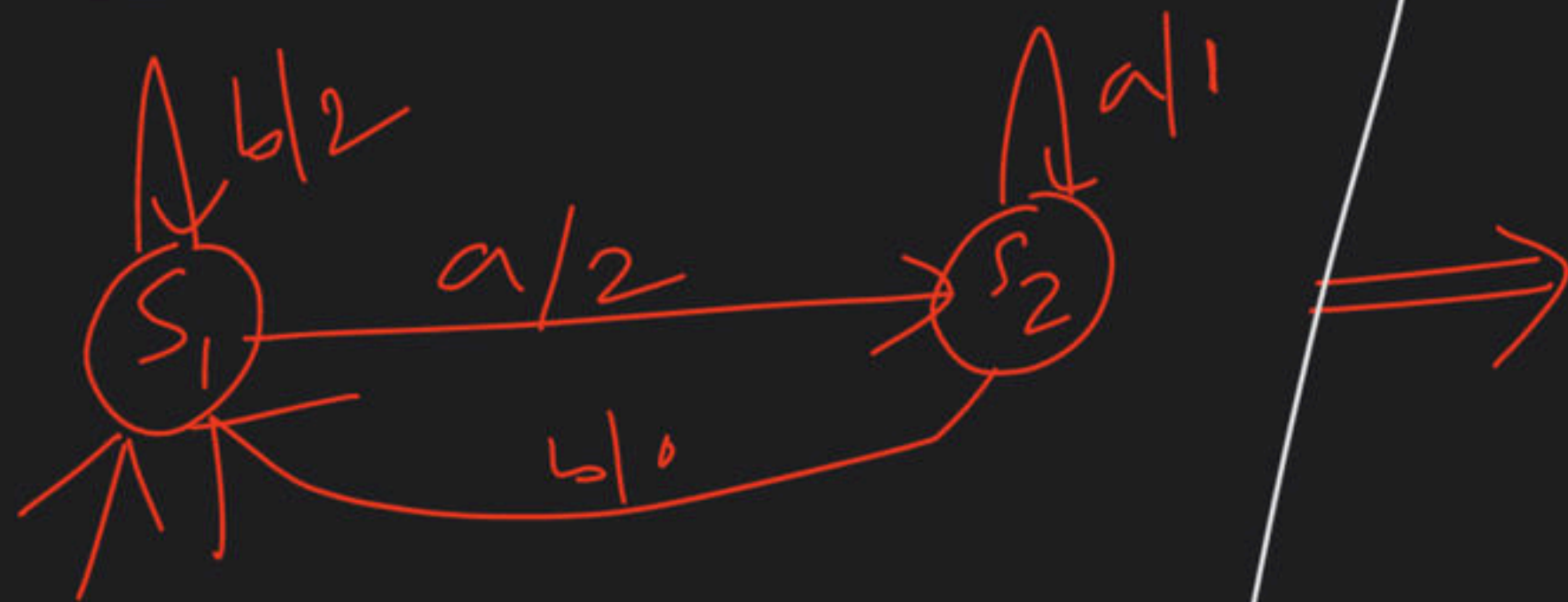




CFG and PDA - IV

Complete Course on Theory of Computation

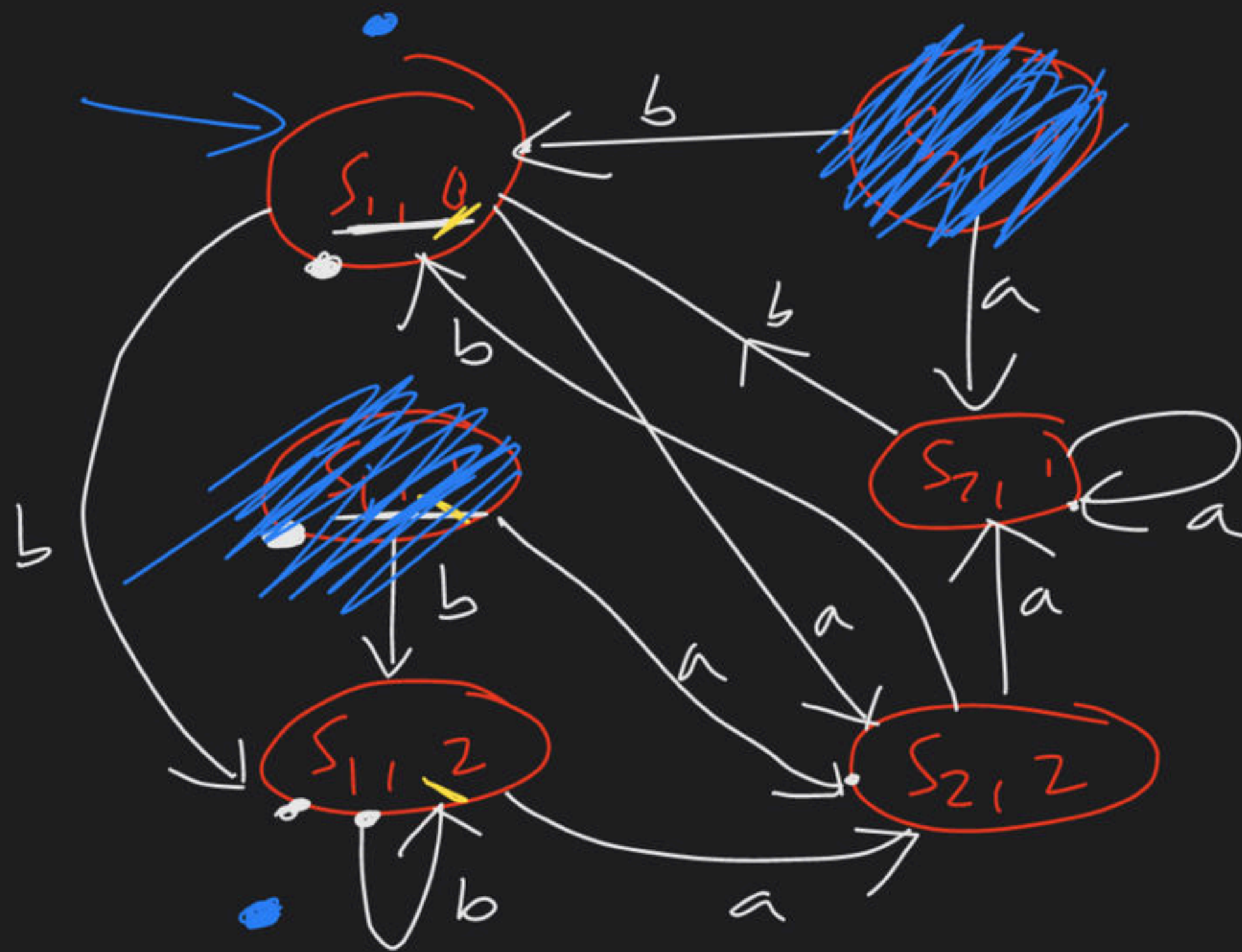
mean to move



S_1, S_2

$0, 1, 2$

S_1 $a \Rightarrow 2$



Take care its initial of
initial and ignore its o/p

Note

For the given m states and n -size- o/p
alphabet of a mealy mlc to construct
equivalent Moore mlc required
 \Rightarrow max states $[wc]$

ex

construct moore m/c for the following mealy

P.S	<u>i=0</u>		<u>i=1</u>	
	NS	<u>o/p</u>	NS	<u>o/p</u>
v₁	v₃	0	v₂	0
v₂	v₁	1	v₄	0
v₃	v₂	1	v₁	1
v₄	v₄	1	v₃	0

⇒

P.S	o/p	<u>i/p=0</u> NS	<u>i/p=1</u> NS
v ₁	<u>1</u>	v ₃	v ₂₀
<u>v₂₀</u>	<u>0</u>	v ₁	v ₄₀
v ₂₁	<u>1</u>	v ₁	v ₄₀
v ₃	<u>0</u>	v ₂₁	v ₁
<u>v₄₀</u>	<u>0</u>	v ₄₁	v ₃
v ₄₁	<u>1</u>	v ₄₁	v ₃

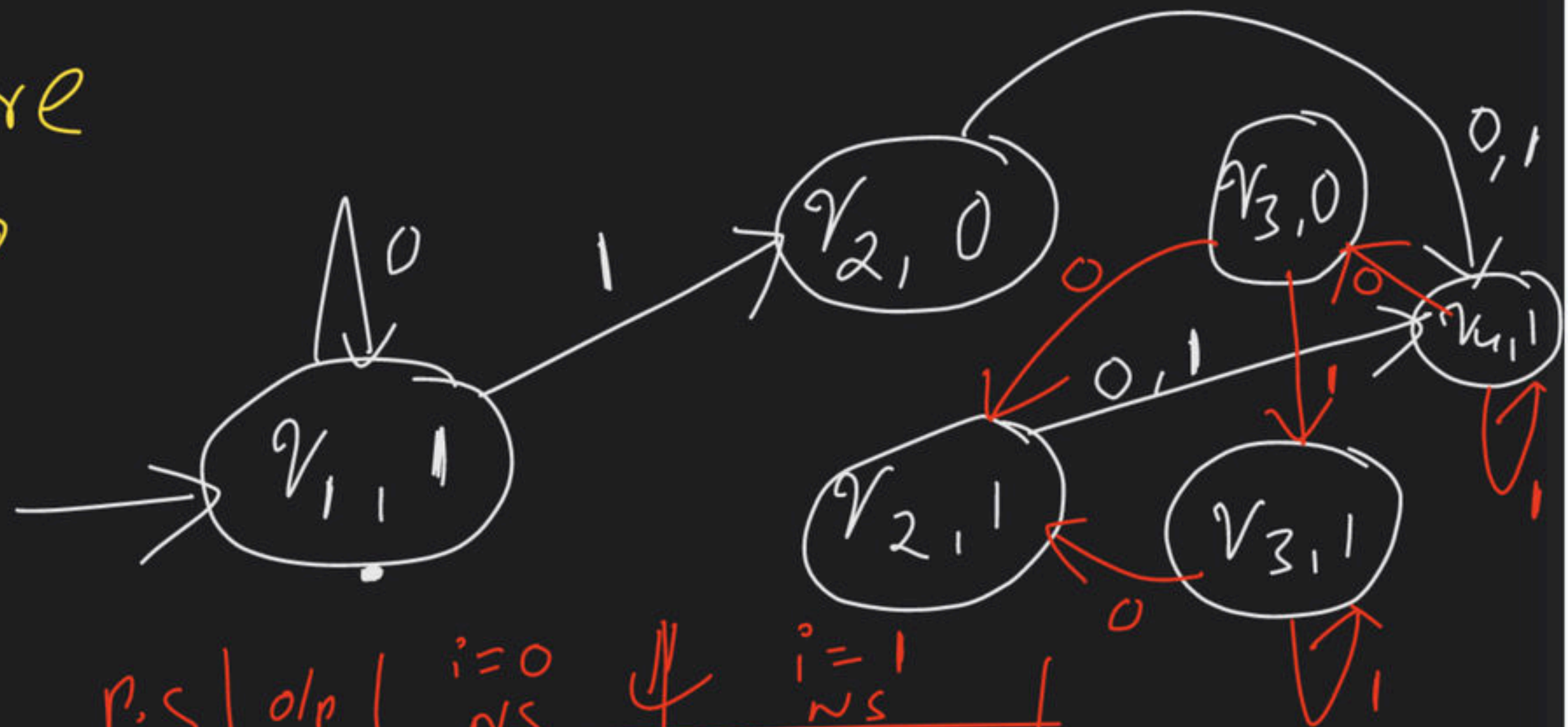


$v_4 \Rightarrow v_{4,0}$
 $v_{4,1}$

$v_2 \Rightarrow v_{2,0}$
 $v_{2,1}$
 $v_3 \Rightarrow v_{3,0}$

cr	i=0 N.S o/p	i=1 N.S -1P
$\rightarrow v_1$	$v_1 \quad 1$	$v_2 \quad 0$
$\checkmark v_2$	$v_4 \quad 1$	$v_4 \quad 1$
$\checkmark v_3$	$v_2 \quad 1$	$v_3 \quad 1$
v_4	$v_3 \quad 0$	$v_4 \quad 1$

moore

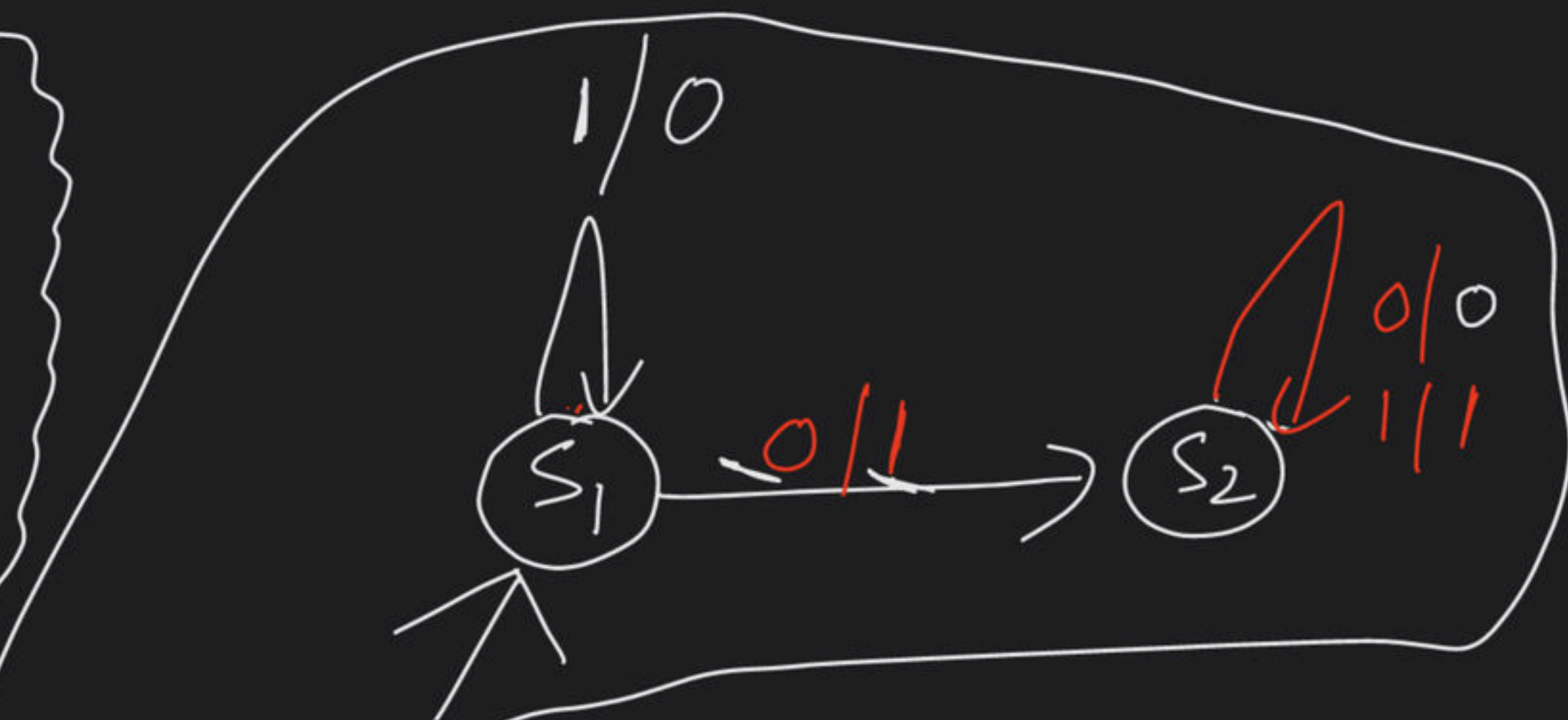


	P.S	o/p	i=0 N.S	i=1 N.S
$\rightarrow v_1$	v_1	1	v_1	$v_2, 0$
v_2	$v_2, 0$	0	v_4	v_4
	$v_2, 1$	1	v_4	v_4
v_3	$v_3, 0$	0	$v_2, 1$	$v_3, 1$
	$v_3, 1$	1	$v_2, 1$	$v_3, 1$
	v_4	1	$v_3, 0$	v_4

construct mealy m/c which will take binary number as i/p and produce same binary num +1 as o/p.

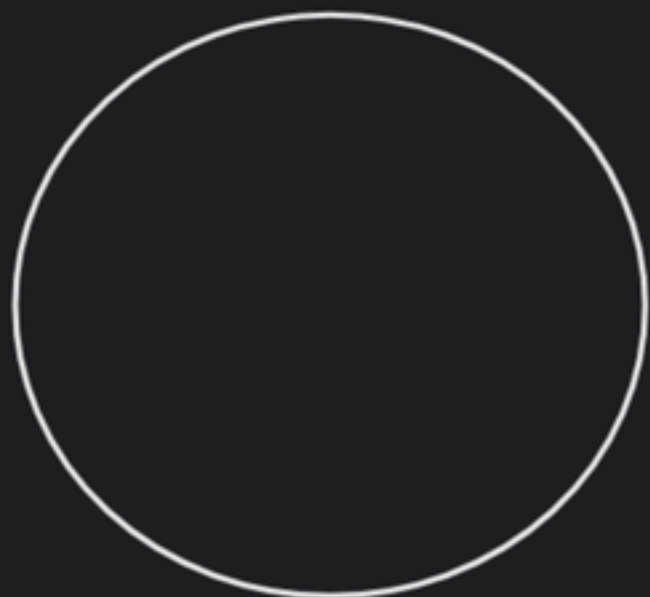
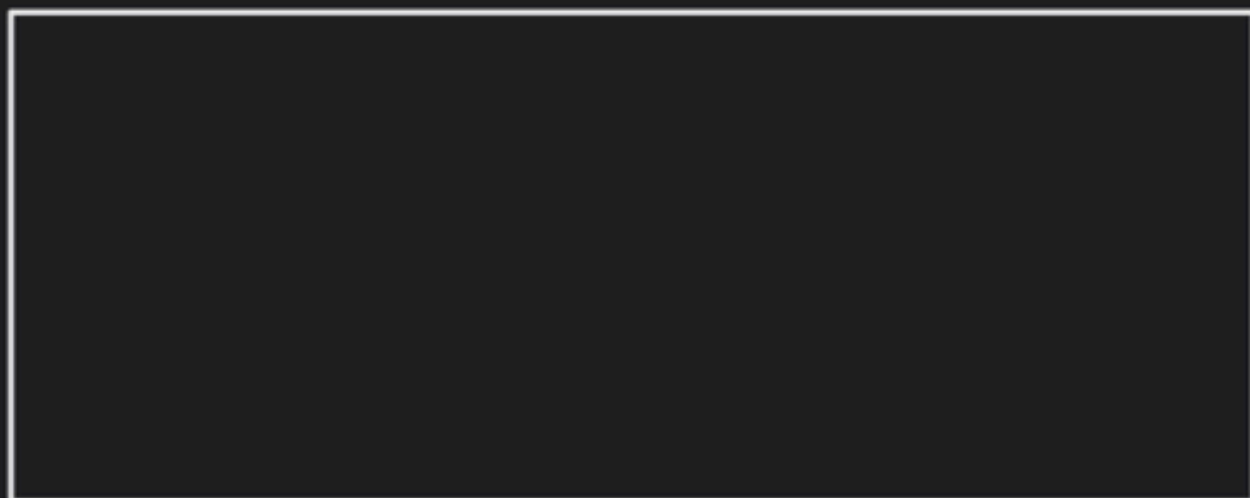
(assume LSB comes 1st & end carry discarded)

$\Rightarrow \boxed{1000} \Rightarrow 1001$
 $\Rightarrow 0000 \Rightarrow 0001$
 $\Rightarrow \boxed{0111} \Rightarrow 1000$
 $\Rightarrow 1111 \Rightarrow 0000$



$$\begin{array}{r} 10000 \\ 1 \\ \hline 11111 \end{array}$$

$$\begin{array}{cccccccccccc} 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ \hline 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \end{array}$$



$$\begin{array}{r}
 0111 \\
 1111 \\
 \hline
 1000 \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{r}
 10000 \\
 1 \\
 \hline
 100001 \\
 \hline
 \hline
 \end{array}$$

$$2 \Rightarrow \underline{10}$$

$$\begin{array}{r}
 11111 \\
 11111 \\
 \hline
 00000 \\
 \hline
 \hline
 \end{array}$$

mealy
↓

(adding Two Binary
number)

i/p: Two

n-bit
binary number

n-bit
binary number

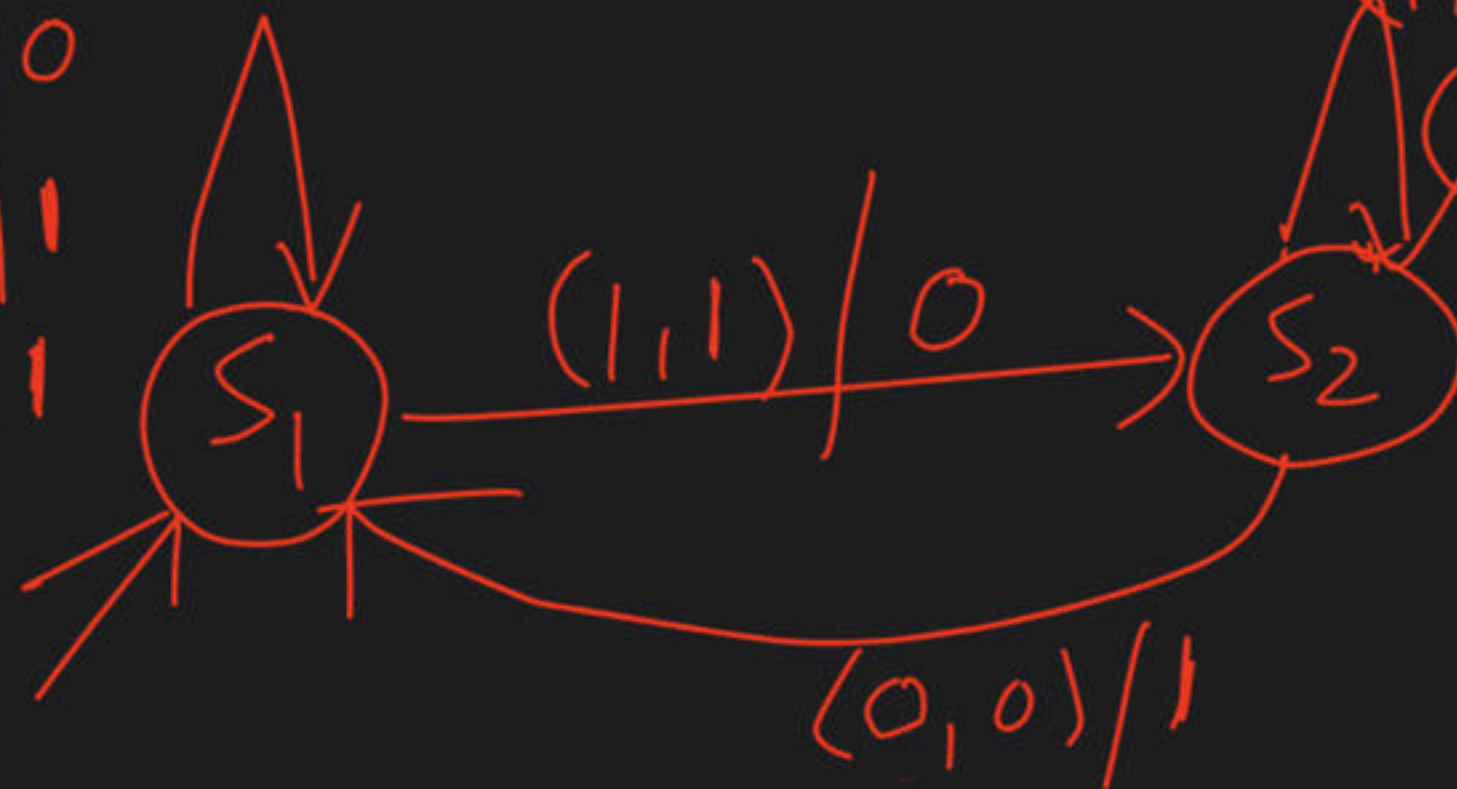
o/p: Sum of these Two

(assume LSB comes 1st & end carry discarded)

01010101
11011000

0101101

(0,0)/0
(1,0)/1
(0,1)/1



(0,1)/0
(1,0)/0
(1,1)/1

Note

① For any R.L	m-DEFA	unique	✓
	DFA	"	/
	m-NFA	"	

② For the given problem	minimal	are also
	Moore	
	or	unique
	minimal	
	medy	