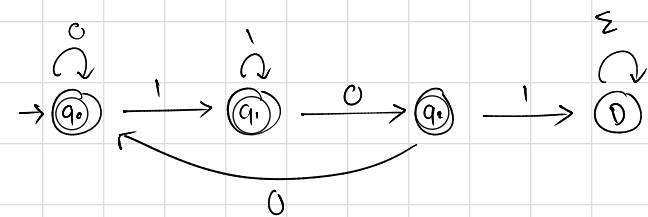
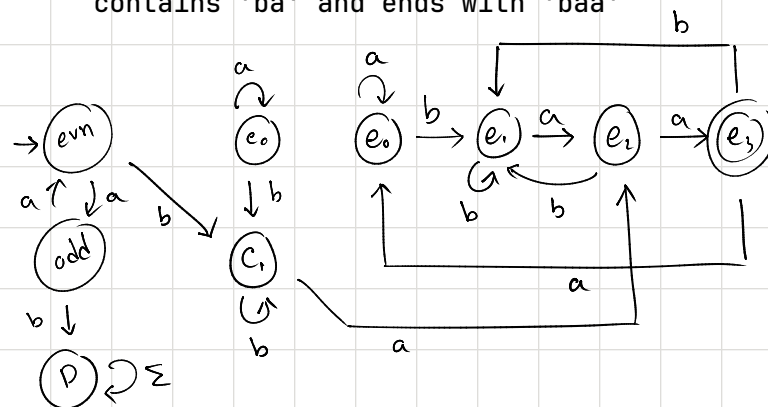


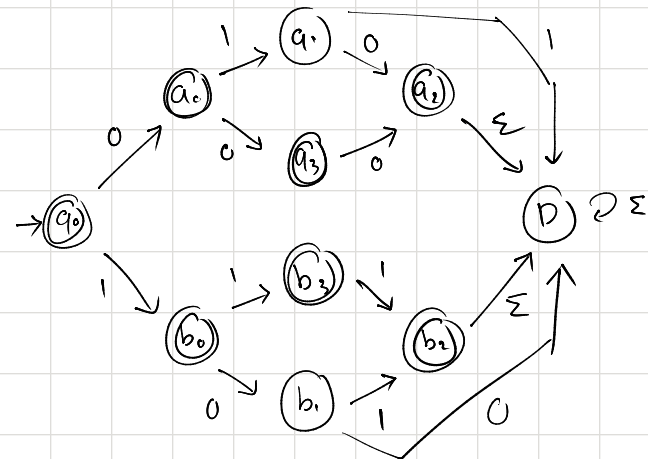
1. a) Does not contain '101'



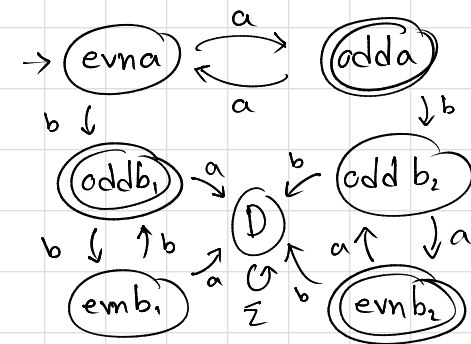
b) starts with an even number of 'a', contains 'ba' and ends with 'baa'



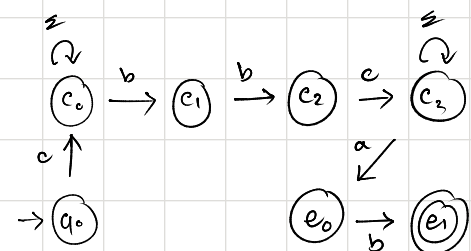
c) panlindrome with max length 3



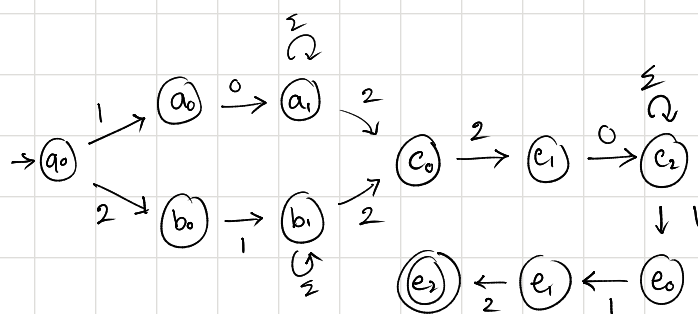
d)  $a^i b^j$ ,  $i \geq 0$ ,  $j \geq 0$ ,  $i+j$  is odd



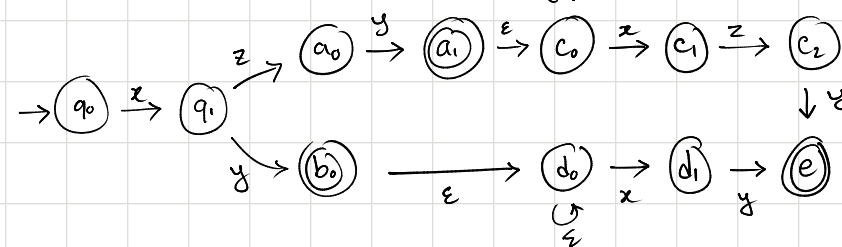
2. a) doesn't start with 'a' or 'b', contains 'bbc' and ends with 'ab'



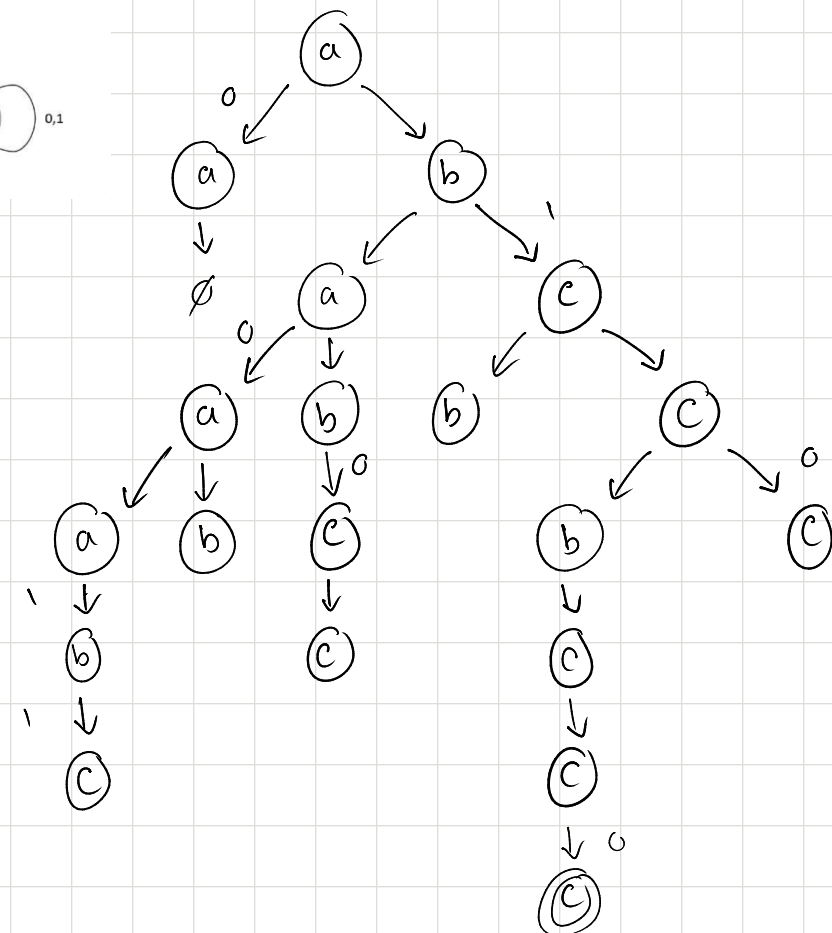
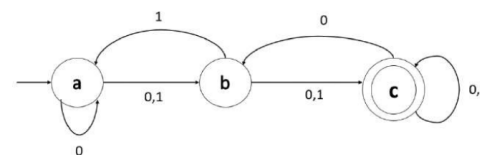
b) starts with '10' or '21', contains '220', ends with '112'



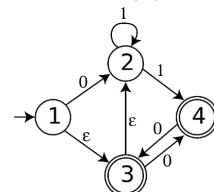
c) starts and ends with either 'xzy' or 'xy'



3. Consider the following NFA, and show with the help of NFA-tree whether the string '0100110' is accepted or not.



5. Convert the following  $\epsilon$ -NFA over alphabet  $\Sigma = \{0,1\}$  to an equivalent DFA.



NFA transition table

	0	1	$\epsilon$
$\rightarrow 1$	$\{2\}$	$\emptyset$	$\{1,2,3\}$
2	$\emptyset$	$\{2,4\}$	$\{2\}$
3*	$\{4\}$	$\emptyset$	$\{2,3\}$
4	$\{3\}$	$\emptyset$	$\{4\}$

DFA transition table

	0	1
$\rightarrow \{1,2,3\}^*$	$\{2,4\}$	$\{2,4\}$
$\{2,4\}$	$\{2,3\}$	$\{2,4\}$
$\{2,3\}^*$	$\{4\}$	$\{2,4\}$
$\{4\}$	$\{2,3\}$	$\emptyset$
$\emptyset$	$\emptyset$	$\emptyset$

