Doubt Clearing Session

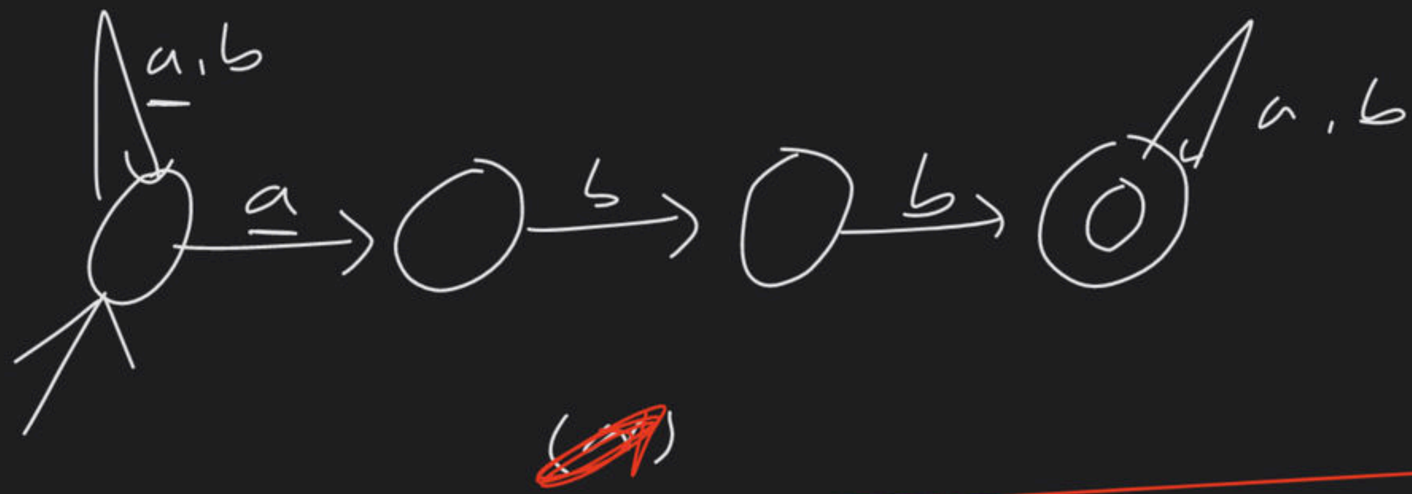
Complete Course on Theory of Computation

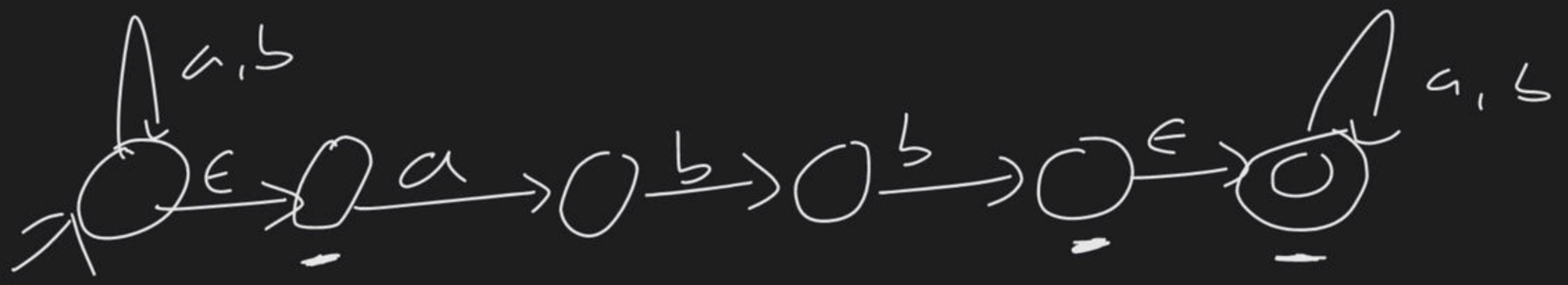
Subbarao Lingamgunta • Lesson 16 • Feb 23, 2022

C-NFA $L = \{$ Set of all strings ~~of a's & b's~~ where each string contain abb as substring $\}$.

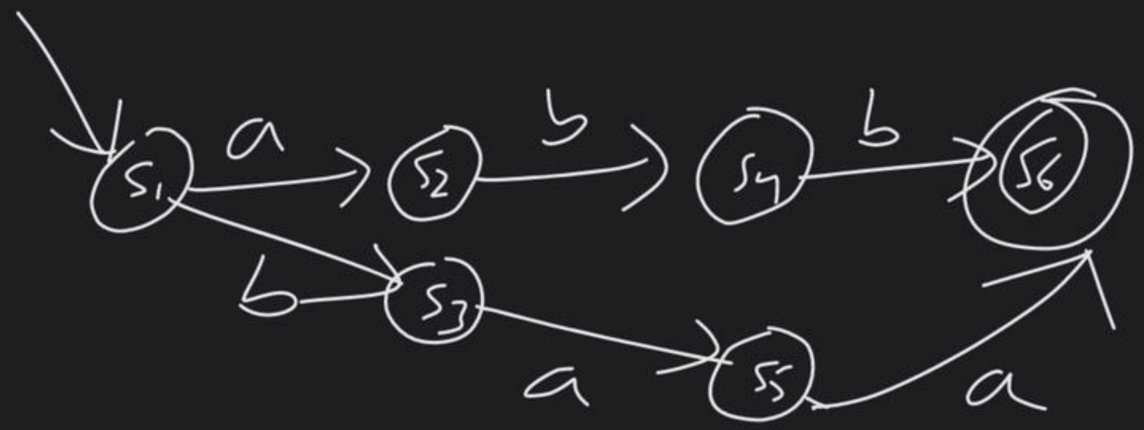
$\Sigma^* abb \Sigma^*$

(3)





C-NFA $L = \{abb, baa\}$



4

DFA: $\delta: Q \times \Sigma \rightarrow Q$

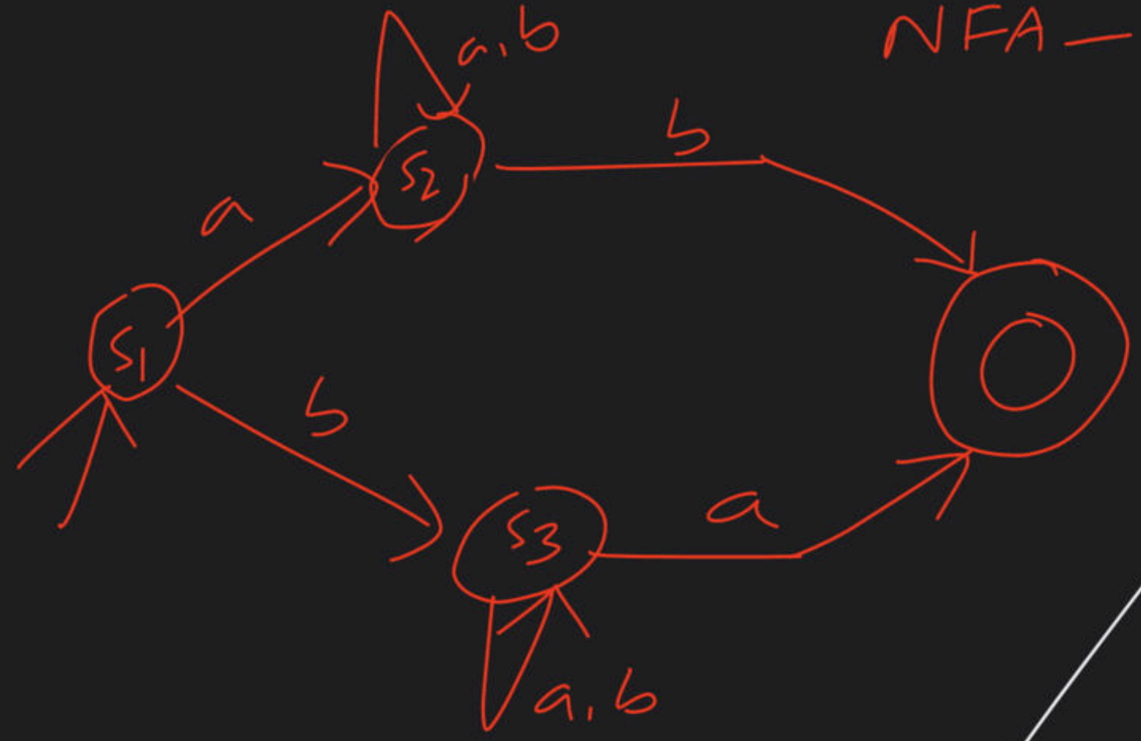
NFA: $\delta: Q \times \Sigma \rightarrow P(Q)$ (or) 2^Q

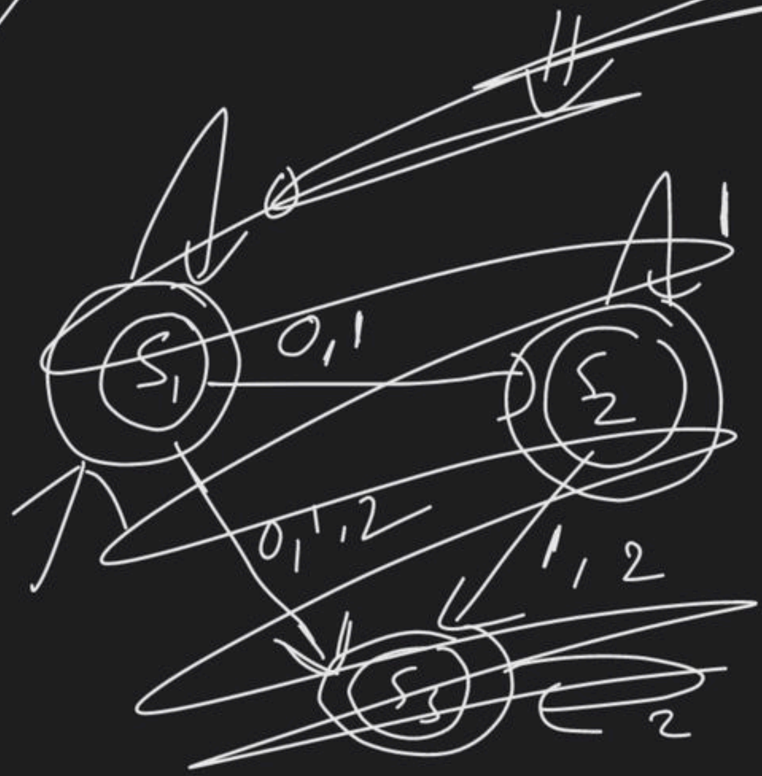
ϵ-NFA: $\delta: Q \times \{\Sigma \cup \epsilon\} \rightarrow P(Q)$ (or) 2^Q

NFA

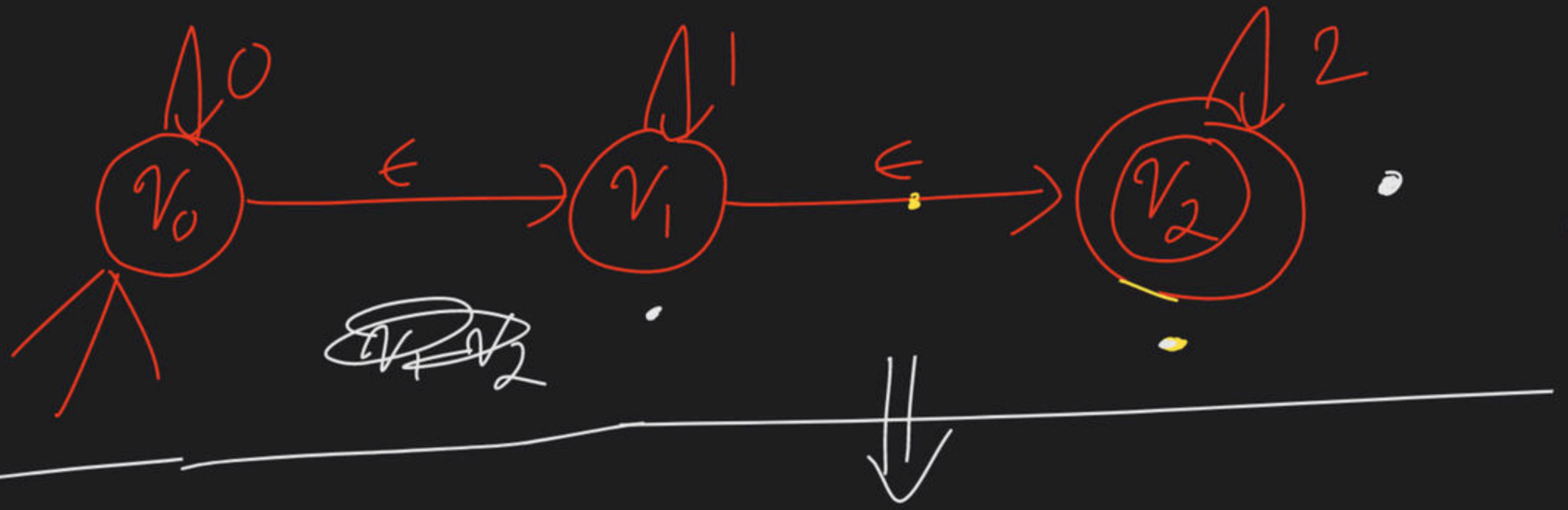
FA

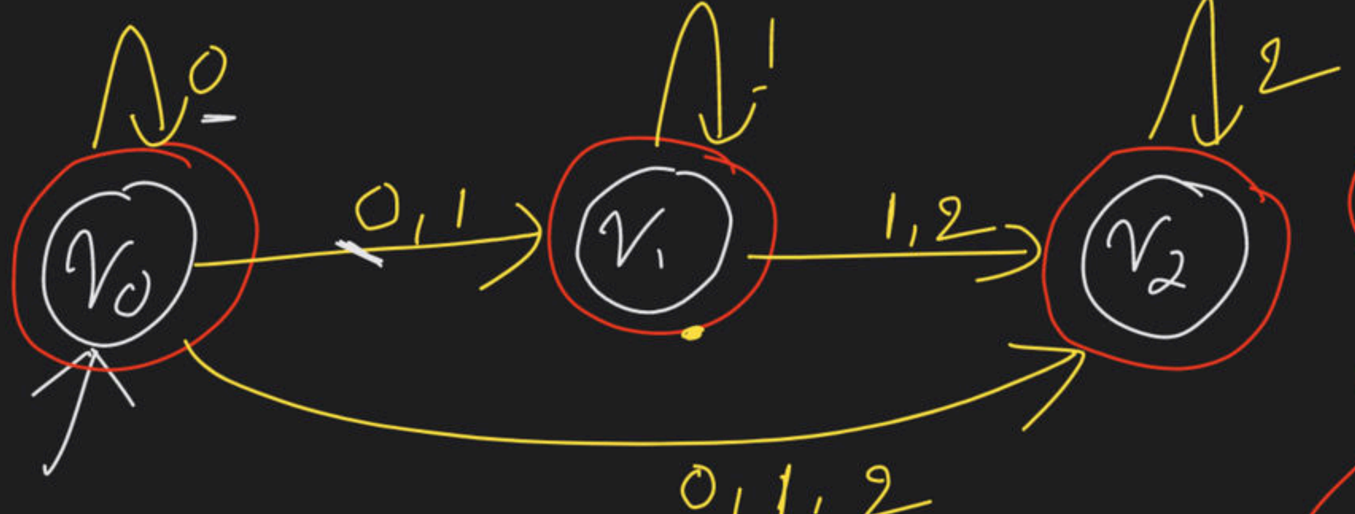
NFA — start & end symbol different





ε-NFA to NFA conversion



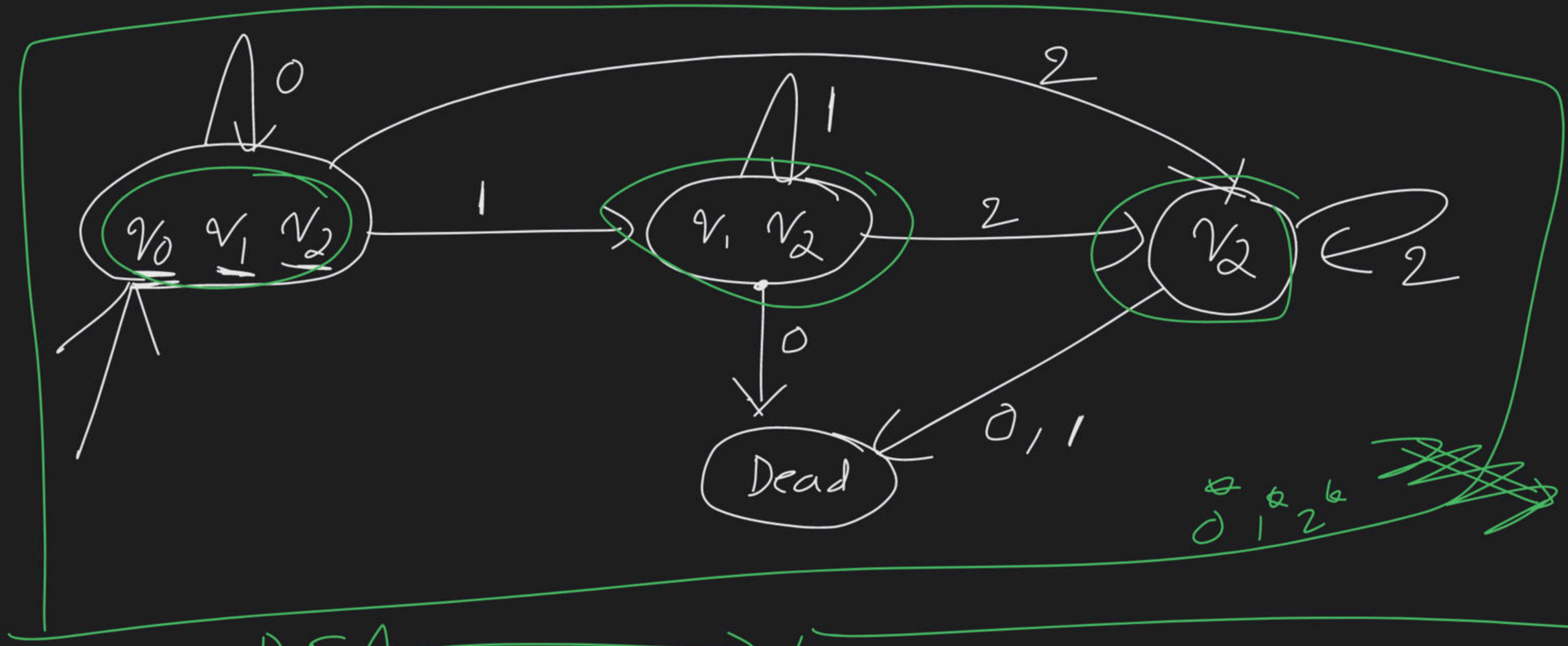


Initial state - Same

No. of states - Same

Final states

- Same Final state + From any state by reading any i/p you can reach final making it final



DFA ⟹

ϵ-NFA ⟹ DFA

Initial state ⟹ Same initial

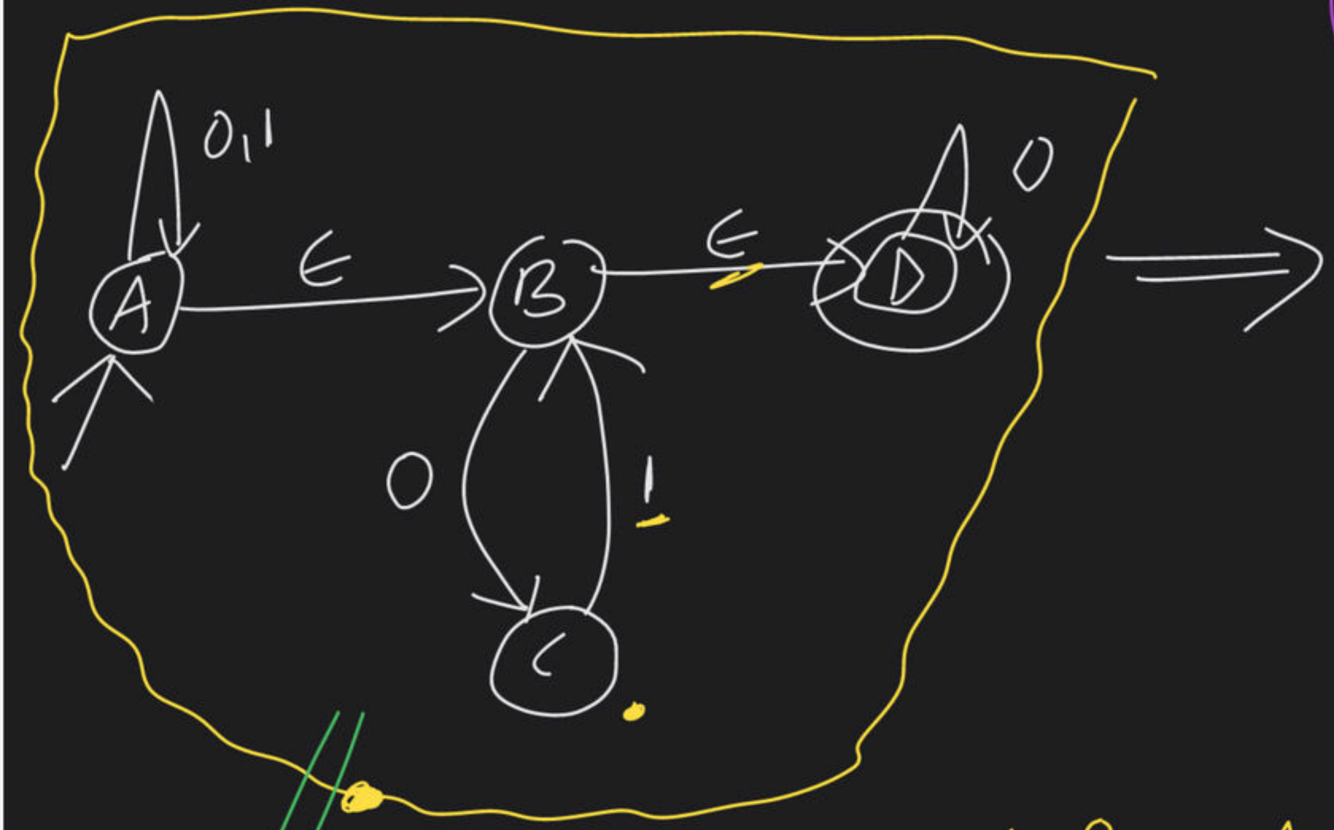
+

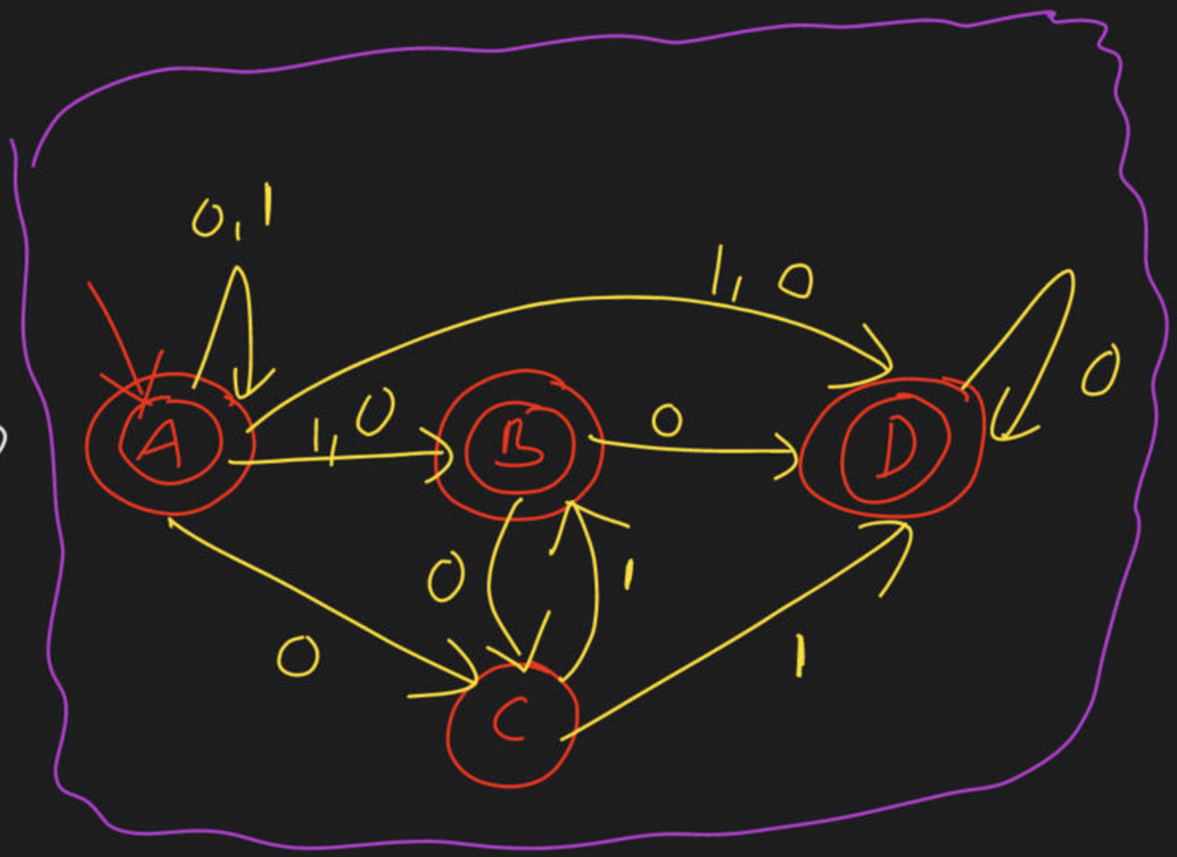
From initial state by reading ϵ which state you can go make those all part of initial.

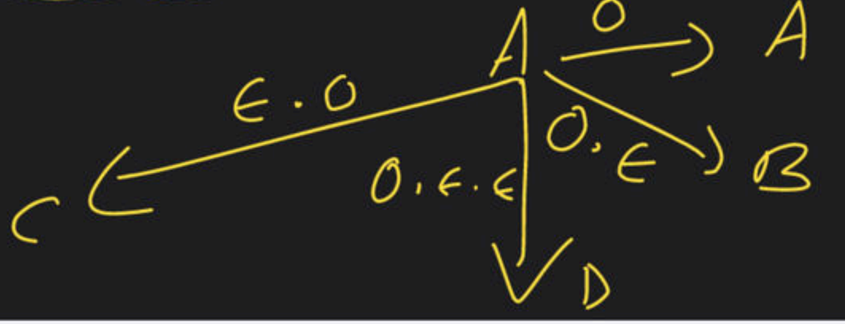
any where if you see ϵ-NFA final state then make that state of final in DFA.

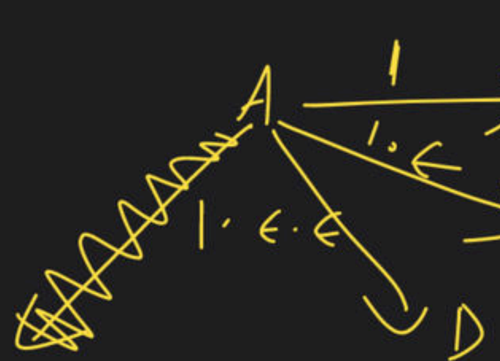
ex

ϵ - NFA ⟹ NFA



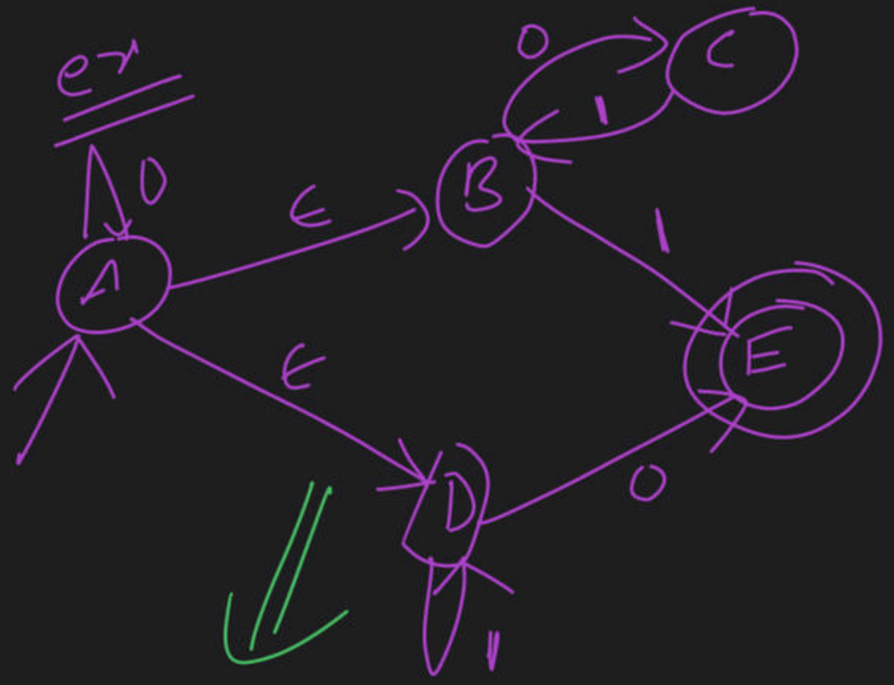






D —0→ D

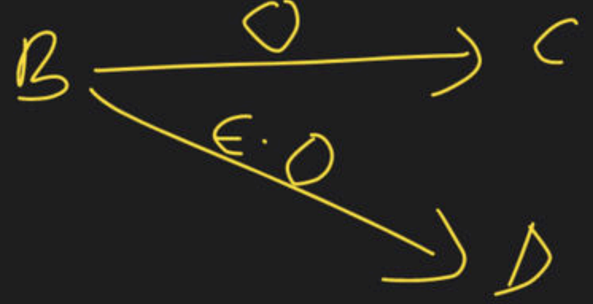
D —1→ ϕ



NFA

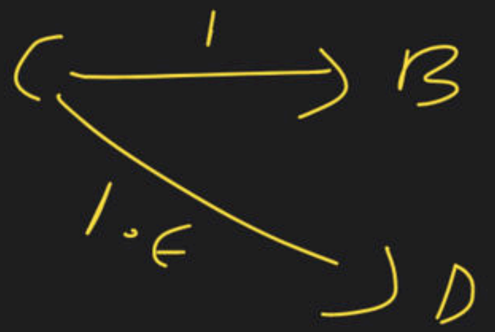
	0	1
→ A	A, B, C, D, E	E, D
B	C	E
C	ϕ	B
D	E	D
* E	ϕ	ϕ

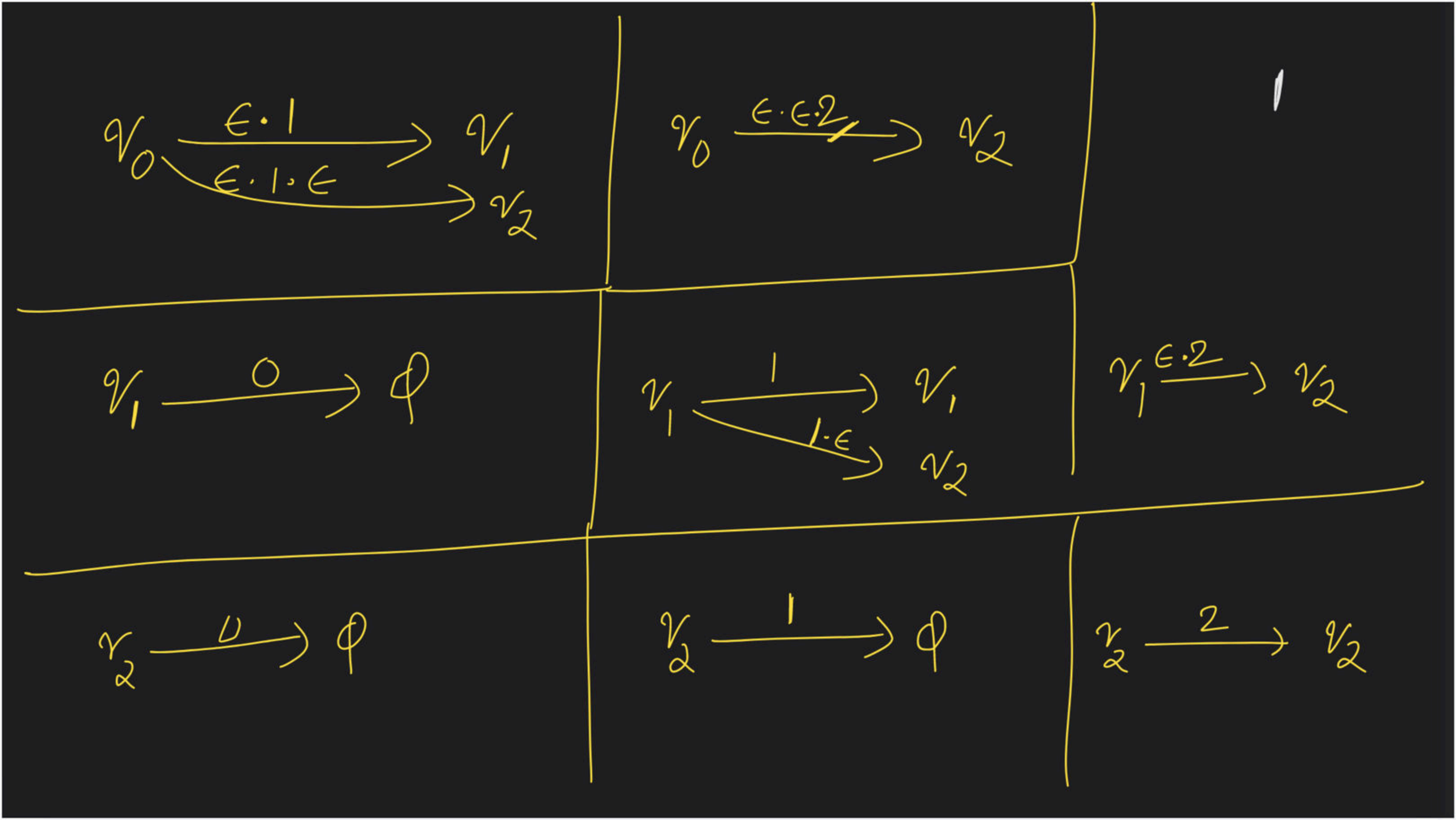
Note: From any state by reading only ε if you can go to final then make that state as final.

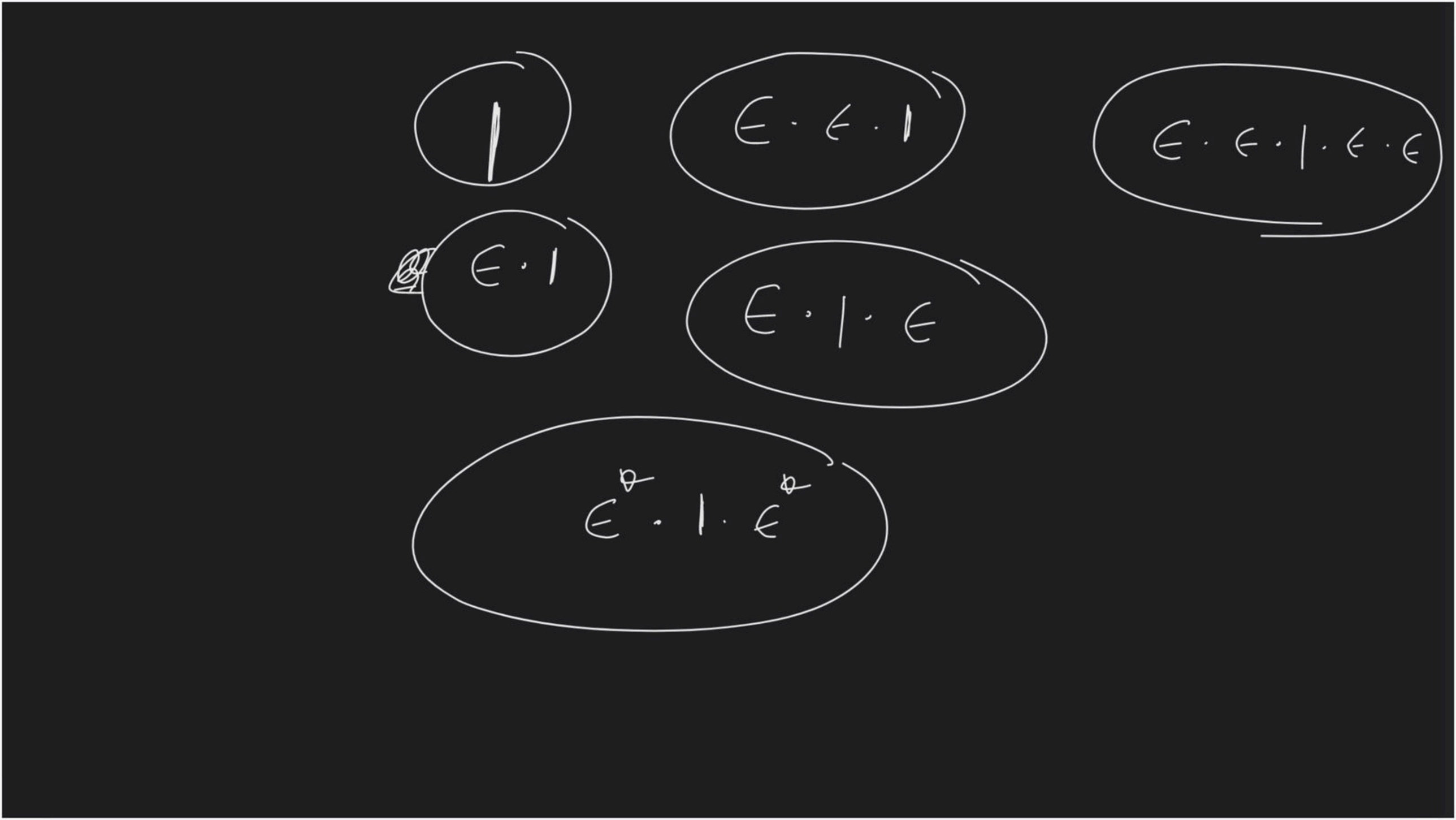

B
0
C
ε·0
D


B
1
ϕ


C
0
ϕ


C
1
B
1·ε
D


q_0
$\epsilon \cdot 1$
q_1
$\epsilon \cdot 1 \cdot \epsilon$
q_2
q_0
$\epsilon \cdot \epsilon \cdot 2$
q_2
1
q_1
0
ϕ
q_1
1
q_1
$1 \cdot \epsilon$
q_2
q_1
$\epsilon \cdot 2$
q_2
q_2
0
ϕ
q_2
1
ϕ
q_2
2
q_2


1
ϵ · ϵ · 1
ϵ · ϵ · 1 · ϵ · ϵ
ϵ · 1
ϵ · 1 · ϵ
ϵ* · 1 · ϵ*