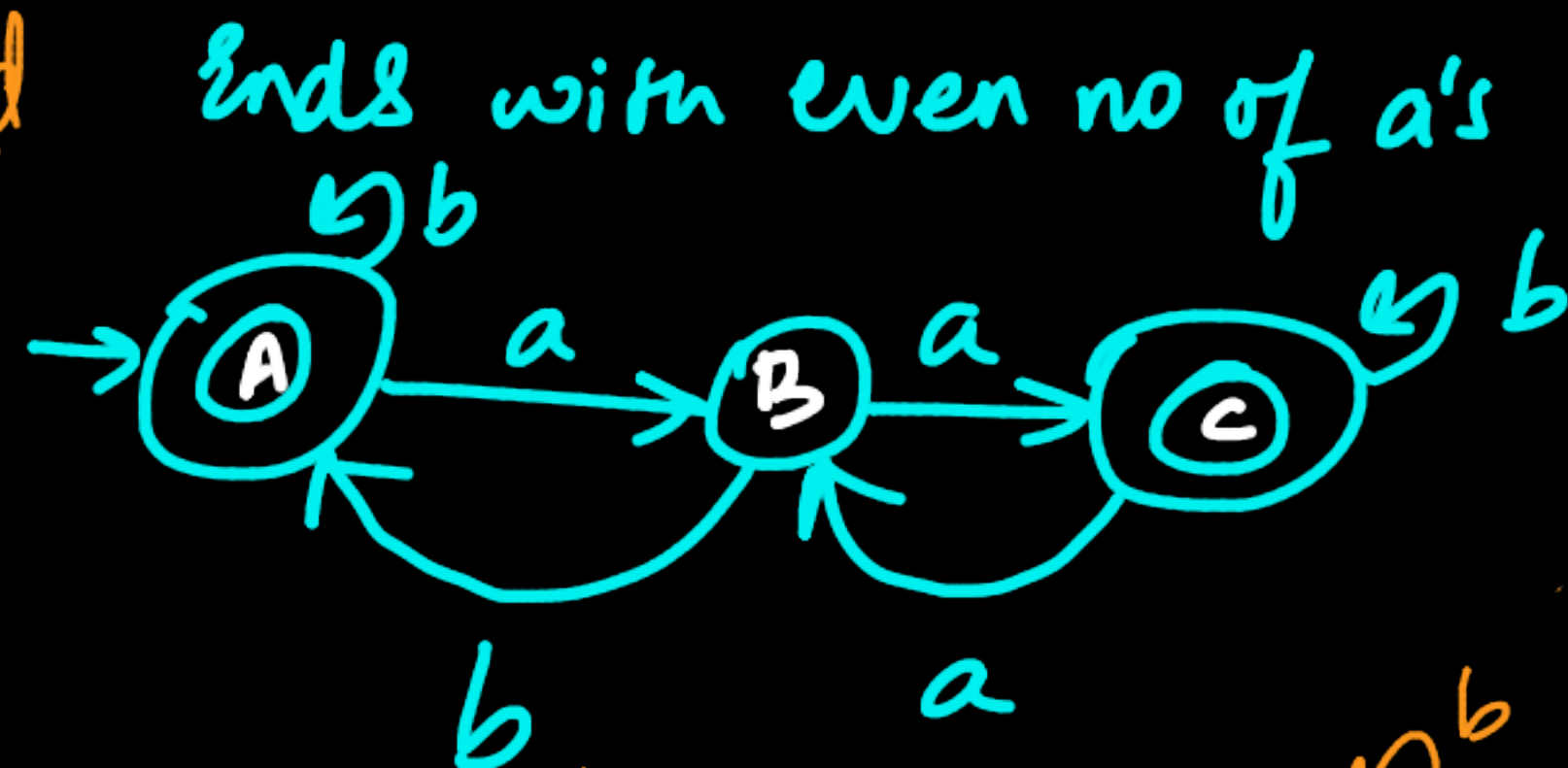


Construct a DFA for the lang that accepts
set of strings that must contain
at least two a's and end with even no. of d's.

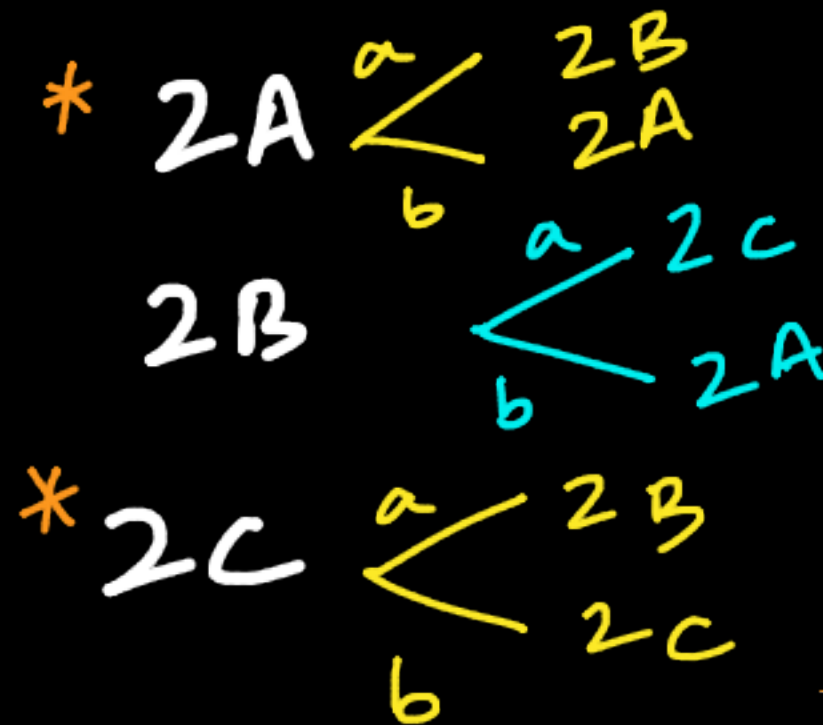
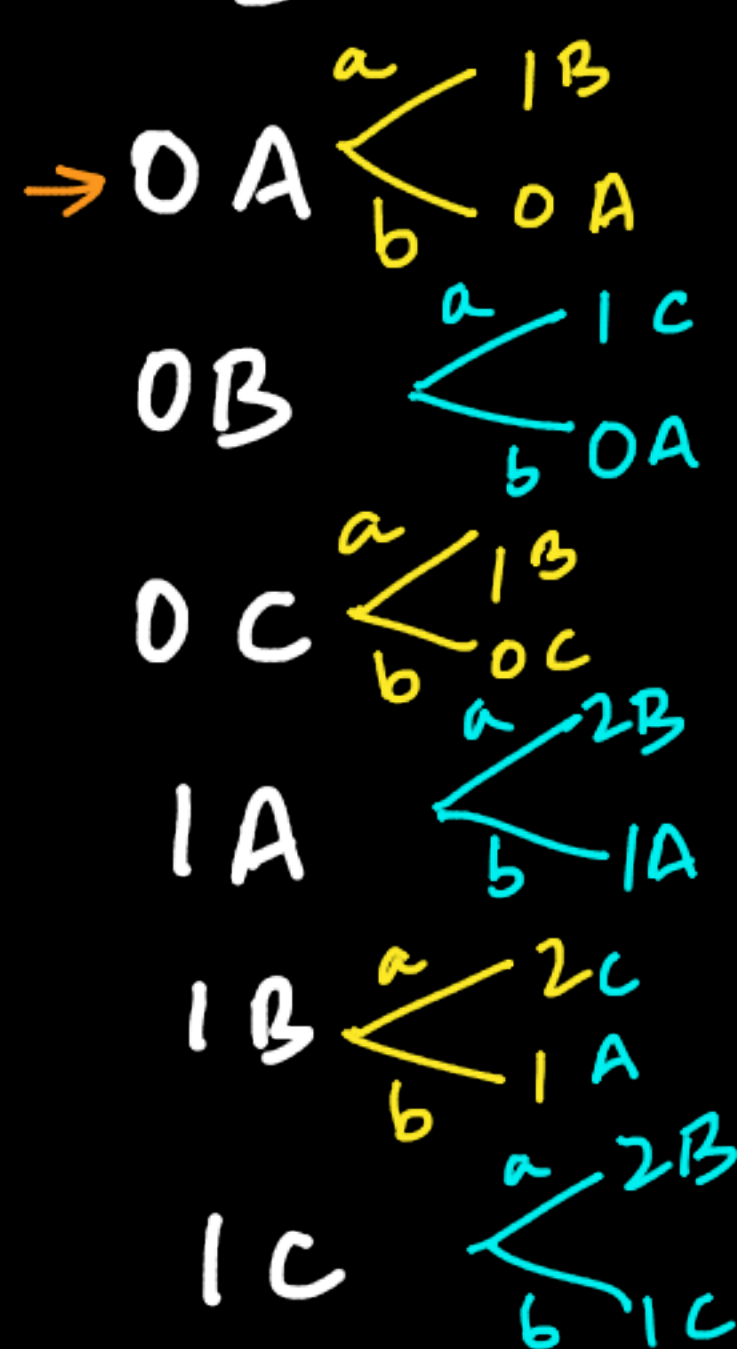
Language :-

$L = \{ aa, b, bb, \dots \text{any no. of } b\text{'s},$
 $abab, abaab, aababaa, \dots$
 $\text{so on!} \}$

We use Cartesian product to construct DFA for
such a language!

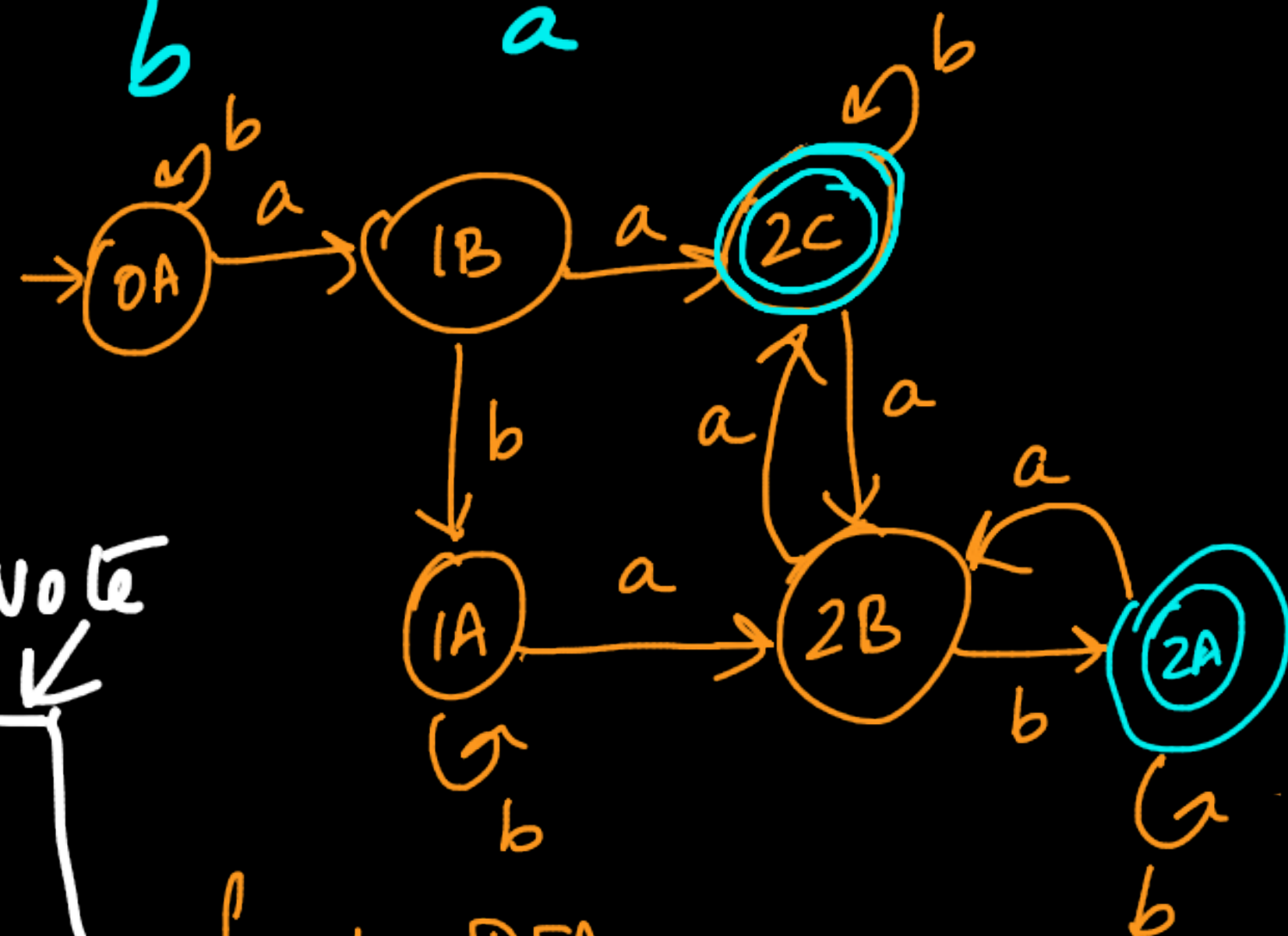


$\{0, 1, 2\} \times \{A, B, C\}$



Note

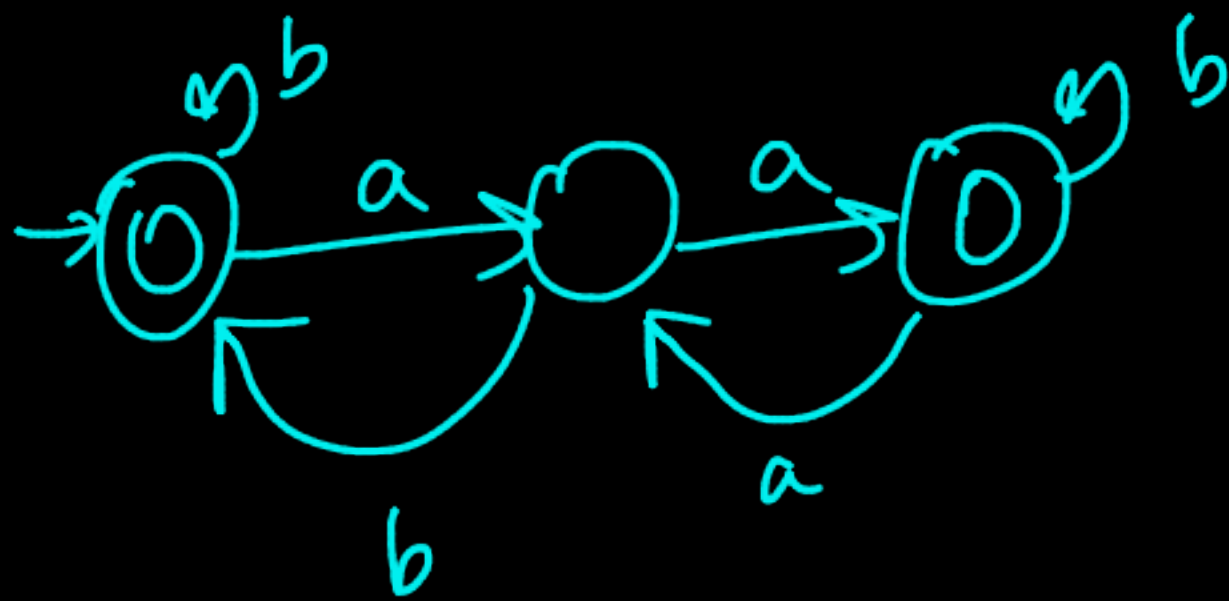
0B, 0C, 1C
are unreachable
from start state



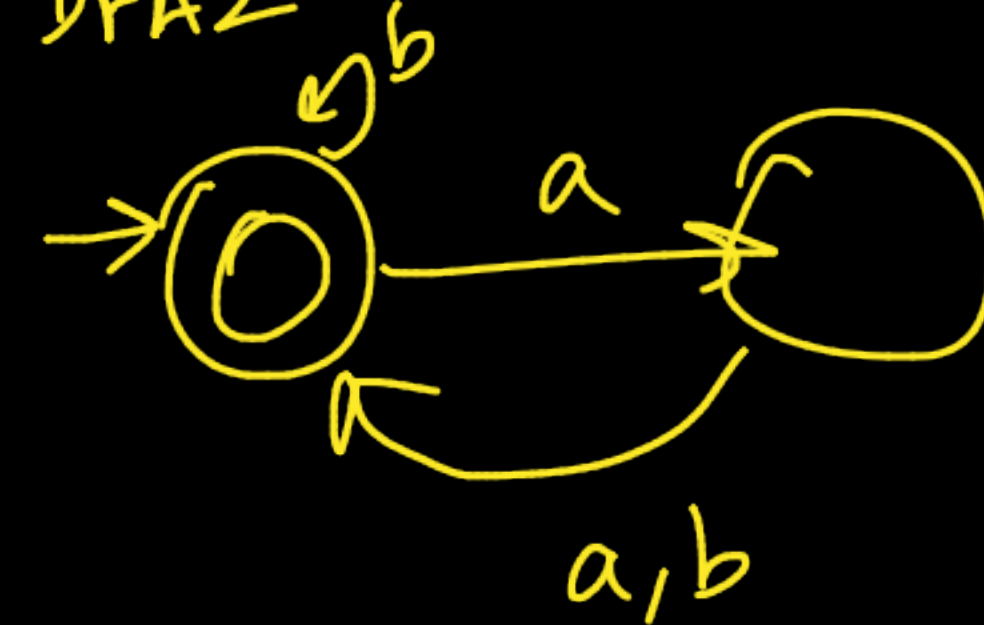
final DFA

In fact the following 2 DFA's are equivalent -
for the lang where the strings must
end with even no. of a's

DFA $\rightarrow 1$

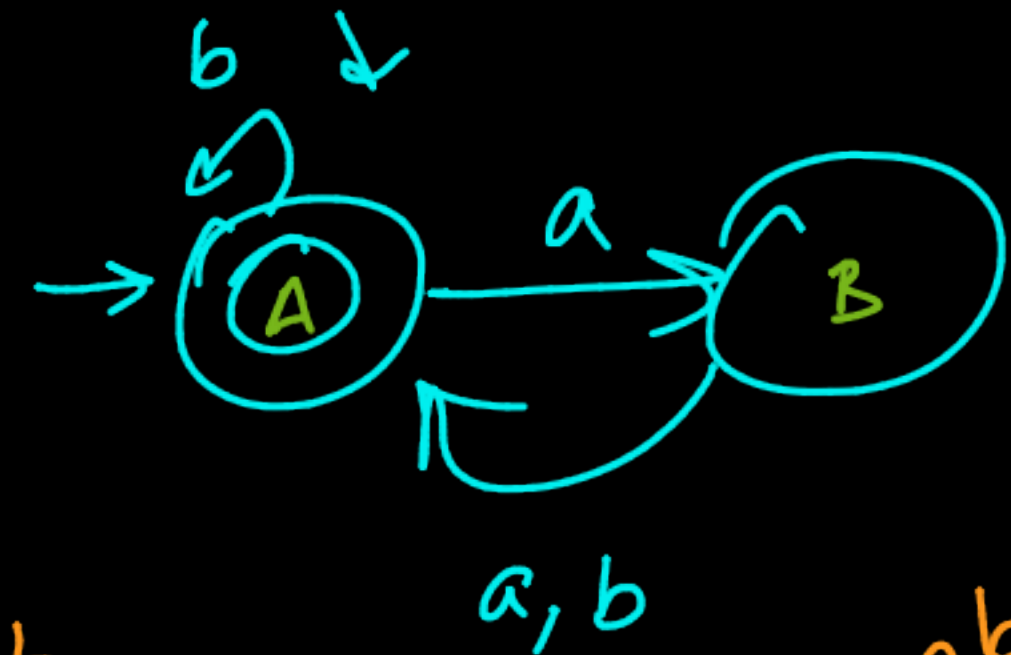
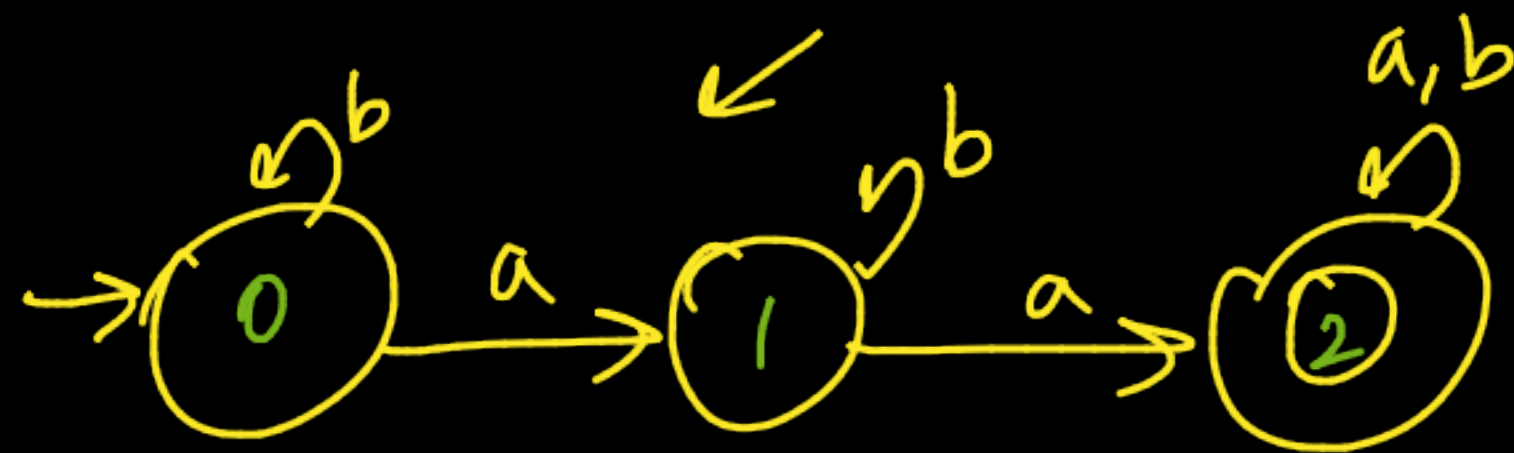


DFA2

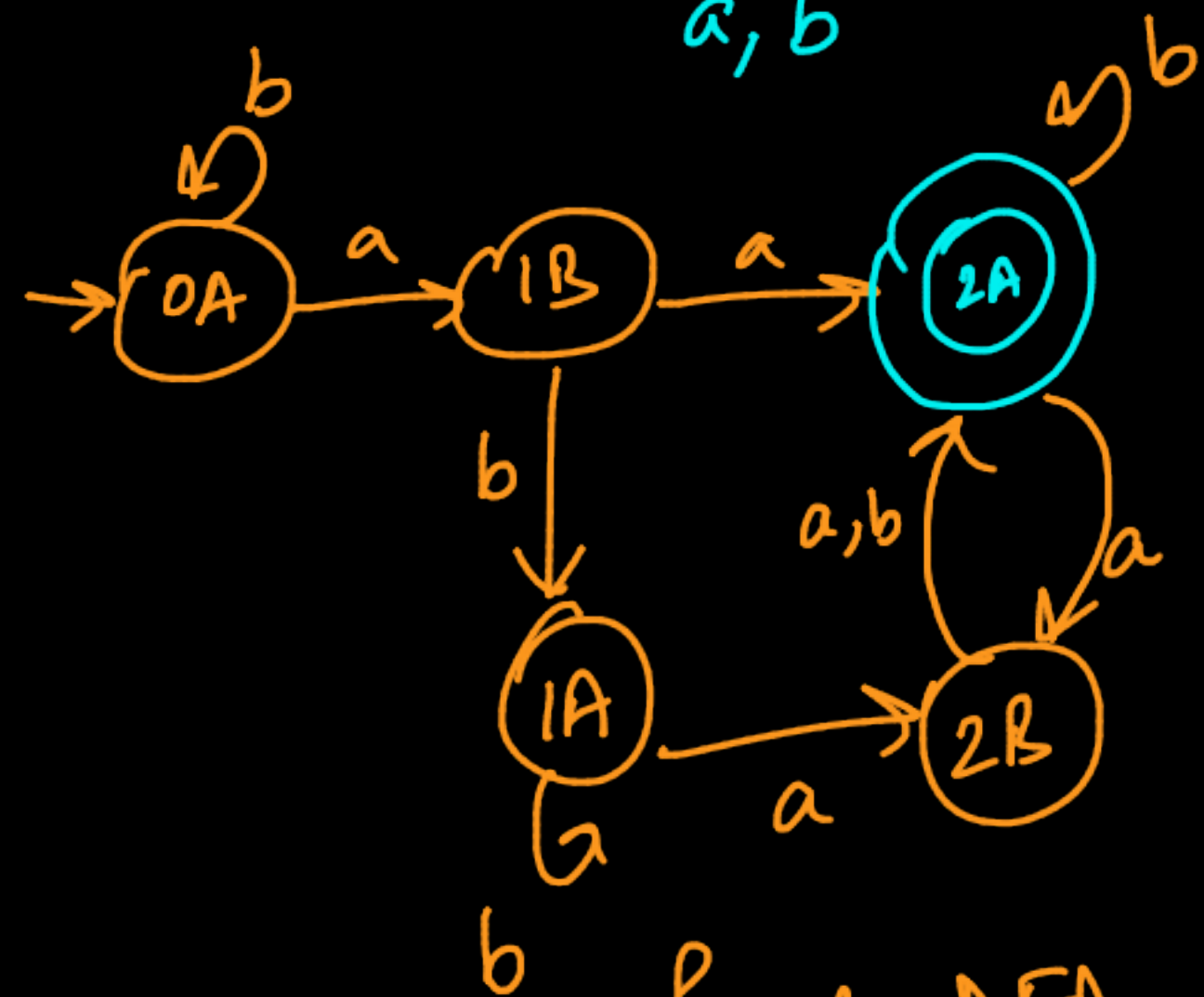
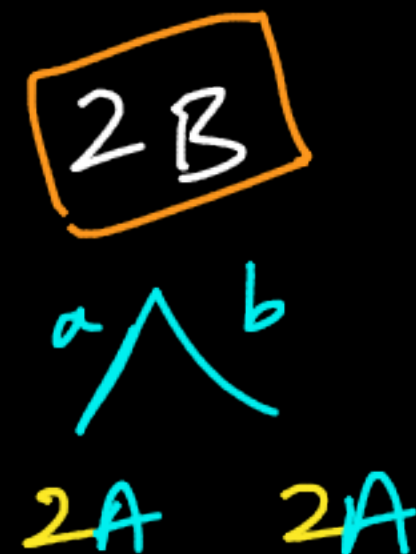
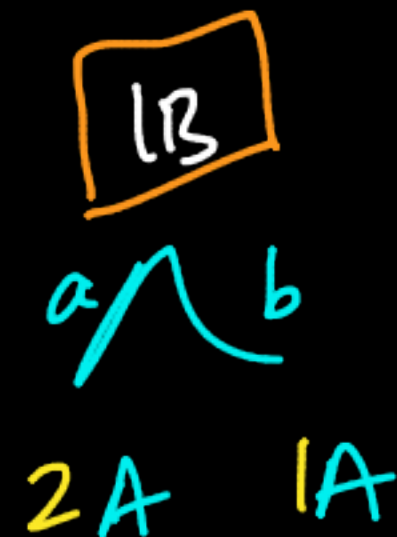
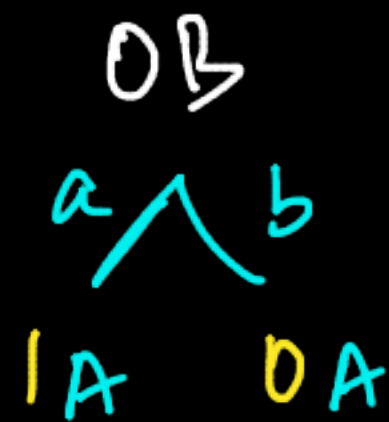
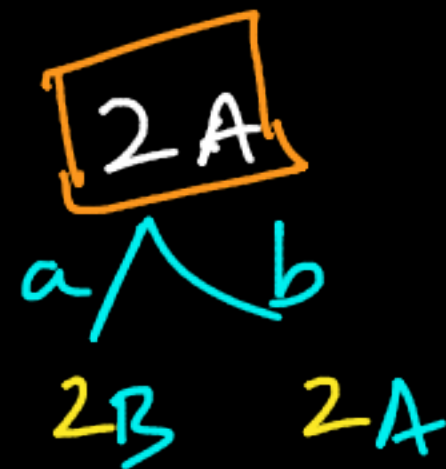
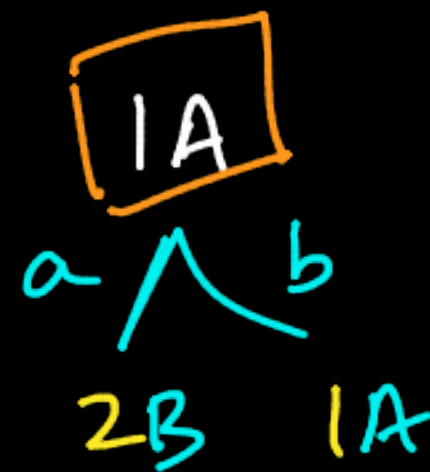
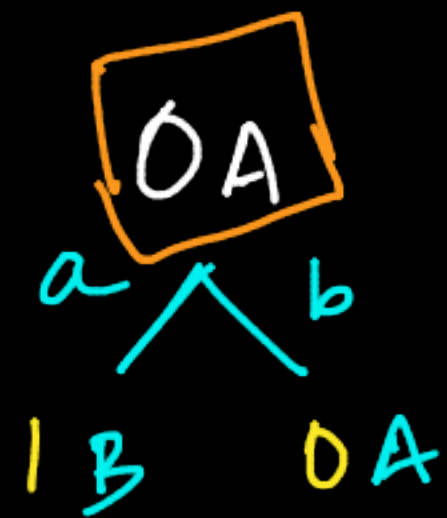


Both DFA₁ and DFA₂ are accepting the
same lang, let's solve the question using DFA₂

$L = \{ \text{at least two } a\text{'s and ending with even no. of } a\text{'s} \}$



$\{0, 1, 2\} \times \{A, B\}$



Note:- 0B is not reachable from start state! final DFA