



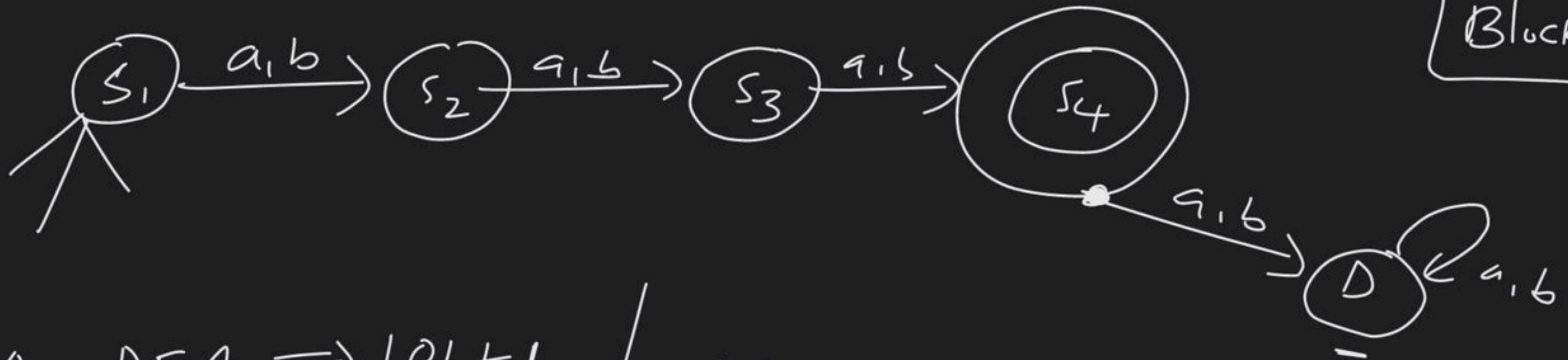
DFA Construction - IV

Complete Course on Theory of Computation

CM-DFA $L = \{ \text{all strings of a's \& b's where each string length is exactly 3} \}$

$\Rightarrow a^3, a^2b, \dots, b^3 \Rightarrow 3-L \Rightarrow 4-5$

$(a+b)^3$



exactly-100 - DFA $\Rightarrow 101+1$

" - n - DFA $\Rightarrow n+1+1$

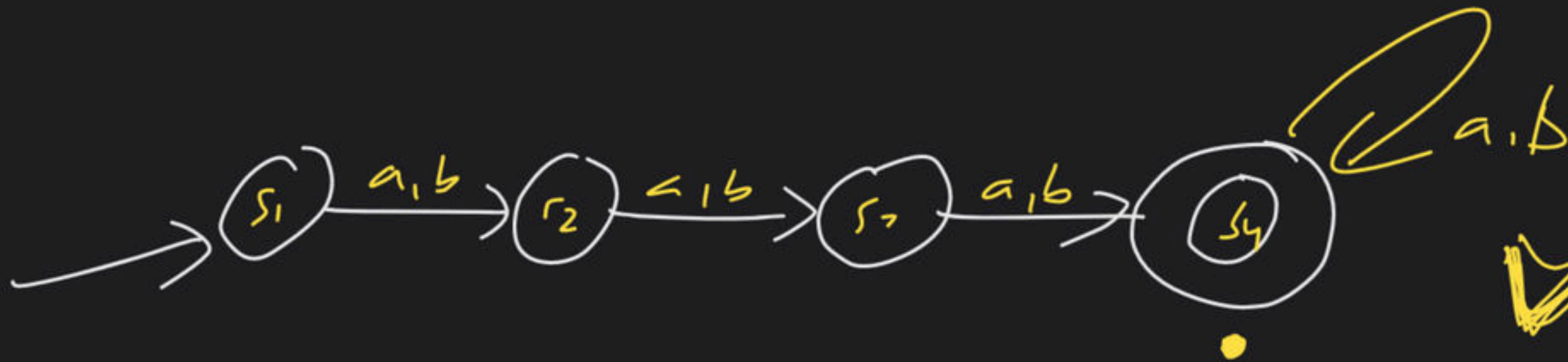
NFA - 100 - 101

" - n - n+1

CM-DFA \Rightarrow at least 3-length string

$\Rightarrow 3, 4, 5, 6, \dots \Rightarrow (a+b)^3 \cdot \Sigma \Rightarrow (a+b)^3 (a+b)$

note: m-DFA - at least 3-L $\Rightarrow 3+1$
 " " " 100-L $\Rightarrow 100+1$
 " " " n-L $\Rightarrow n+1$



minimal DFA unique ✓

" " NFA
" " R, E

$\{ \emptyset, \cdot, + \}$
 $\emptyset \cdot \emptyset = \emptyset$
 $3 \cdot 1 = 4$
 $3 \cdot 2 = 5$
 \vdots

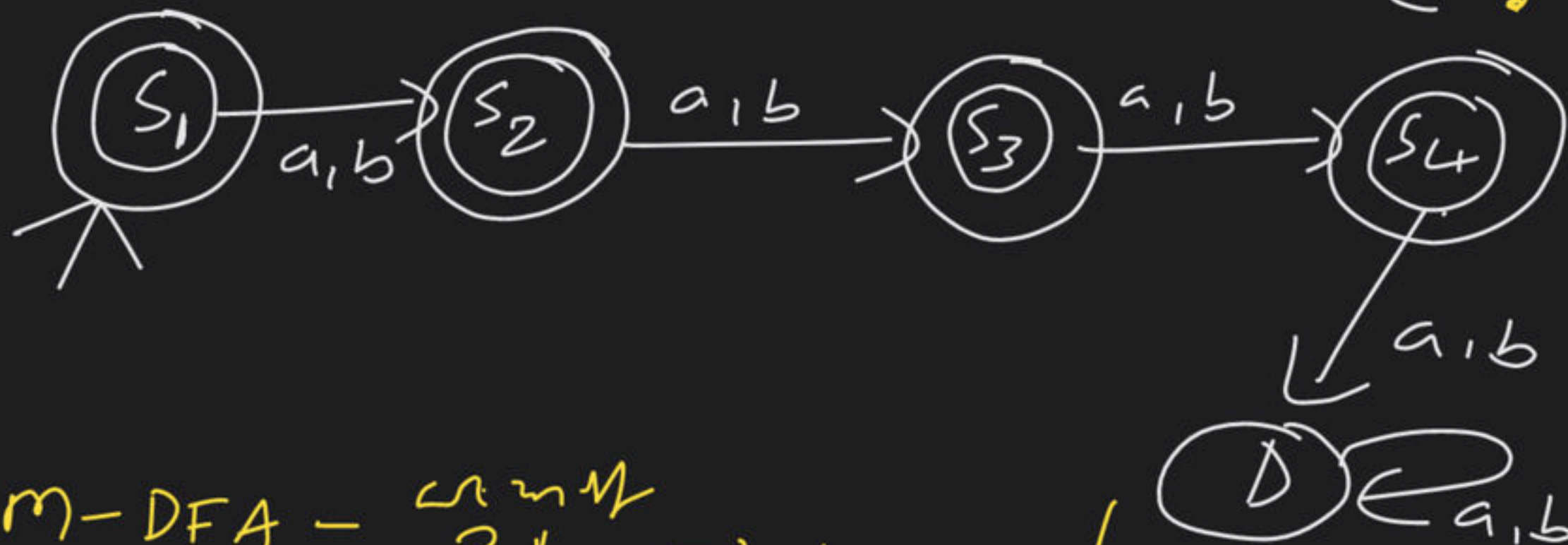
$\Sigma \cdot (a+b)^3$
 $0 \cdot 3 = 3$
 $1 \cdot 3 = 4$
 $2 \cdot 3 = 5$
 \vdots
 $\Sigma \cdot (a+b)^3 \cdot \Sigma$
 $(a+b) \cdot (a+b)^3 \cdot (a+b)$

CM-DFA $L = \{ \text{set of all strings of a's \& b's} \}$
 where each string length at mod 3

$L \Rightarrow 0, 1, 2, 3$



\in



m-DFA - $3-L = 4+1$

" " - $100 = 101+1$

NFA

$3-L \Rightarrow 4$

$100-L \Rightarrow 101$

$a+b$

$$(a+b+c)^3 \checkmark$$

$$\Sigma^0 + \Sigma^1 + \Sigma^2 + \Sigma^3$$

.....

$$\epsilon \quad \epsilon \quad \epsilon = \epsilon$$

$$\epsilon \cdot a \quad a = aa$$

$$a \cdot \epsilon \cdot \epsilon = a$$

$$b \quad b \quad b = bbb$$

Every Deadstate is non-livel

but every non-livel is not deadstate.
