Doubt Clearing Session

Complete Course on Theory of Computation

Subbarao Lingamgunta • Lesson 38 • Mar 26, 2022

Push, Pop & Skip operations

$\delta(s_1, a, z_0) \longrightarrow (s_2, z_0 x) \Longrightarrow$ push

$\delta(s_1, a, \underline{z_0}) \longrightarrow (s_2, \underline{\epsilon}) \Longrightarrow$ pop

$\delta(s_1, a, z_0) \longrightarrow (s_2, z_0) \Longrightarrow$ skip.

ex construct PDA $L = \{a^n b^n / n \geq 1\}$;

i/p: a a a a b b b b $

a's — push

a's — push

⋮

a's — push

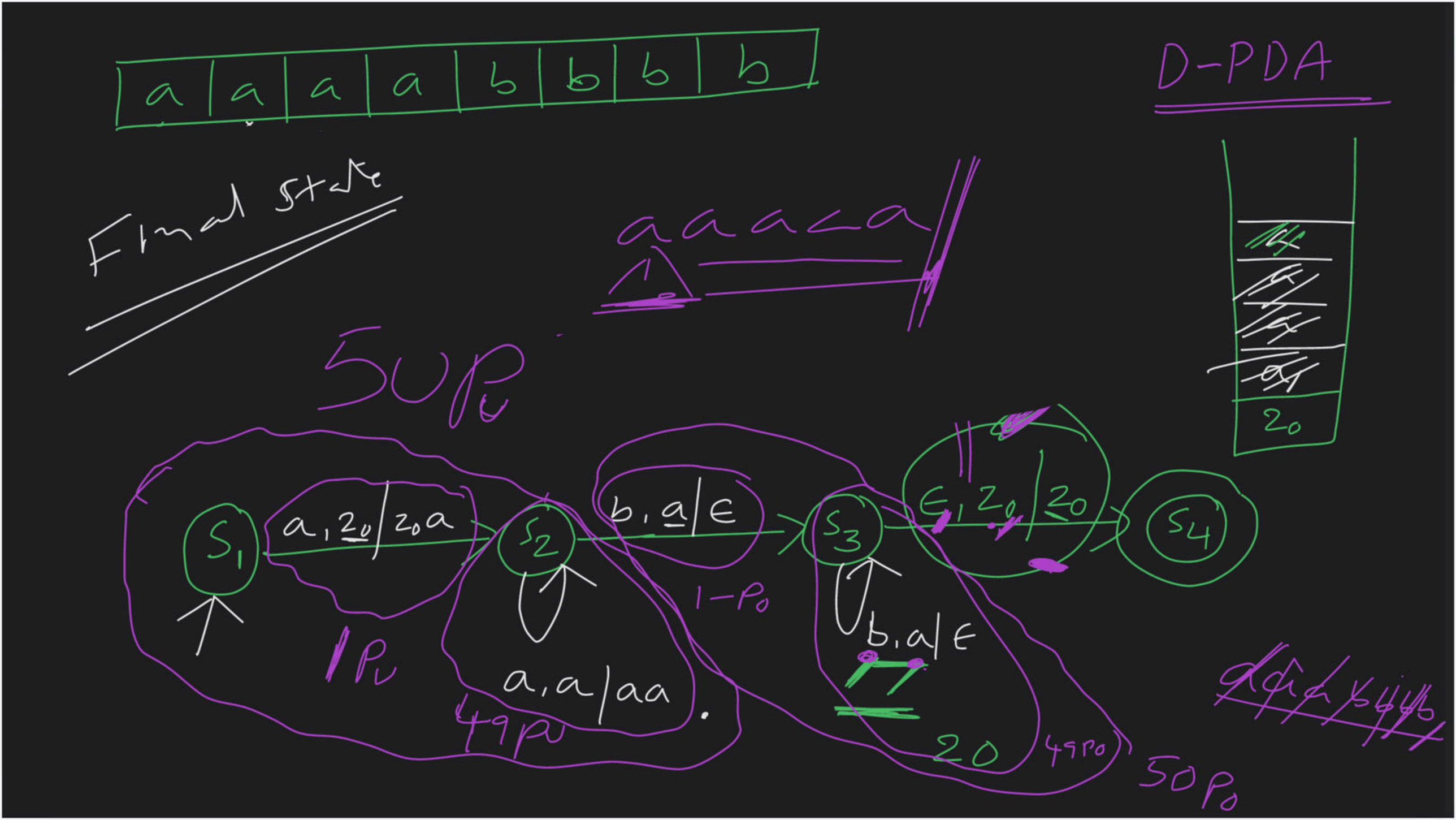
b's — pop(a)

b's — pop(a)

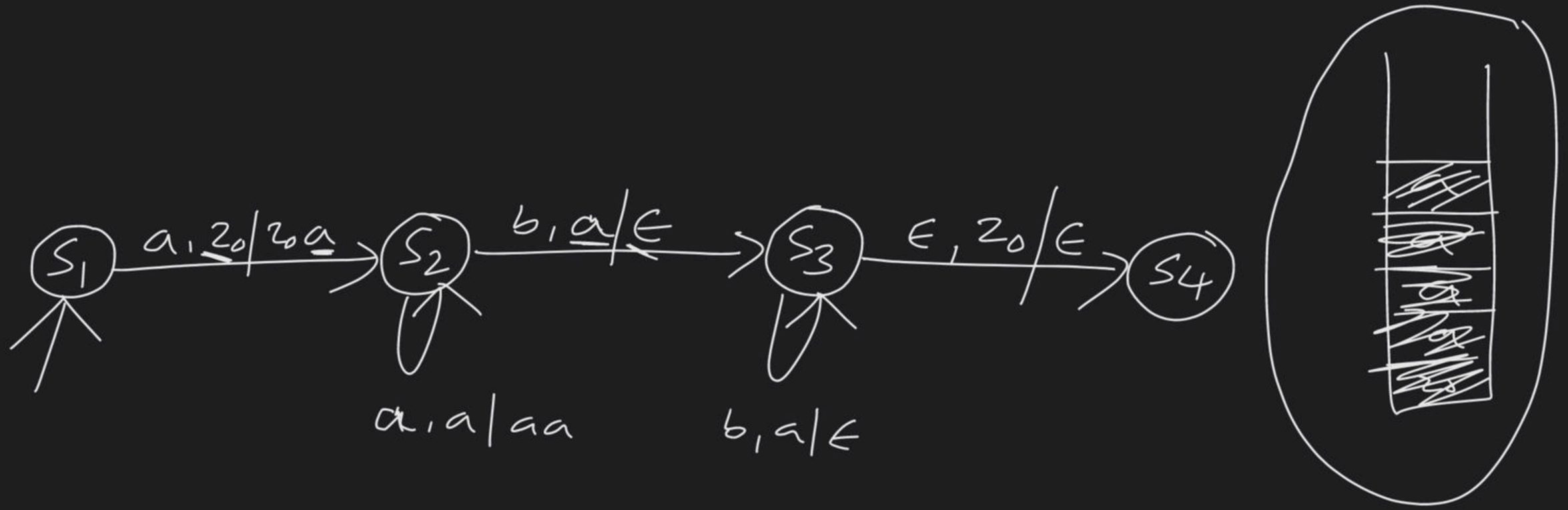
⋮

b's — pop(a)

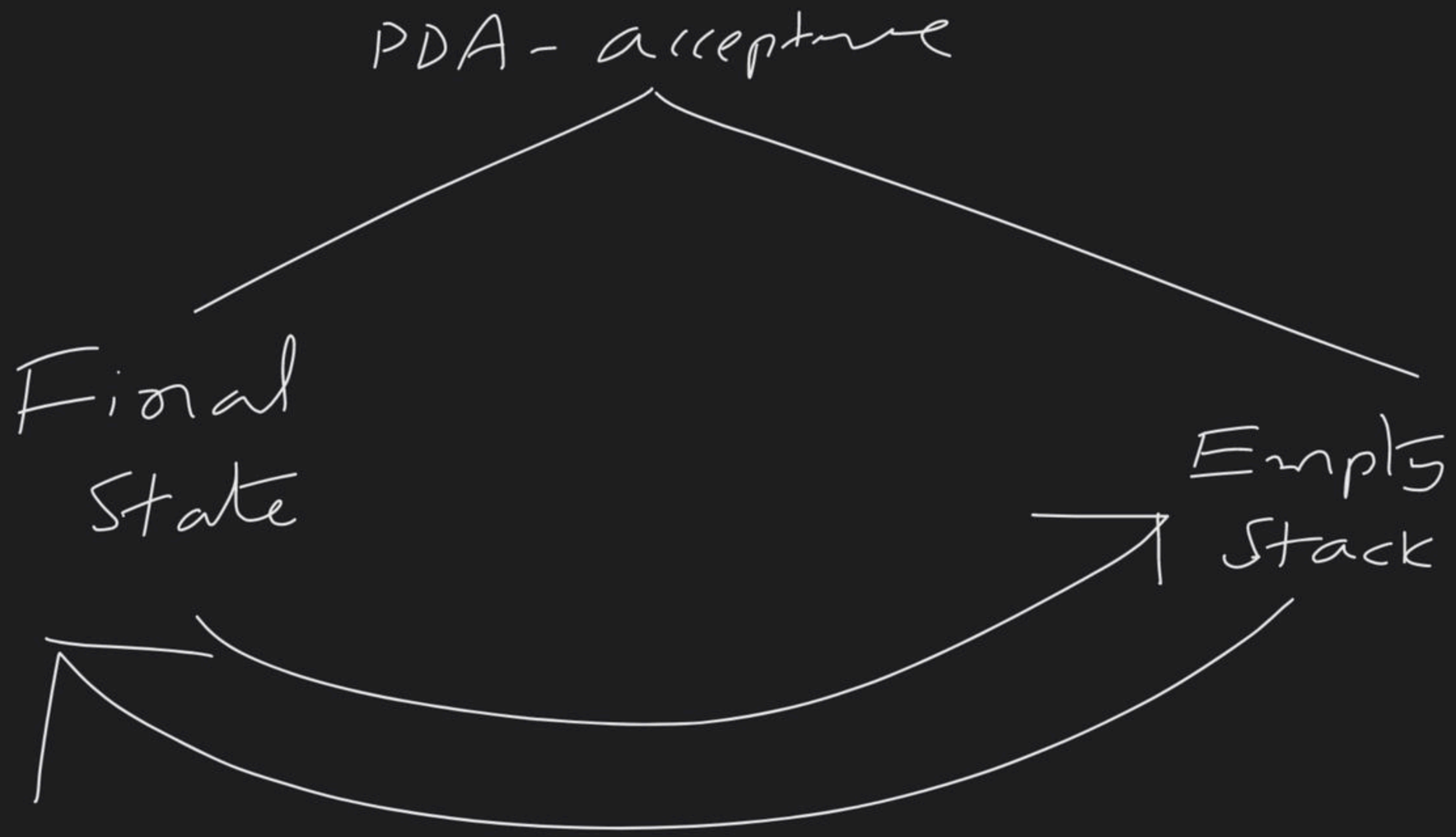
$ — z_0 ⇒ Succ comptn


a a a a b b b b
D-PDA
Final state
aaaaaa
50Pu
S1
a, Z0 / Z0 a
1Pu
S2
a, a / aa
49Pu
b, a / ε
1-Po
S3
b, a / ε
20
49Po
ε, Z0 / Z0
50Po
S4
Z0

a a a a b b b b

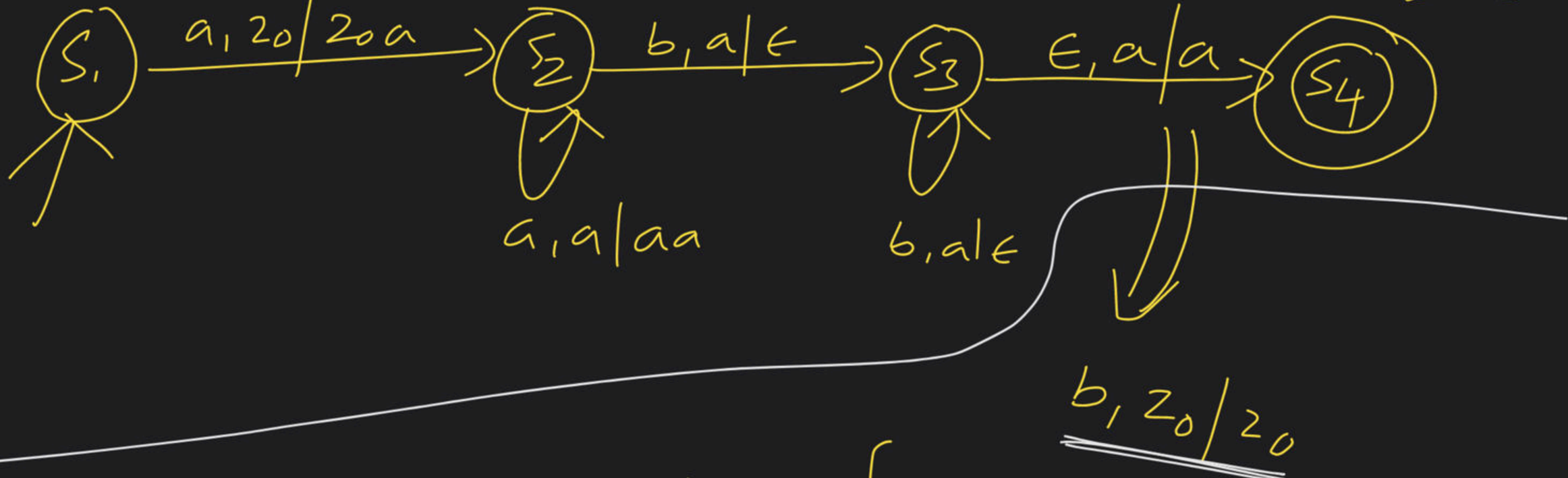


empty stack


PDA - acceptance
Final State
Empty Stack

ex

$$L = \{ a^m b^n \mid m, n \geq 1 \text{ and } m > n \}$$



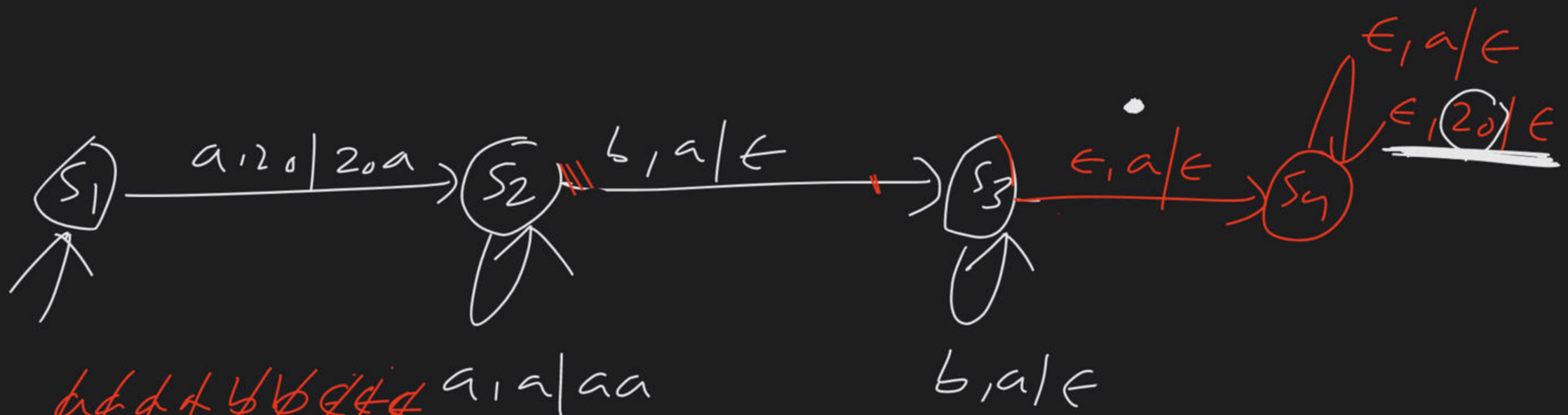
b, Z0 / Z0

ex

$$L = \{ a^m b^n \mid m, n \geq 1 \text{ and } m < n \}$$

$a^m b^n \mid m > n$ $\quad m, n \geq 1$

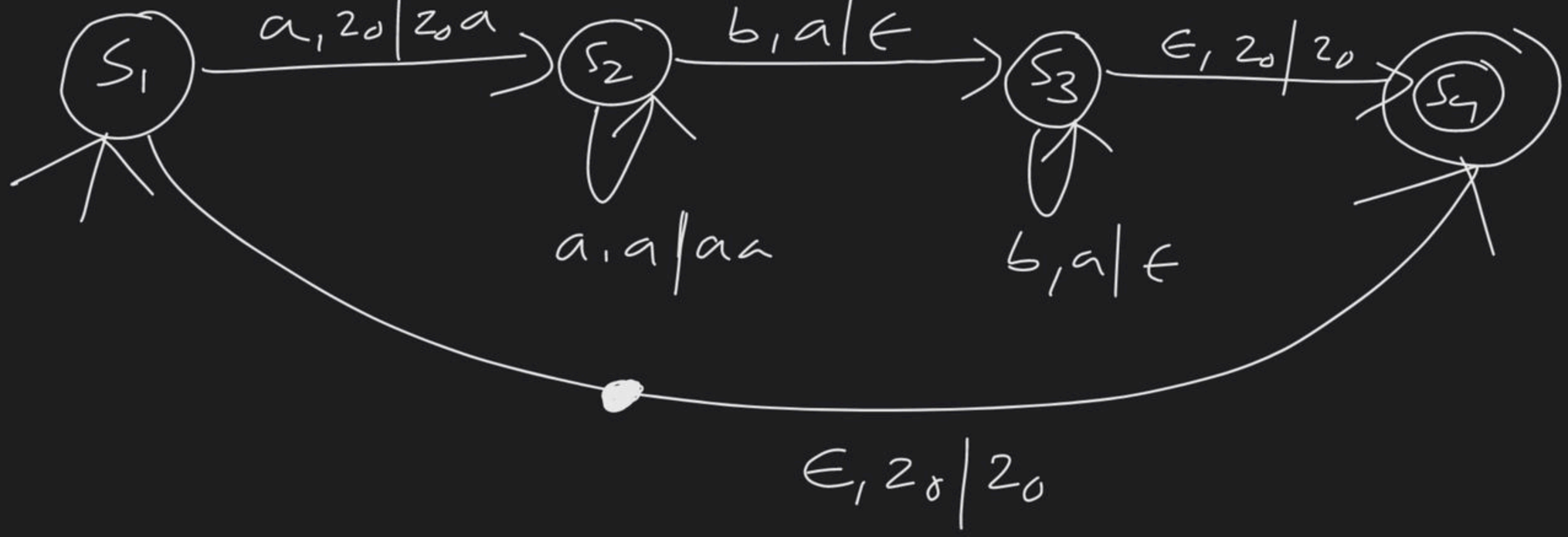
aaaa bb



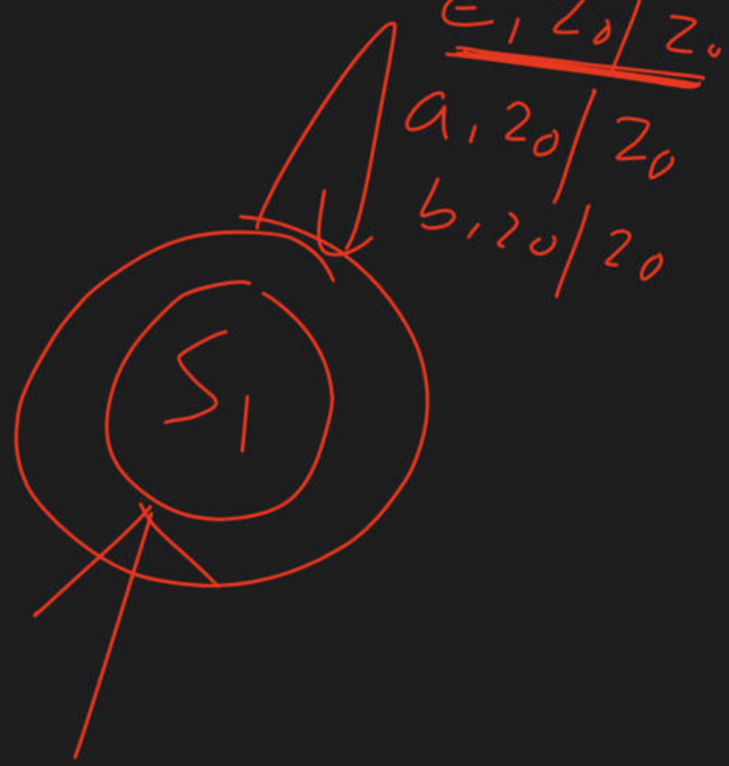
ex

$$L = \{ a^n b^n \mid n \geq 0 \}$$

Final



ex



$$L = \{ w \mid w \in (a+b)^b \}$$

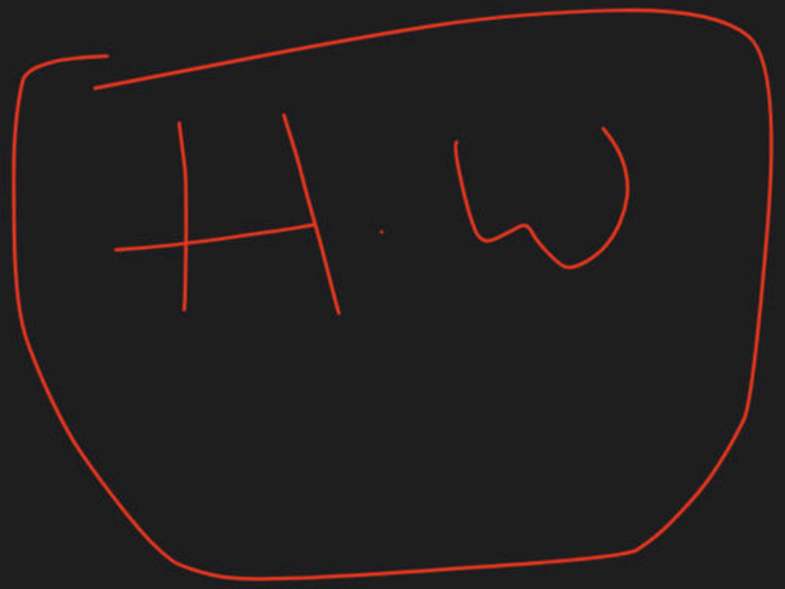
Construct PDA $L = \{ w \mid w \in (a+b)^* \text{ and } n_a(w) = n_b(w) \}$

aaabbb

bbbaaa

abababab

bababa

aababb

$\in$