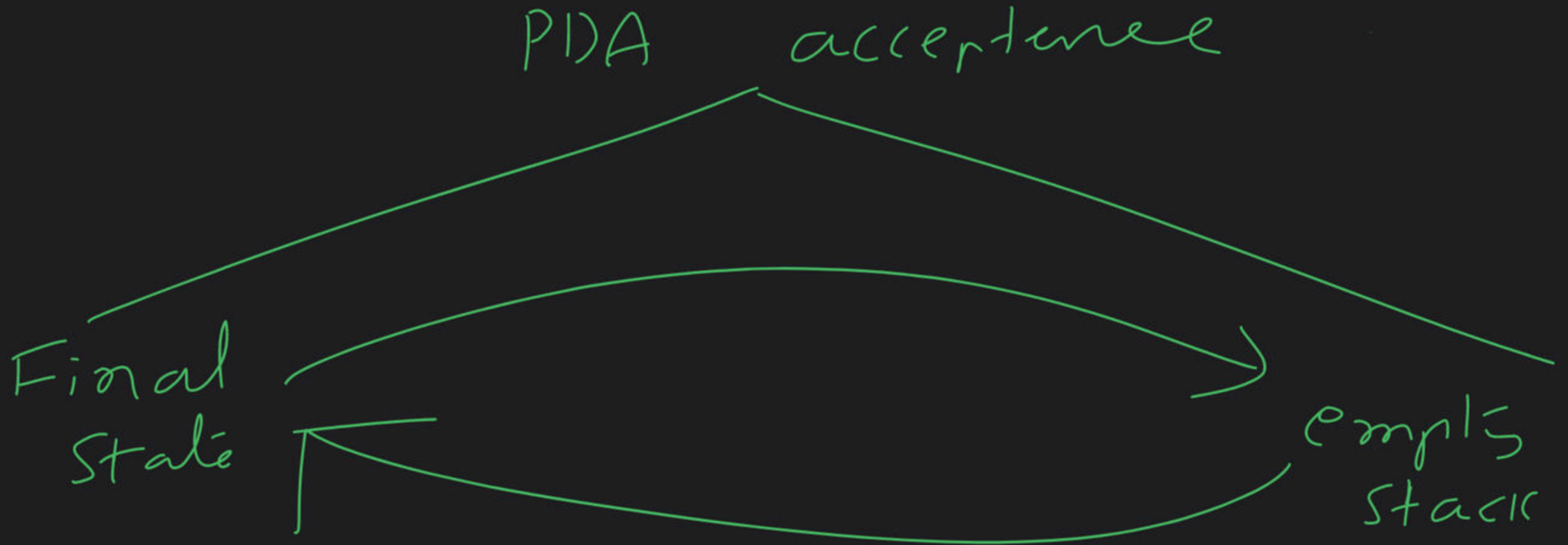
Uncountable and Countable

Complete Course on Theory of Computation

Subbarao Lingamgunta • Lesson 39 • Mar 28, 2022

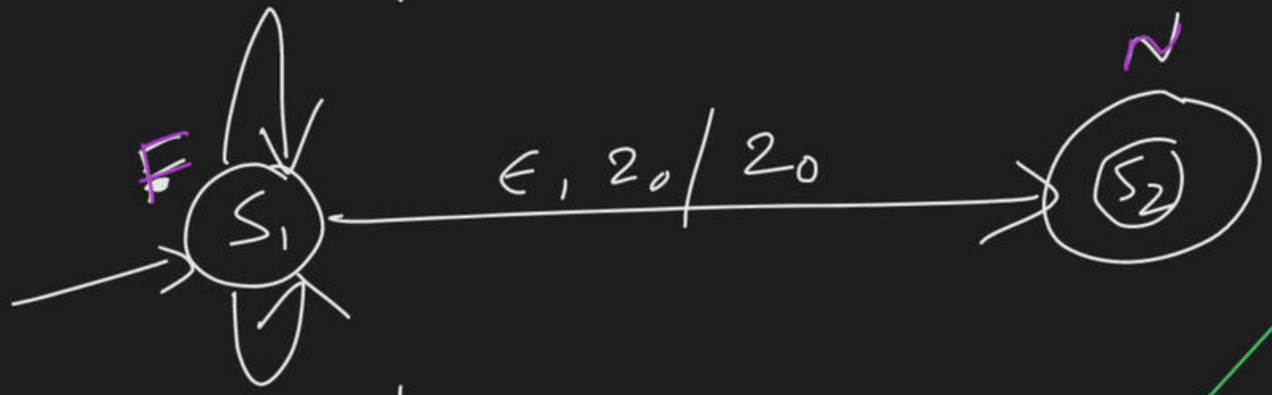

PDA acceptance
Final state
empty stack

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

final state

b, a | ∈

a, b | ∈



a, Z_0 | Z_0 a

a, a | aa

b, Z_0 | Z_0 b

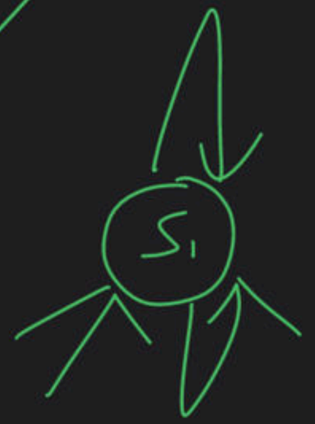
b, b | bb

b, b | bb

a, a | aa

b, Z_0 | Z_0 b

a, Z_0 | Z_0 a



a, b | ∈

b, a | ∈

∈, Z_0 | ∈

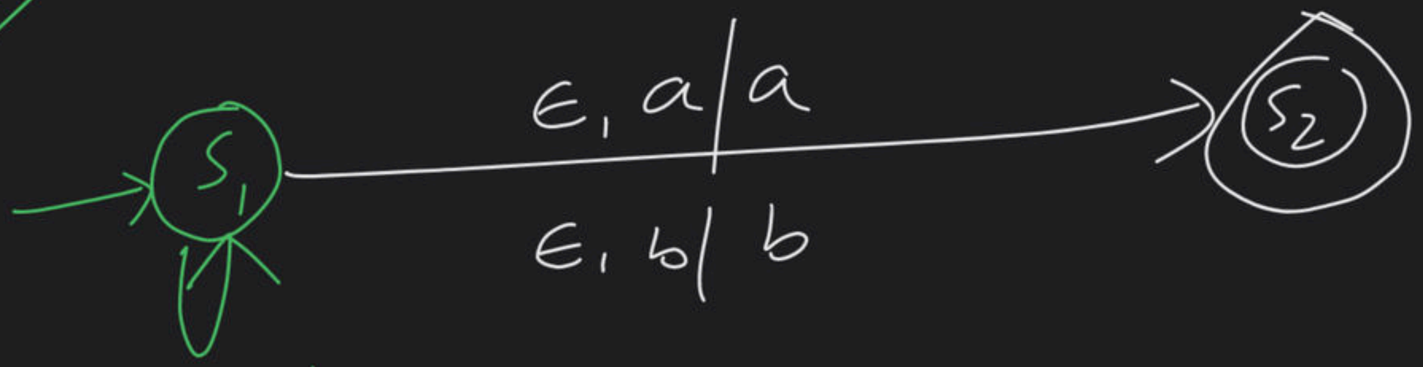
empty stack.

aaabbb

$$L = \{ w \mid w \in (a+b)^* \text{ s.t. } n_a(w) \neq n_b(w) \}$$

$\Rightarrow$ $a > b$
$a < b$

Final state



$a, z_0 \mid z_0 a$

$b, z_0 \mid z_0 b$

$a, a \mid aa$

$b, b \mid bb$

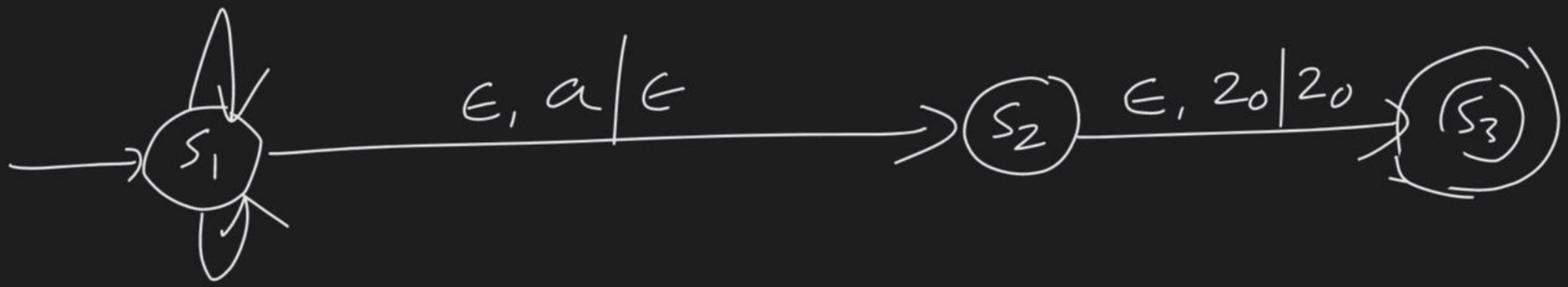
$a, b \mid \epsilon$

$b, a \mid \epsilon$

$$L = \{ w \mid w \in (a+b)^* \text{ && } n_a(w) = n_b(w) + 1 \}$$

b, a | ∈

a, b | ∈



a, Z0 | Z0 a

b, Z0 | Z0 b

a, a | a a

b, b | b b

Construct PDA $L = \{ w c w^R \mid w \in (a+b)^* \}$

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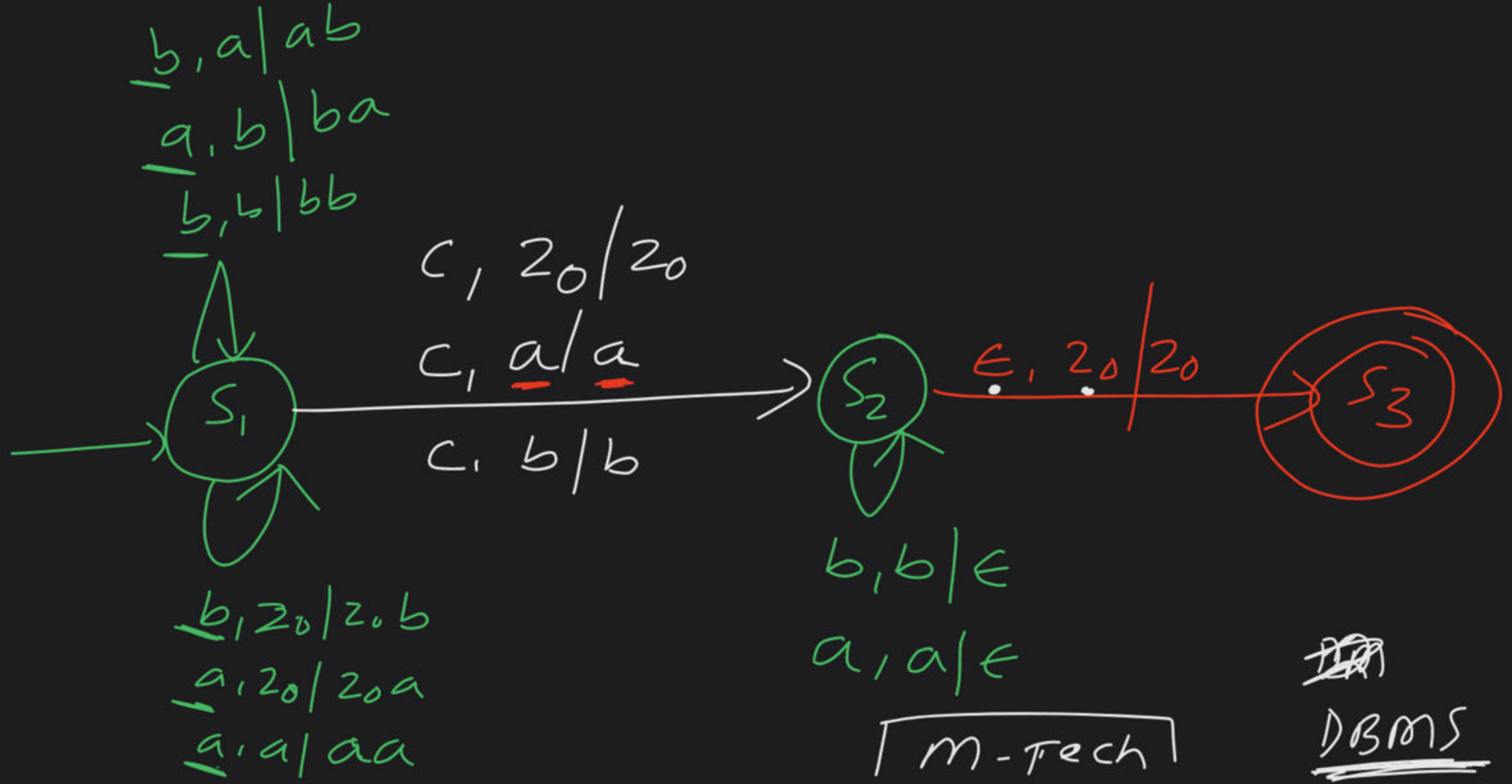

DS

Algo

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