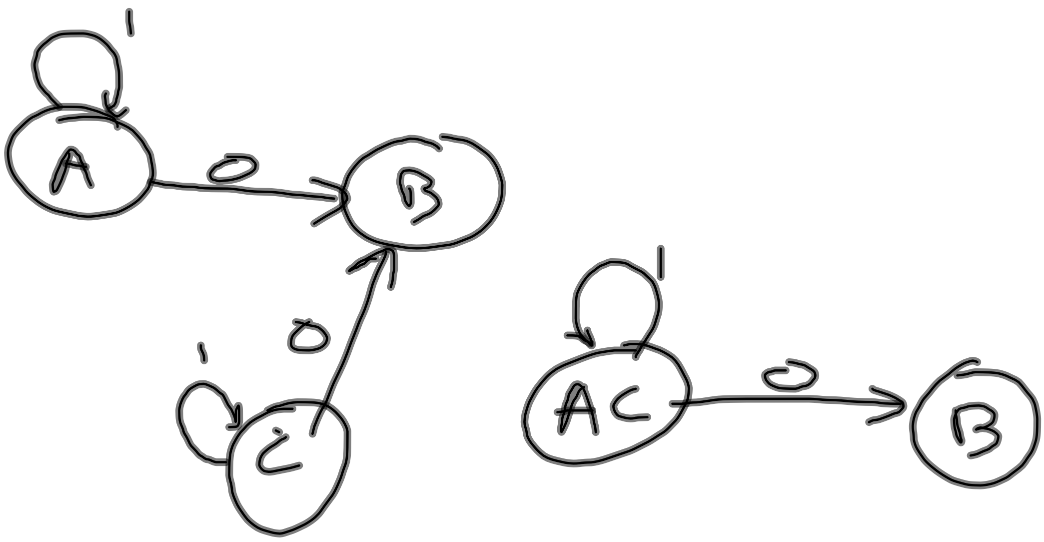
DFA minimization



0. removing unreachable states

1. Build a graph, G w/ nodes
   for each state in the DFA

2. add an edge between every
   accept and non-accept state

3. repeat until no edges are added

   for each pair p, q s.t $p \neq q$
   and every $a \in \Sigma$

   add (p, q) to G
   if $(\delta(p,a), \delta(q,a))$
   is an edge in G

4. for each state q
   determine $[q] = \{r \in Q \mid$ no edge (q, r) is in $G\}$

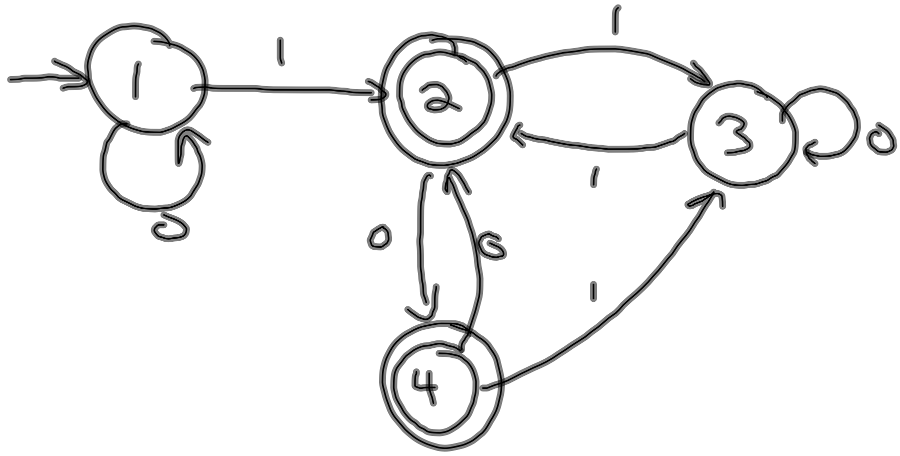
5. min DFA $(Q', \Sigma, \delta', q_0', F')$

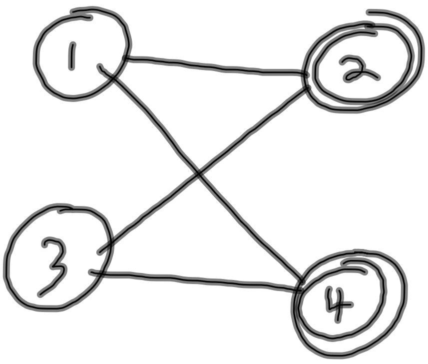
$$Q' = \{[q] \mid q \in Q\}$$

$$\delta'([q], a) = [\delta(q, a)] \quad \forall q \in Q, a \in \Sigma$$

$$q_0' = [q_0]$$

$$F' = \{[q] \mid q \in F\}$$





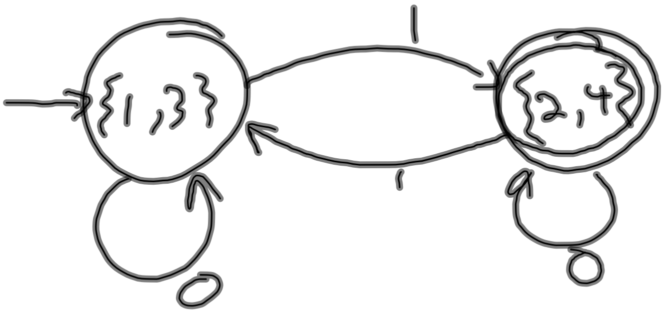
	1	2	3	4
1		X		X
2	X		X	
3		X		X
4	X		X	

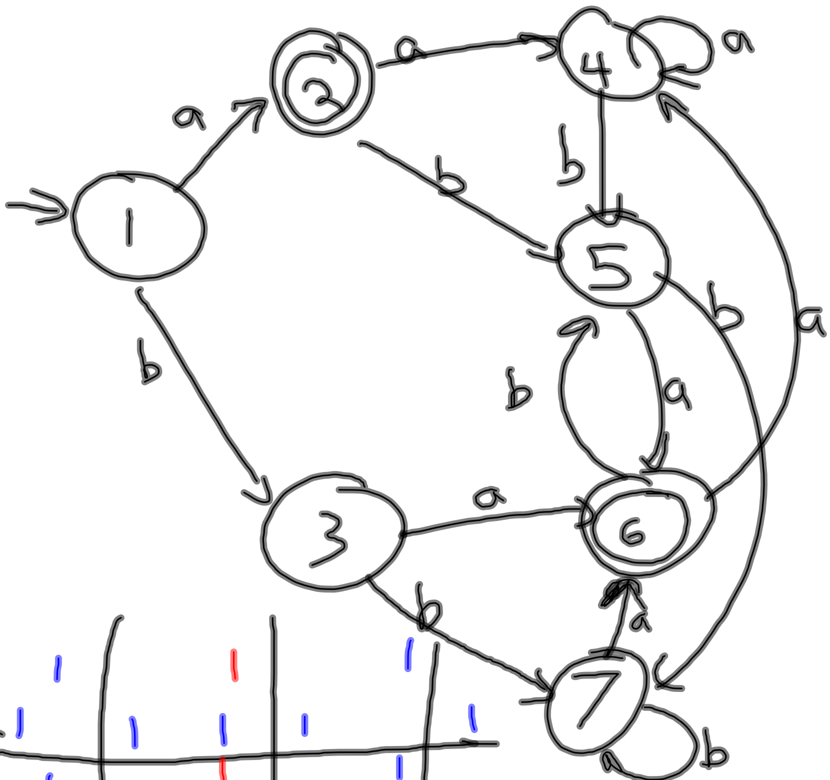
$[1] = \{1,3\}$

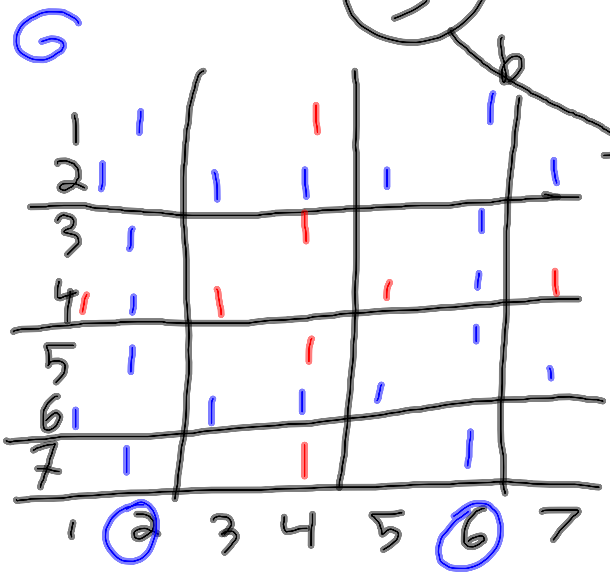
$[2] = \{2,4\}$

$[3] = \{1,3\}$

$[4] = \{2,4\}$







[1] = {1, 3, 5, 7}

[2] = {2, 6}

[3] = {1, 3, 5, 7}

[4] = {4}

[5] = {1, 3, 5, 7}

[6] = {2, 6}

[7] = {1, 3, 5, 7}