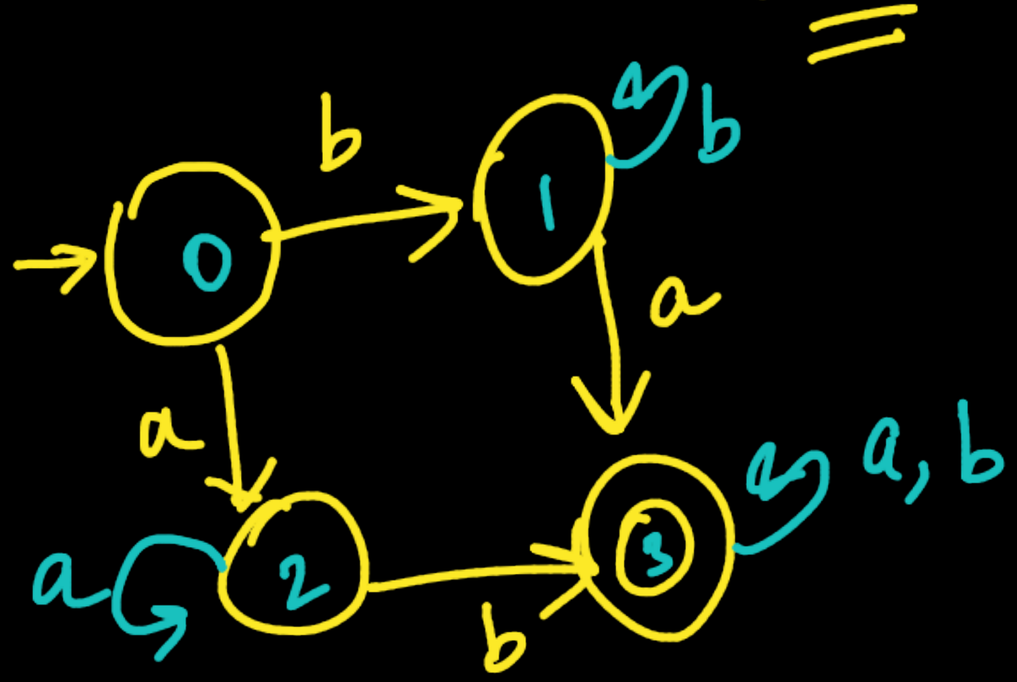
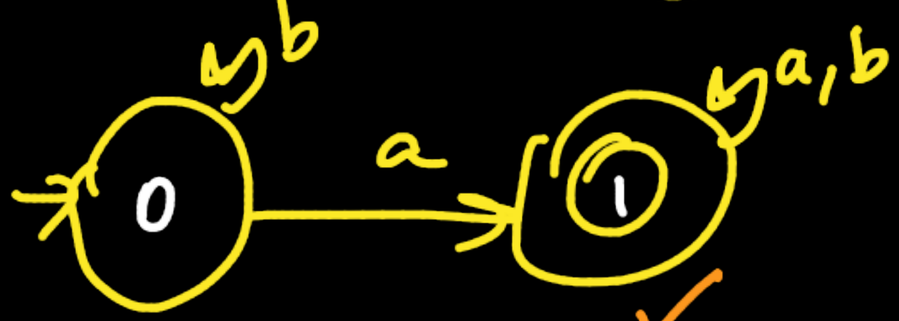
Construct DFA for the lang that accepts set of strings that contain atleast one a and atleast one b

Straight way

$L = \{ ab, ba, aaaab\ldots, ababa\ldots ab, bbbb\ldots a \ldots \}$



$\Sigma = \{a, b\}$ Atleast one a

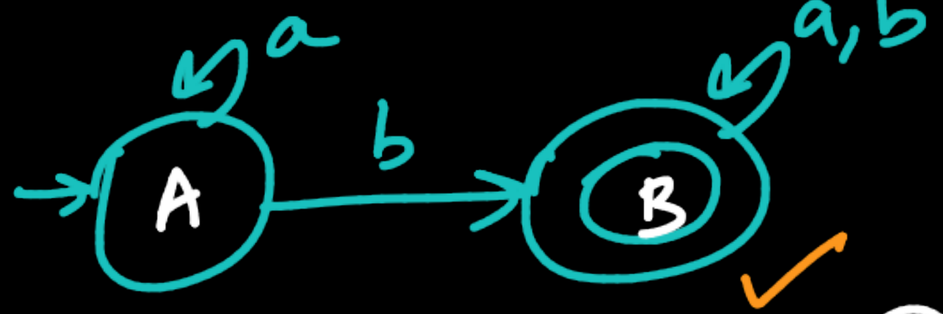


1 or B

and

or

Atleast one b

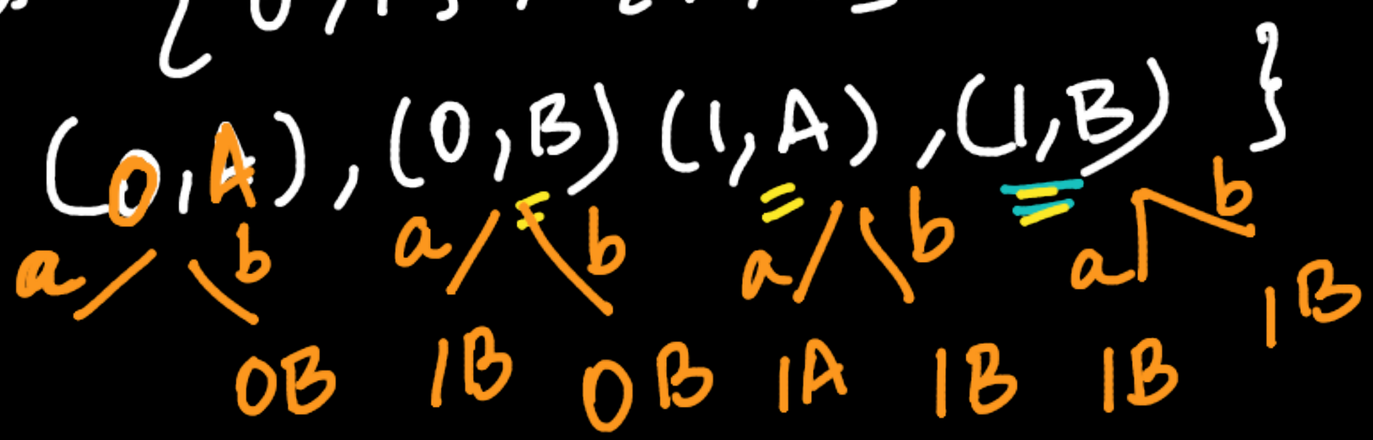


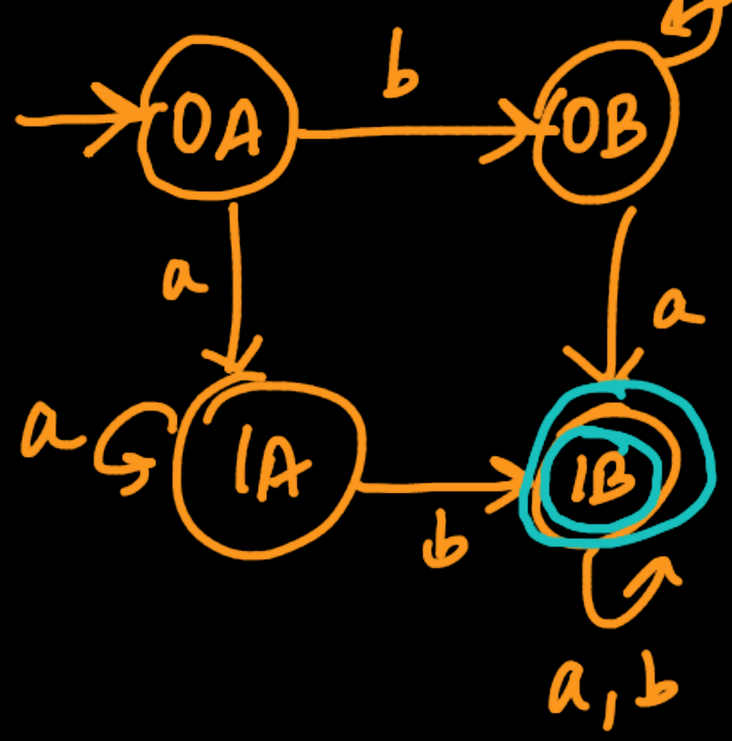
2 X 2 = 4 states

final state 1B

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

$= \{(0,A), (0,B), (1,A), (1,B)\}$

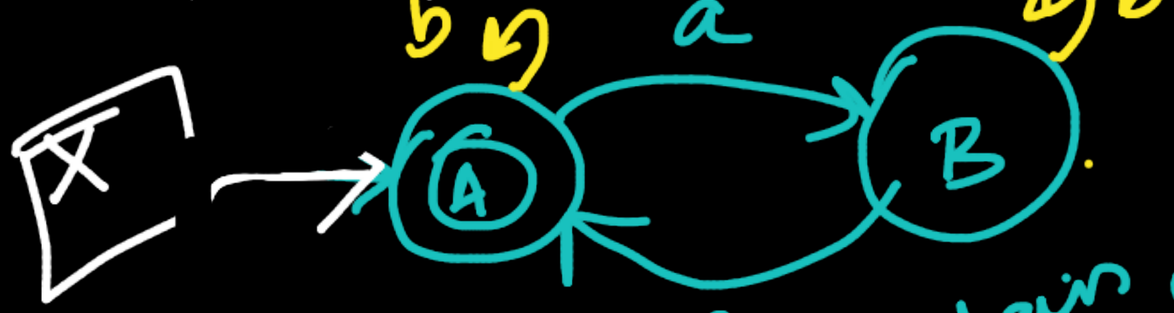




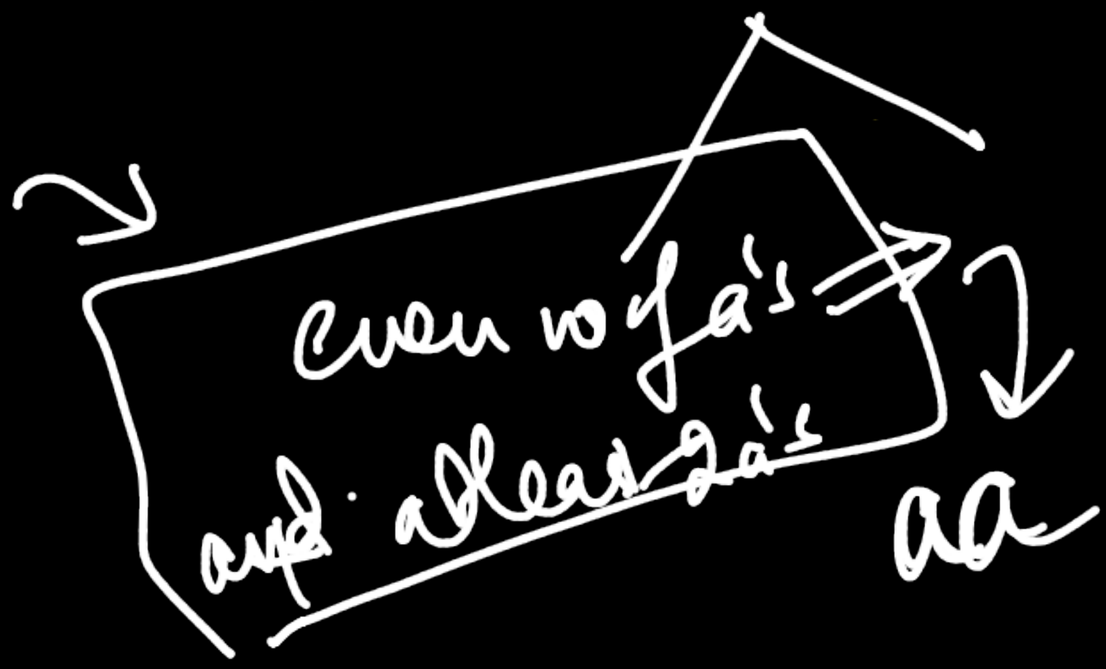
L = atleast 2 a's & containing even no. of a's

$L = \{aa, bbabbabb\ldots aa\}$

$L = \{\lambda, bb\ldots bbaa, \ldots bb\ldots\}$



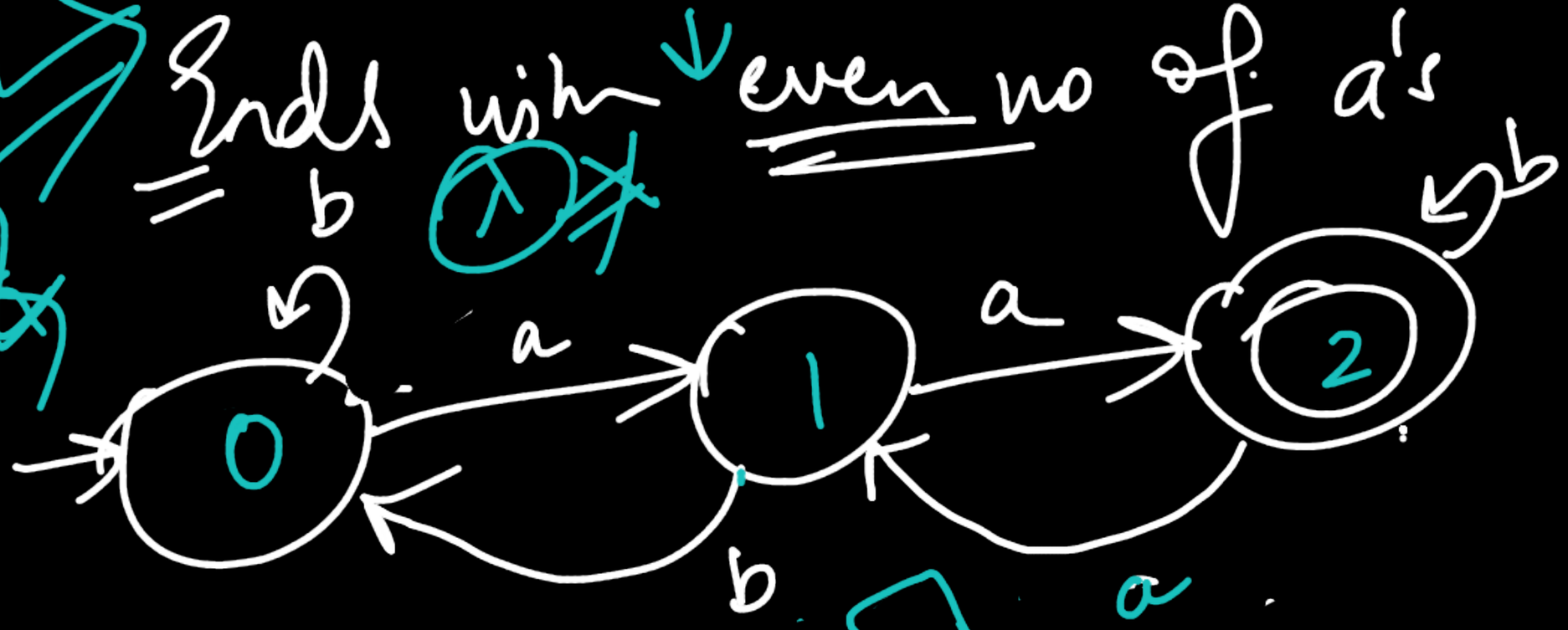
contain even no of a's



atleast 2 a's

Ends with

even no of a's



DFA =

bbbb

bbbab =

b b a a b a b

0 1 2 2 1 2

accpt

λ not accepted

λ → atleast 2 a's & ends with even no of a's

L = { aa, bb, bbb...,
babaabbb, baaaab bb. }