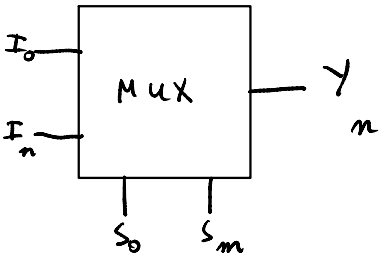
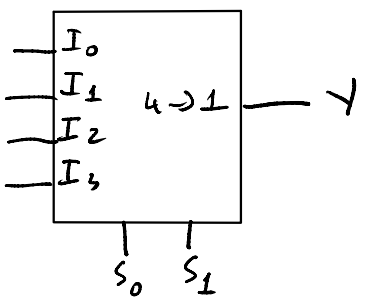


$n = 2^m$

S_0	Y
0	I_0
1	I_1

$Y = \bar{S_0} I_0 + S_0 I_1$

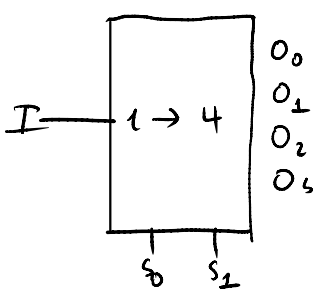
Mux $4 \rightarrow 1$



S_1	S_0	Y
0	0	I_0
0	1	I_1
1	0	I_2
1	1	I_3

$Y = \bar{S_0}\,\bar{S_1} I_0 + \bar{S_0}\,\bar{S_1} I_1 + S_0\,\bar{S_1} I_2 + S_0 S_1 I_3$

De MUX : $1 \rightarrow 4$

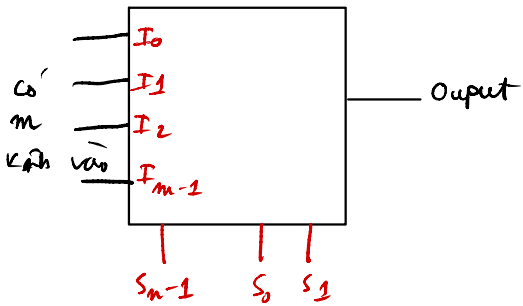


S_0	S_1	O_0	O_1	O_2	O_3
0	0	I	0	0	0
0	1	0	I	0	0
1	0	0	0	I	0
1	1	0	0	0	I

$O_0 = \bar{S_0}\,\bar{S_1} I$, $O_1 = \bar{S_0}\, S_1 I$, $O_2 = S_0\,\bar{S_1} I$,

$O_3 = S_0 S_1 I$

Multiplexers:



Có m kênh vào

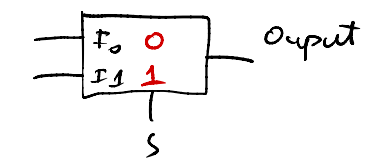
$2^n \geq m$

Vd: 8 kênh => 3 bit điều khiển

4 kênh => 2 bit

Có n tín hiệu chọn kênh

Mux 2-1



Input			Output	
I_1	I_0	S	D	
0	0	0	0	
0	0	1	0	
0	1	0	1	x
0	1	1	0	
1	0	0	0	
1	0	1	1	x
1	1	0	1	x
1	1	1	1	x

$S=0, \quad D=I_0$

$S=1, \quad D=I_1$

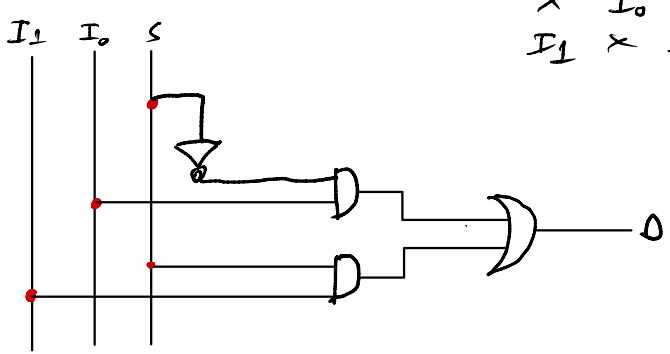
$$D = \bar{I}_1 I_0 \bar{S} + I_1 \bar{I}_0 S + I_1 I_0 \bar{S} + I_1 I_0 S$$

$$= I_0 \bar{S} + I_1 S$$

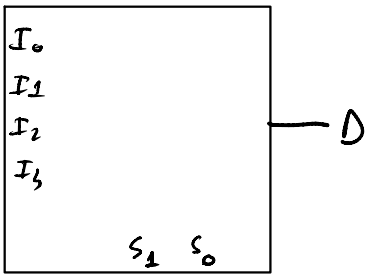
$$\Rightarrow D = I_0 \bar{S} + I_1 S$$

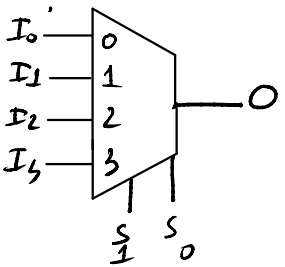
bảng rút gọn

Input			output
I_1	I_0	S	D
x	I_0	0	I_0
I_1	x	1	I_1



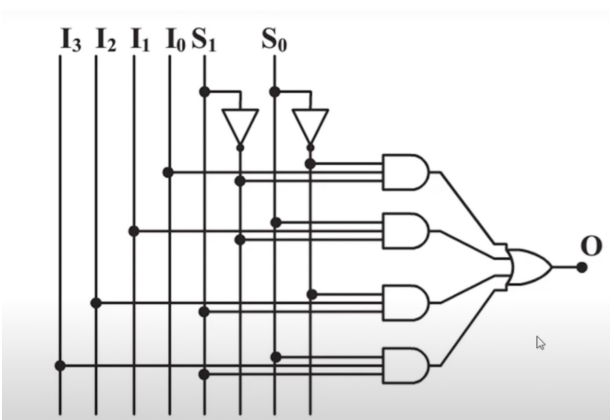
4-1 :

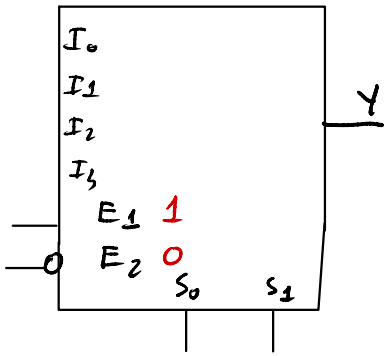




Inputs				Outputs		
I_3	I_2	I_1	I_0	S_1	S_0	D
x	x	x	I_0	0	0	I_0
x	x	I_1	x	0	1	I_1
x	I_2	x	x	1	0	I_2
I_3	x	x	x	1	1	I_3

$$D = I_0 \bar{S_1} \bar{S_0} + I_1 \bar{S_1} S_0 + I_2 S_1 \bar{S_0} + I_3 S_1 S_0$$



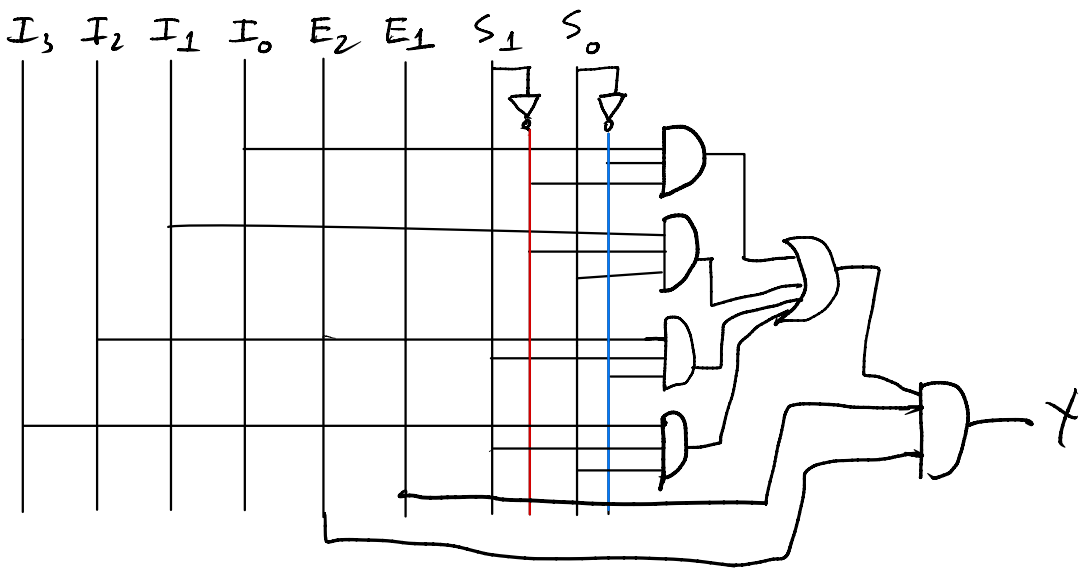


Inputs				Output
E_2	E_1	S_1	S_0	Y
X	0	X	X	0
1	X	X	X	0
0	1	0	0	I_0
0	1	0	1	I_1
0	1	1	0	I_2
0	1	1	1	I_3

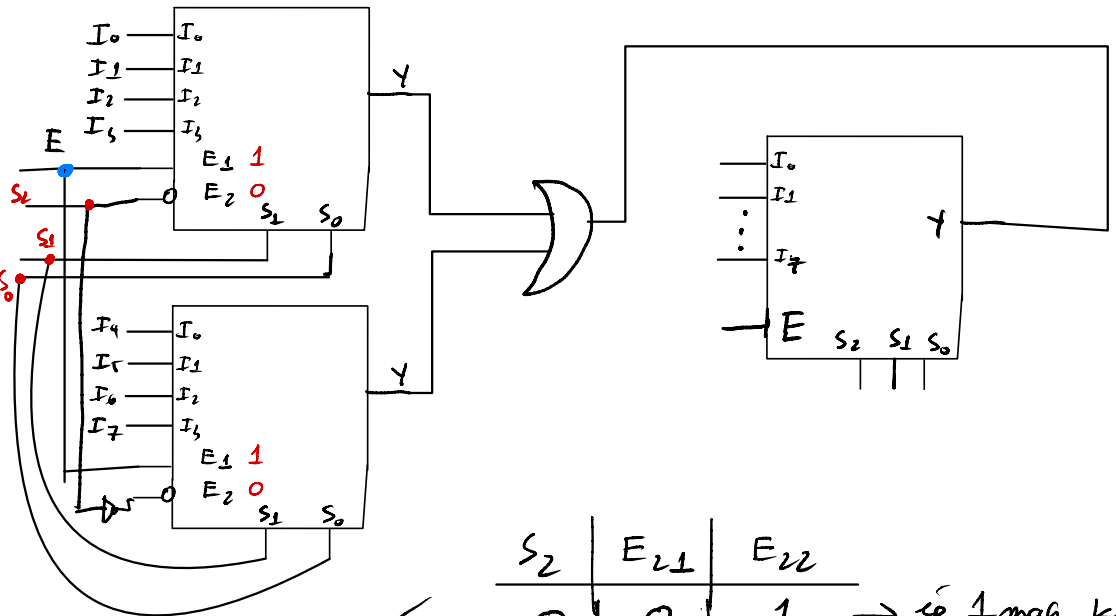
E_1 tích cực cao, E_2 tích cực thấp

→ Chỉ cho kênh ra khi E_1, E_2 tích cực

$$Y = \bar{E}_2 E_1 \left(I_0 \bar{S}_1 \bar{S}_0 + I_1 \bar{S}_1 S_0 + I_2 S_1 \bar{S}_0 + I_3 S_1 S_0 \right)$$



4→1 + 4→1 → 8→1 ⟩ E_2 tích cực thấp



S_2	E_{21}	E_{22}	
0	0	1	→ ép 1 mạch ko hoạt
1	1	0	

↓

ép 1 mạch ko hoạt

$E_{22} = \overline{S_2}$

$E_{21} = S_2$