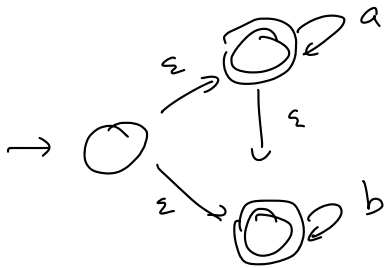


NFAs can do more than DFAs:

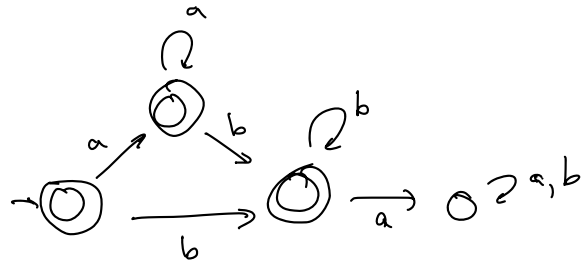
$\epsilon$ -transitions & several or no arrows.

Can NFA generate any language that a DFA cannot? **NO!**

Like:  $a^n b^m$

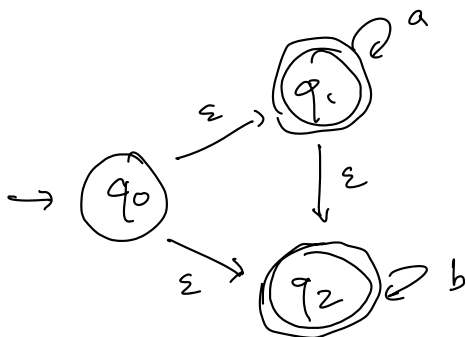


NFA



DFA

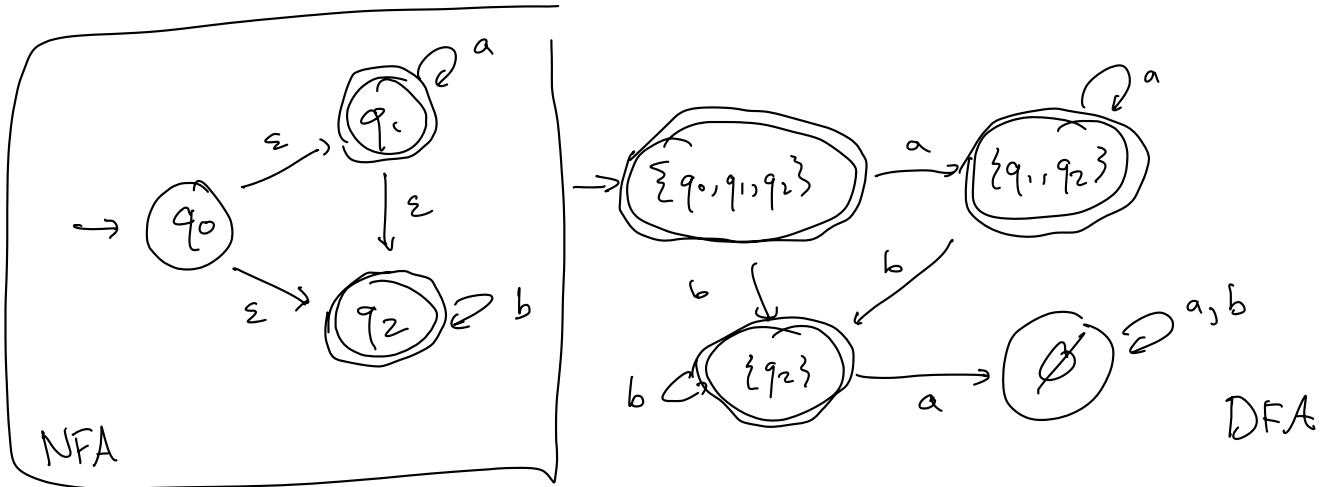
There is a construction to convert any NFA to an equivalent DFA. "subset construction"



NFA.

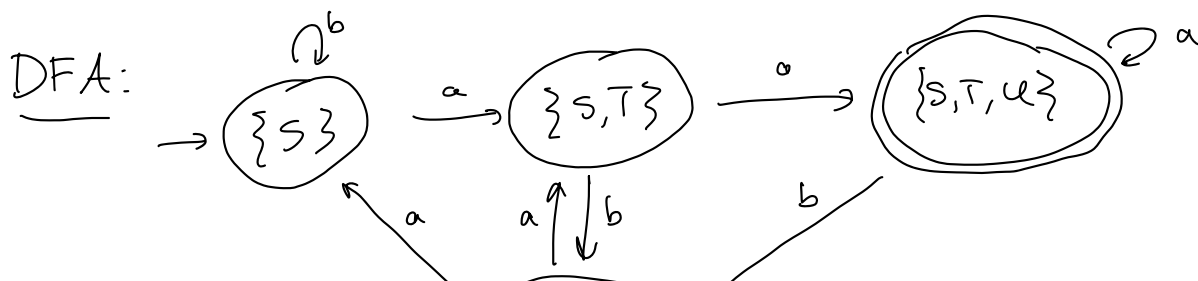
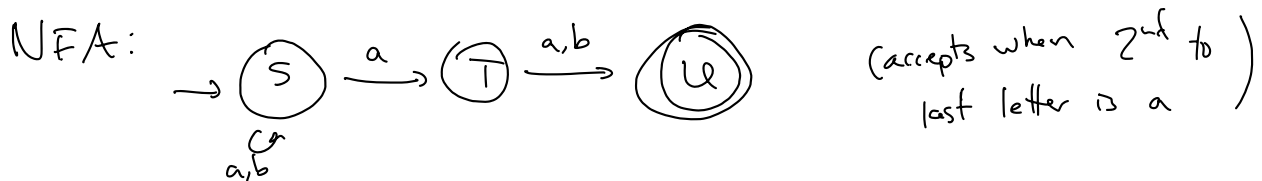
Our DFA states will be subsets of states from the NFA.

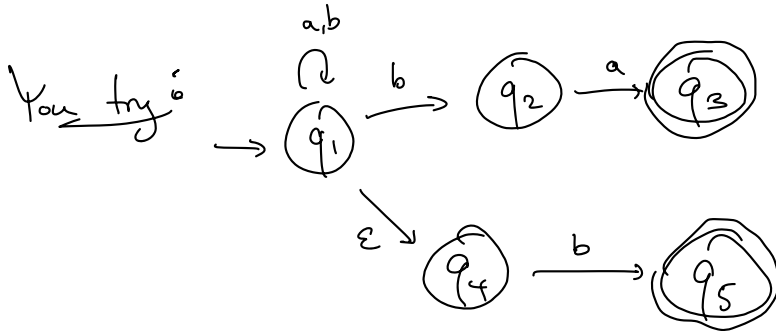
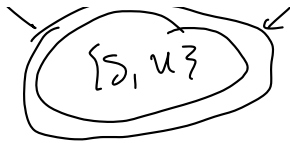
Our starting state in the subset machine is the NFA start state, plus any other states reachable by  $\epsilon$ 's from the start.



For each arrow, find all states reachable from any state in the set by reading your letter (plus  $\epsilon$ 's)

The accepting states are any sets containing original NFA accepting states.





DFA has only 3 reachable states.

