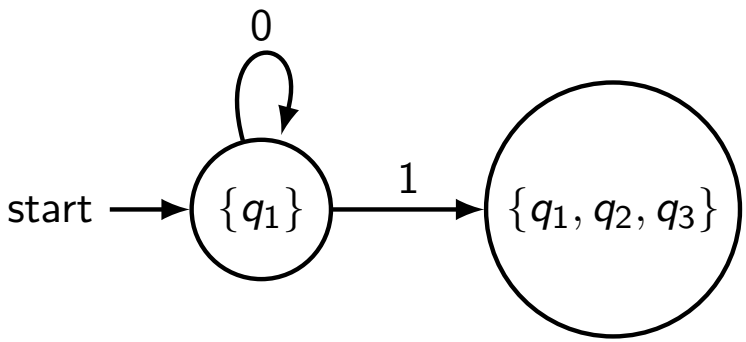
Converting NFA to DFA



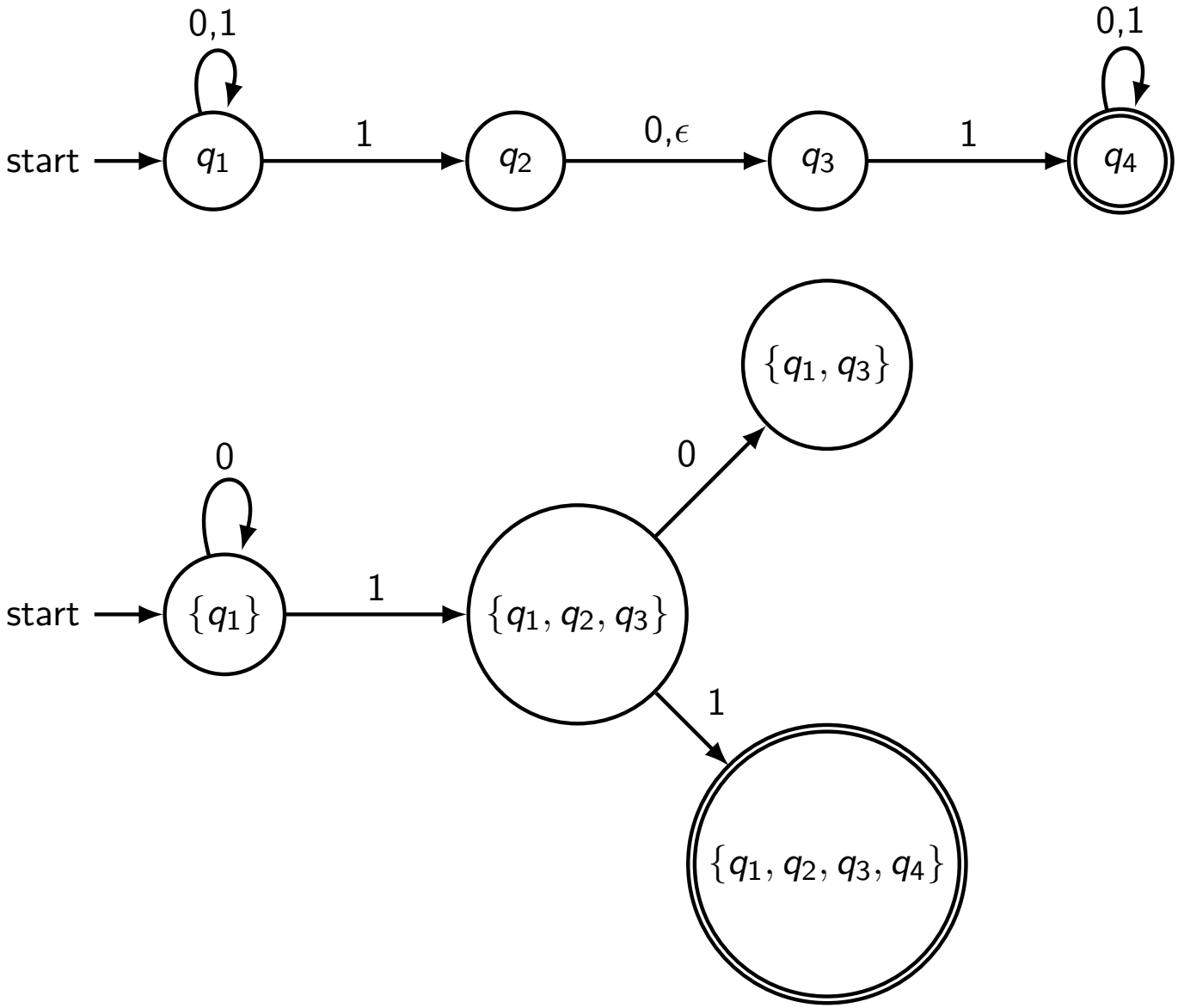


Converting NFA to DFA

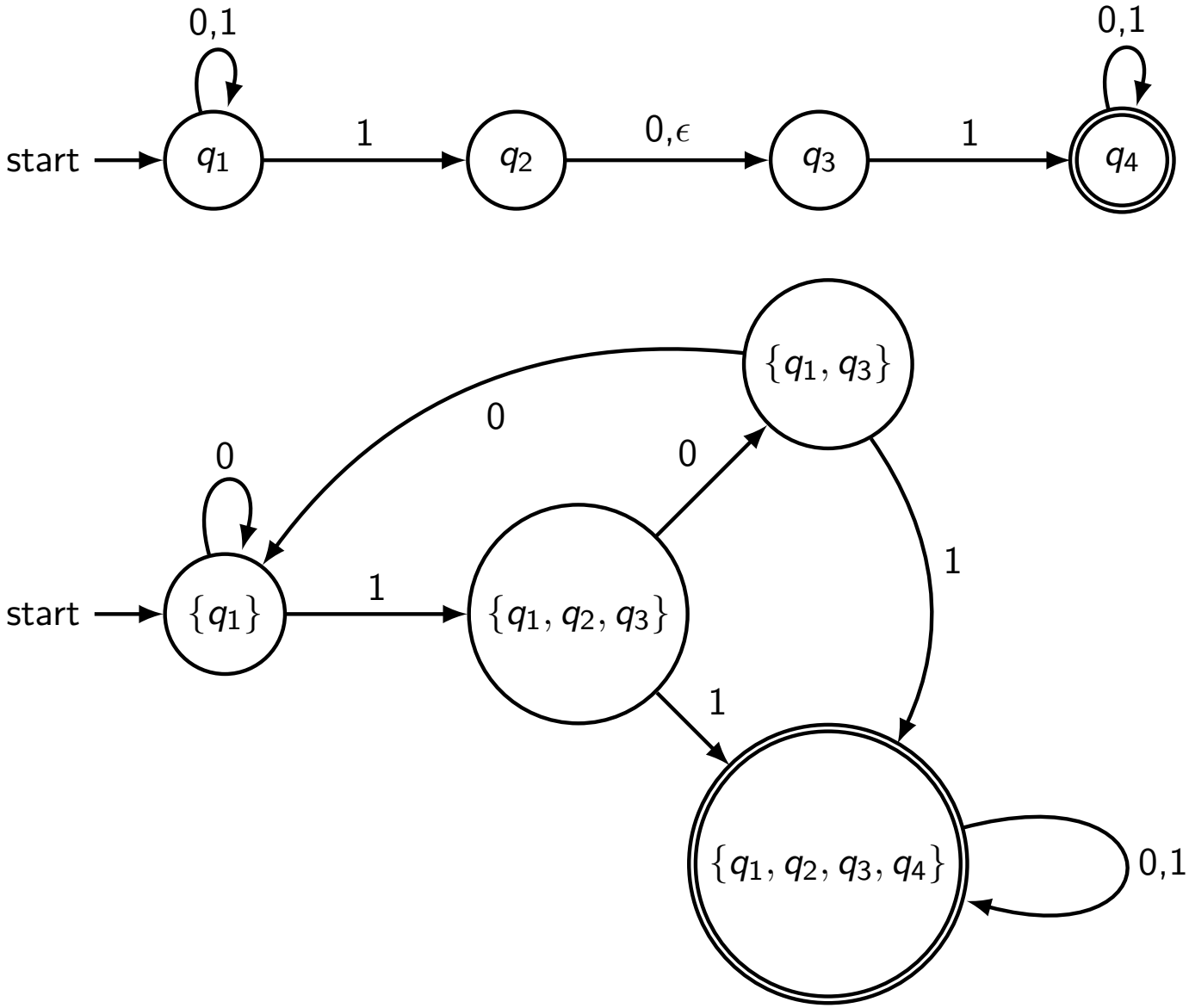




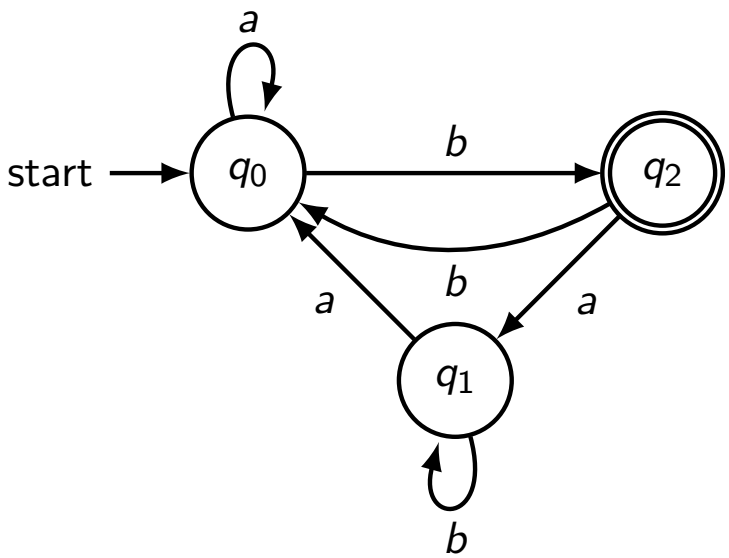
Converting NFA to DFA



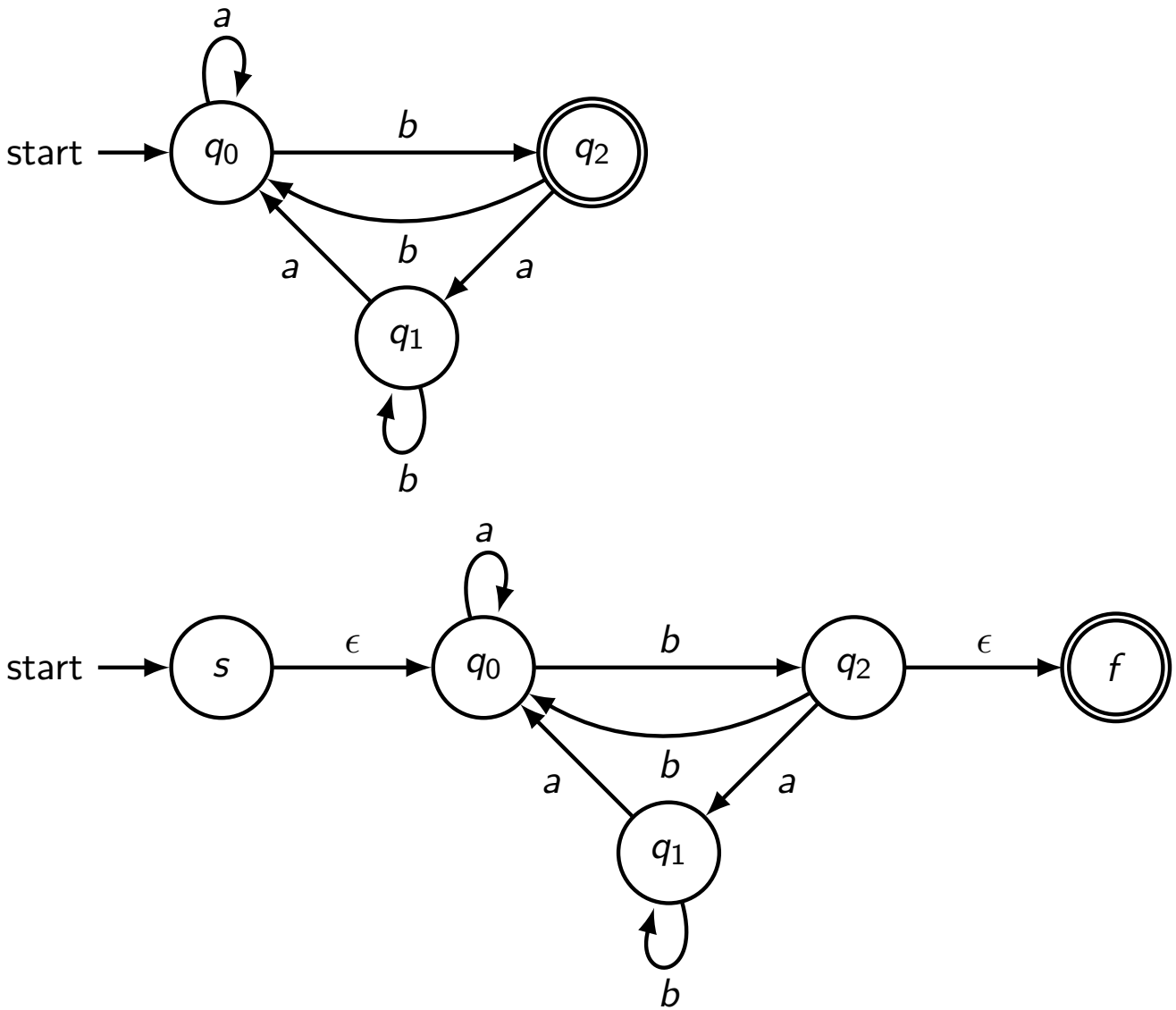
Converting NFA to DFA



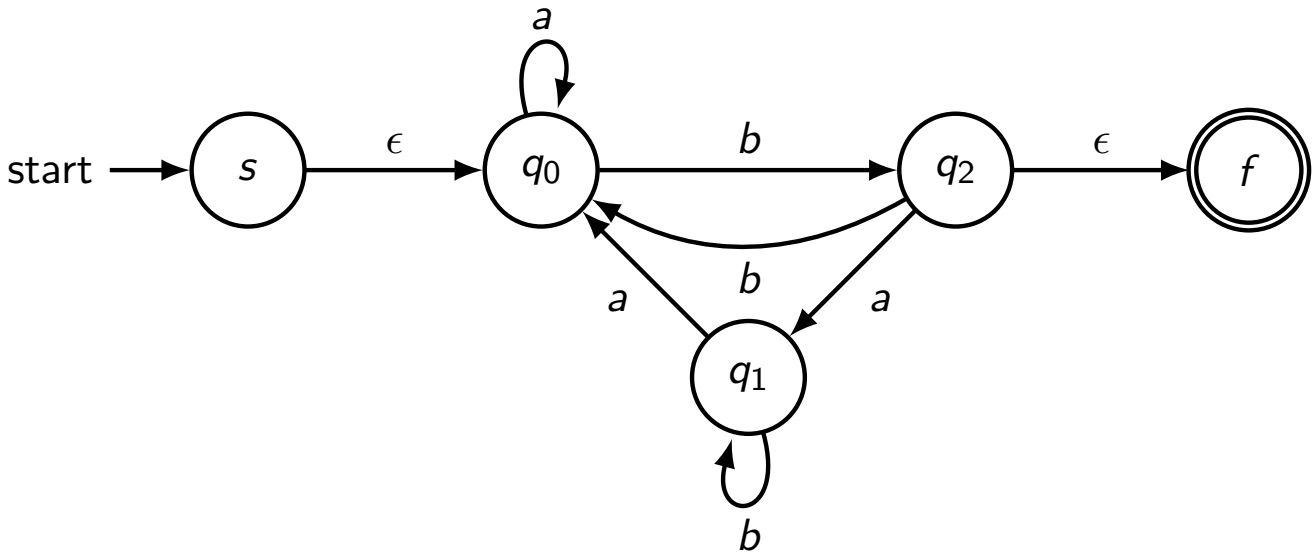
Converting NFA to RE

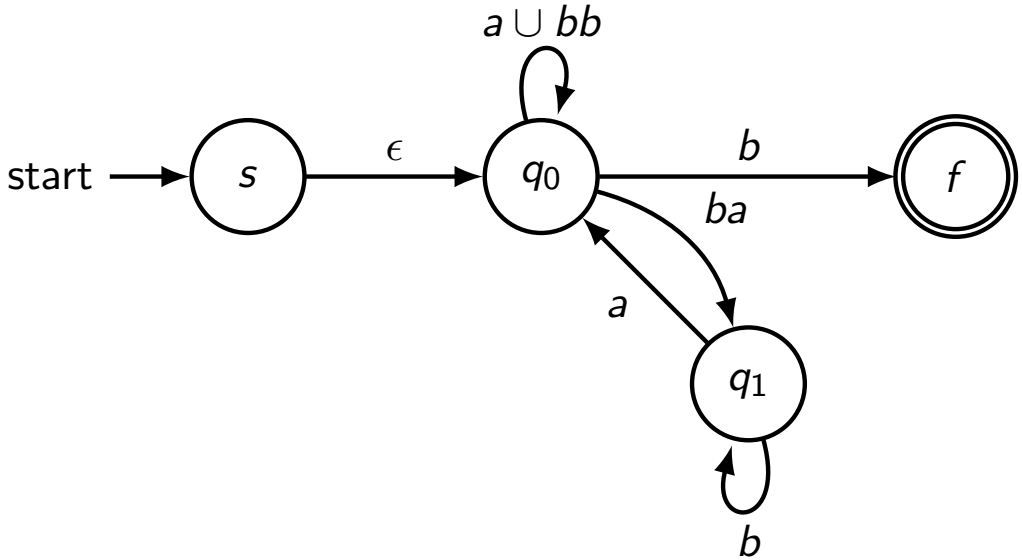


Add new start and accept states

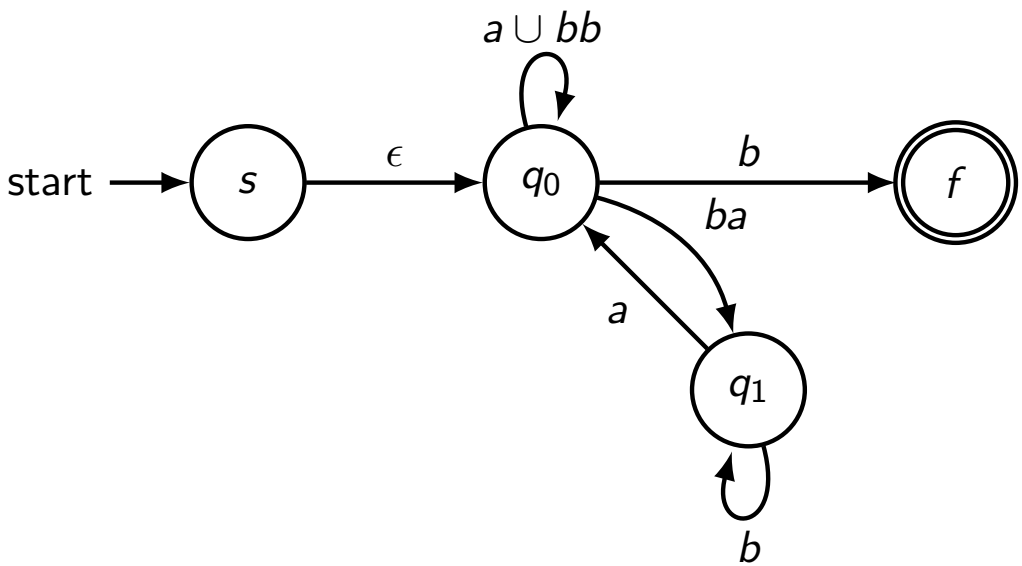


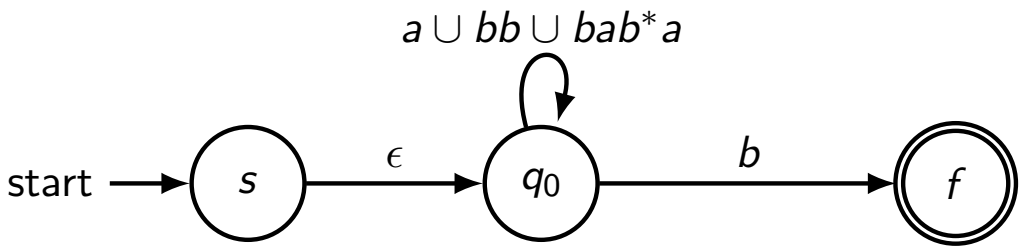
Eliminate q_2





Eliminate q_1





Eliminate q_0