Undecidability - II

Complete Course on Theory of Computation

Subbarao Lingamgunta • Lesson 42 • Mar 31, 2022

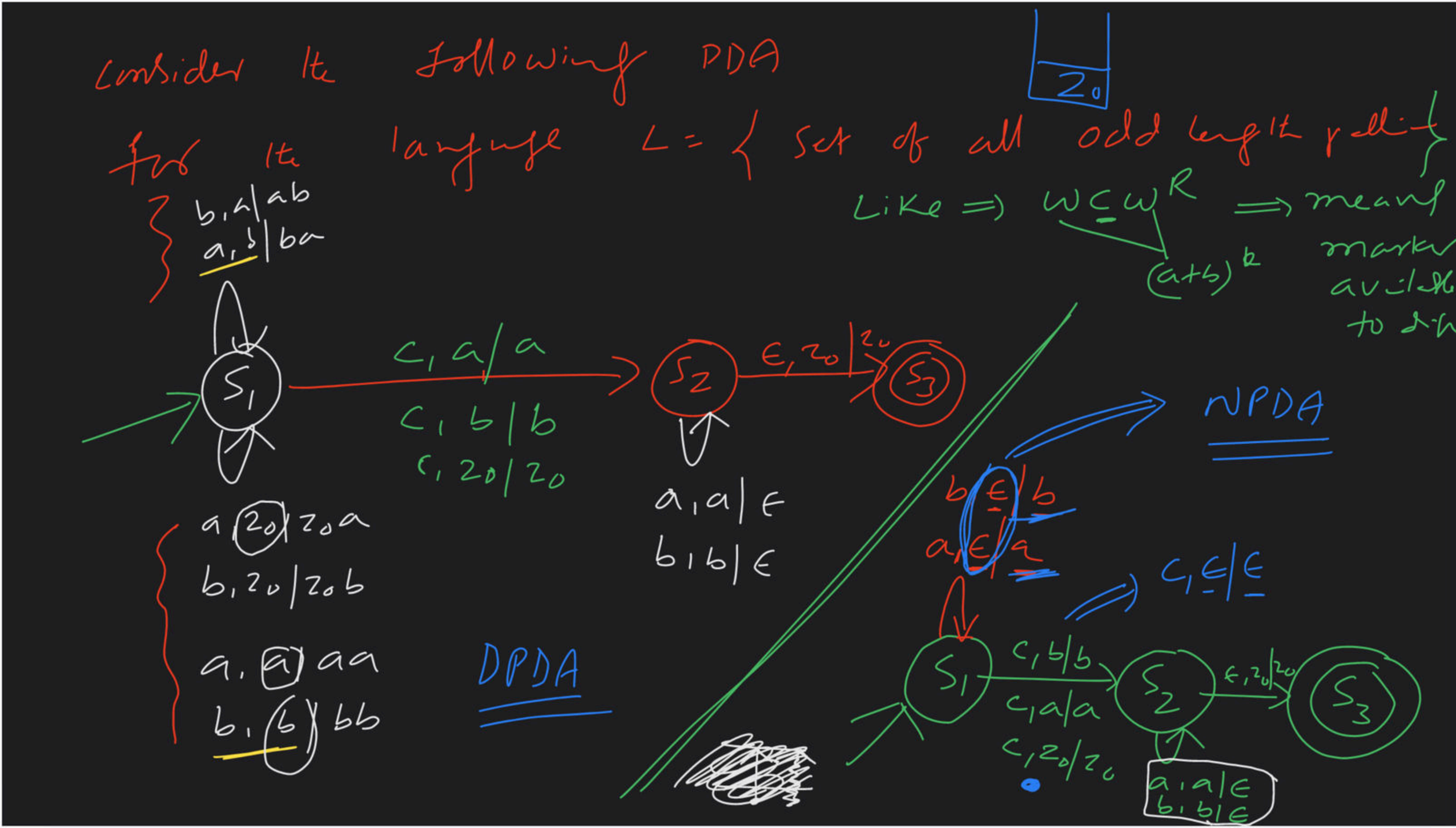

odd length palindromes
with marked
$W \subseteq wR$
DCFL
with or without marked
$W \subseteq_{(cv)} wR$
b
NPDA
$\Rightarrow$ CFL

Consider the following PDA

for the language $L = \{$ set of all odd length pallindrome $\}$

Like $\Rightarrow$ $W C W^R$ $\Rightarrow$ means marker available to pick

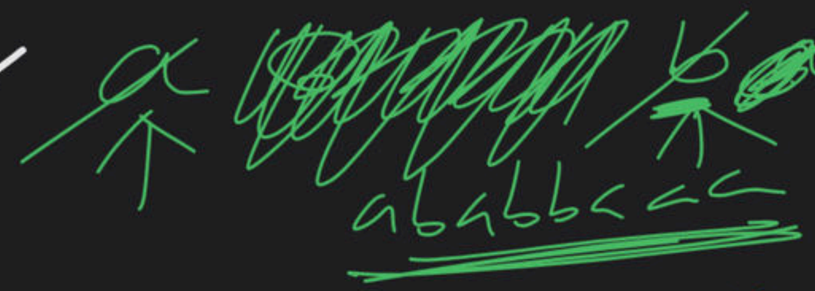
$(a+b)^k$



a, ∈ | a

of i/p symbol a coming without seeing

Top of it simply push a.



DCFL

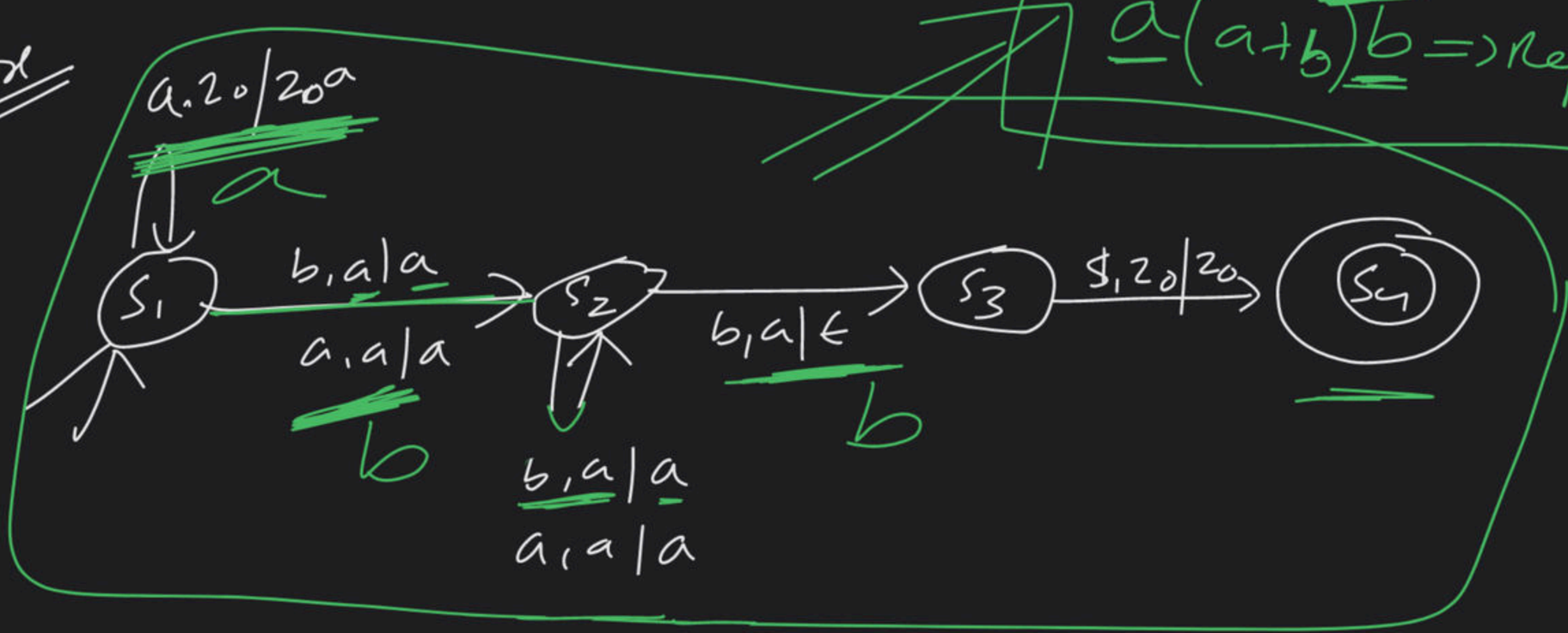
PDA

||

Language?

$a(a+b)^+b \Rightarrow$ Regular

Ex

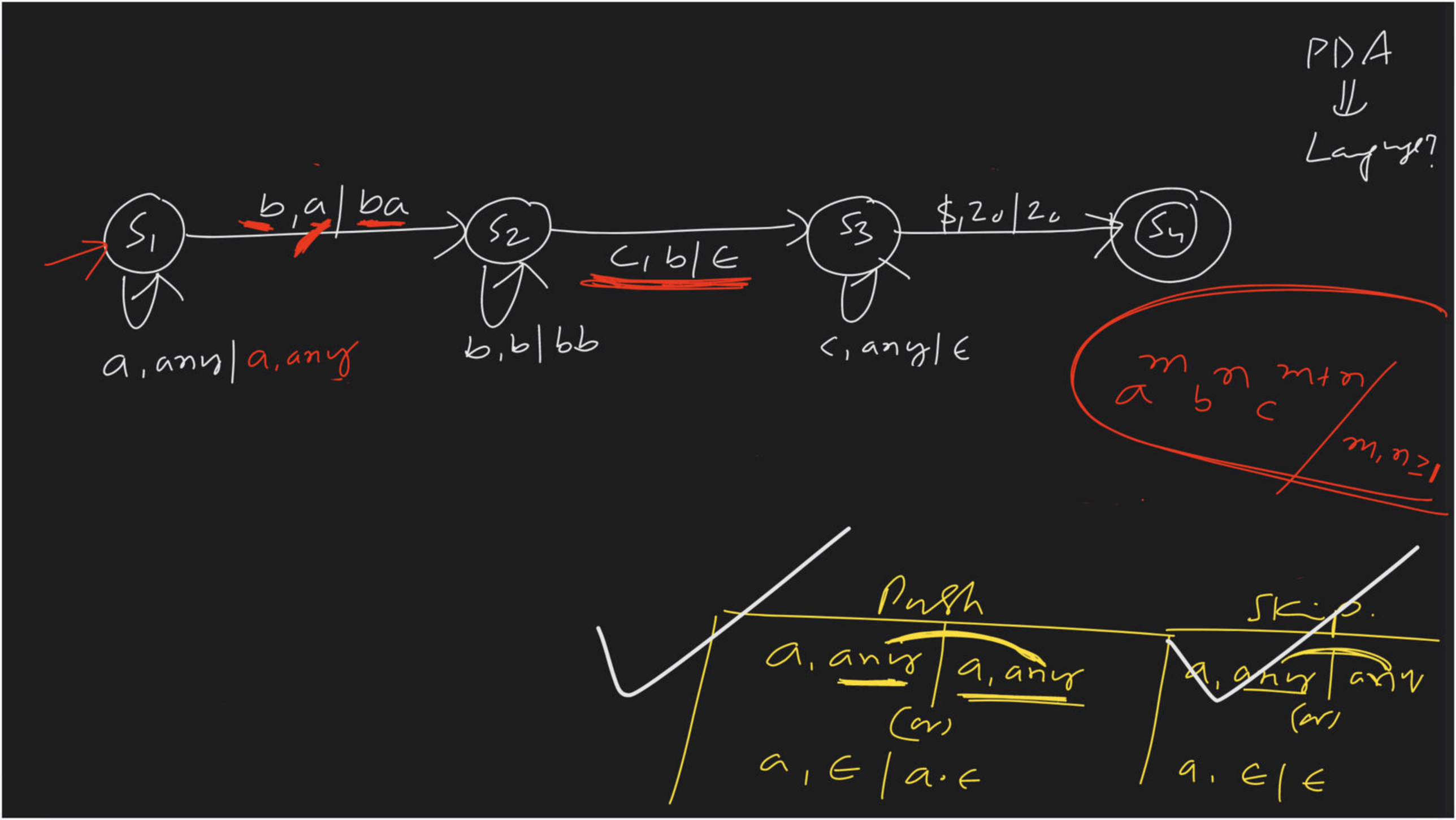


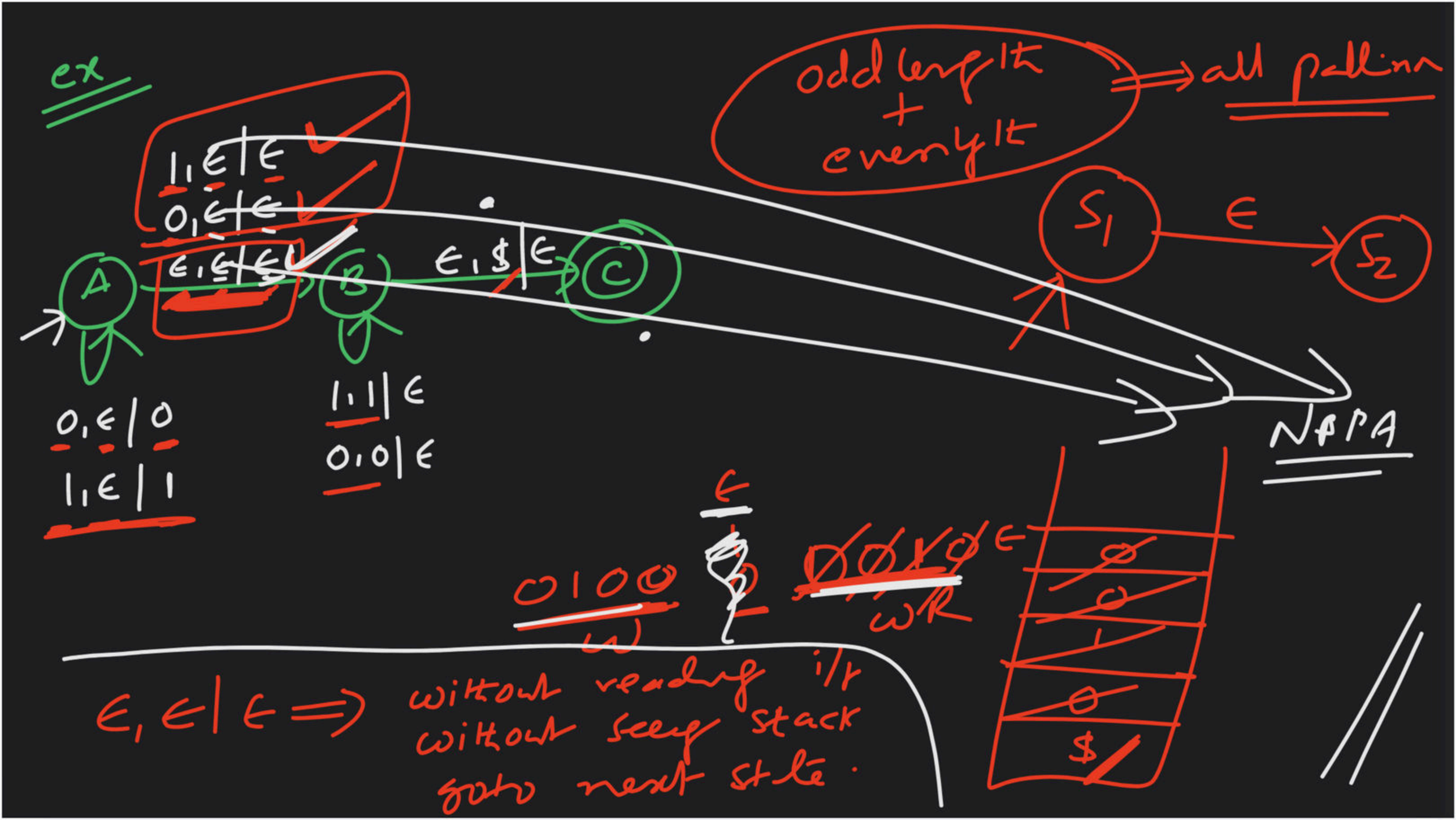
(a) Regular & RL_Tool

(b) DCFL but not regular

(c) CFL ~~DCFL~~

(d) Finite lang


PDA
⇓
Language?
S1
S2
S3
S4
b, a | ba
c, b | ∈
$, Z0 | Z0
a, any | a, any
b, b | bb
c, any | ∈
$a^m b^n c^{m+n}$
m, n ≥ 1
Push
a, any | a, any
(or)
a, ∈ | a, ∈
Skip
a, any | any
(or)
a, ∈ | ∈


ex
1, ε | ε
0, ε | ε
ε, $ | ε
A
B
C
0, ε | 0
1, ε | 1
1, 1 | ε
0, 0 | ε
odd length
+
even length
all palins
S1
ε
S2
NPDA
ε
0100
WR
ε, ε | ε ⟹ without reading i/p
without seeing stack
goto next state.
$