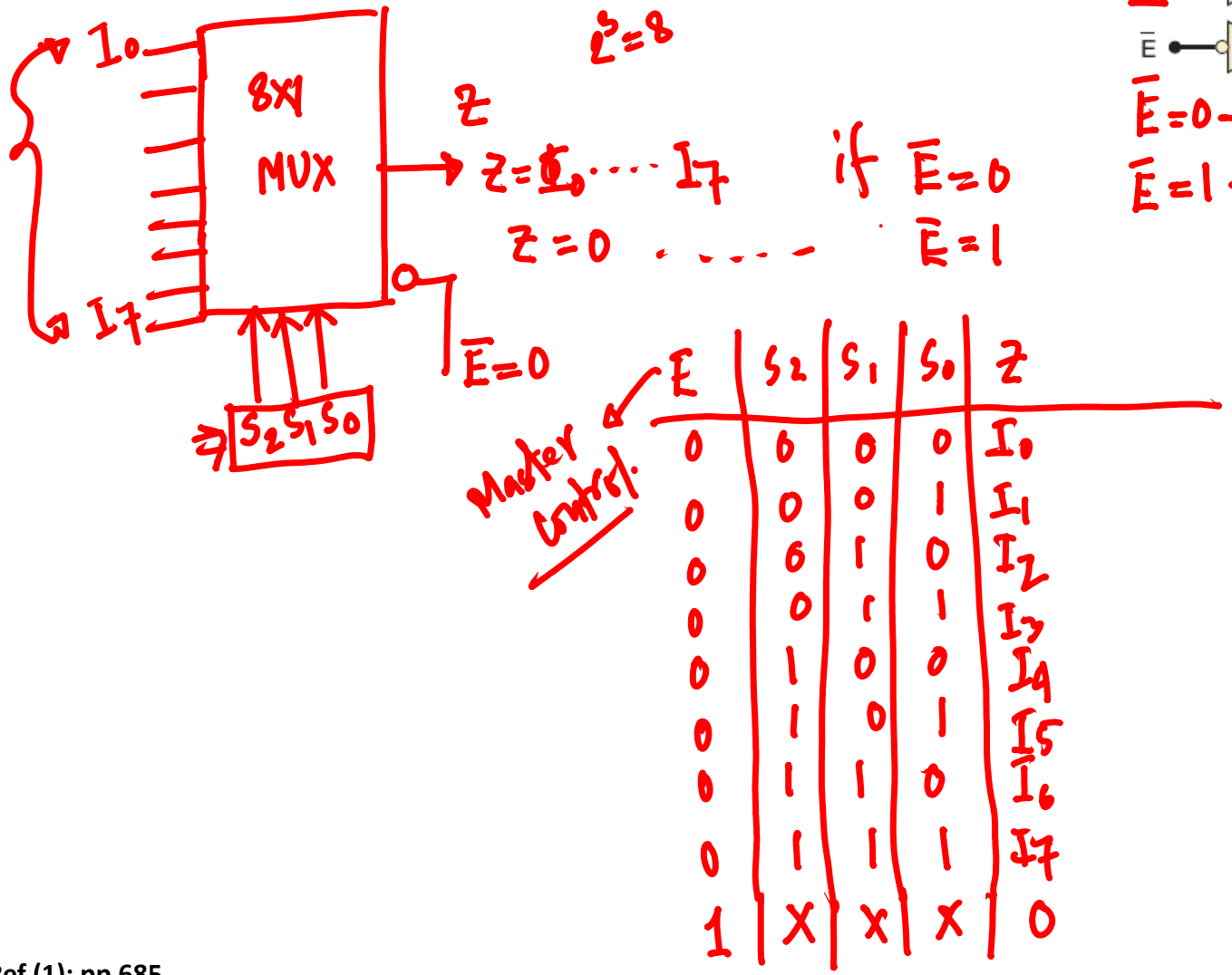
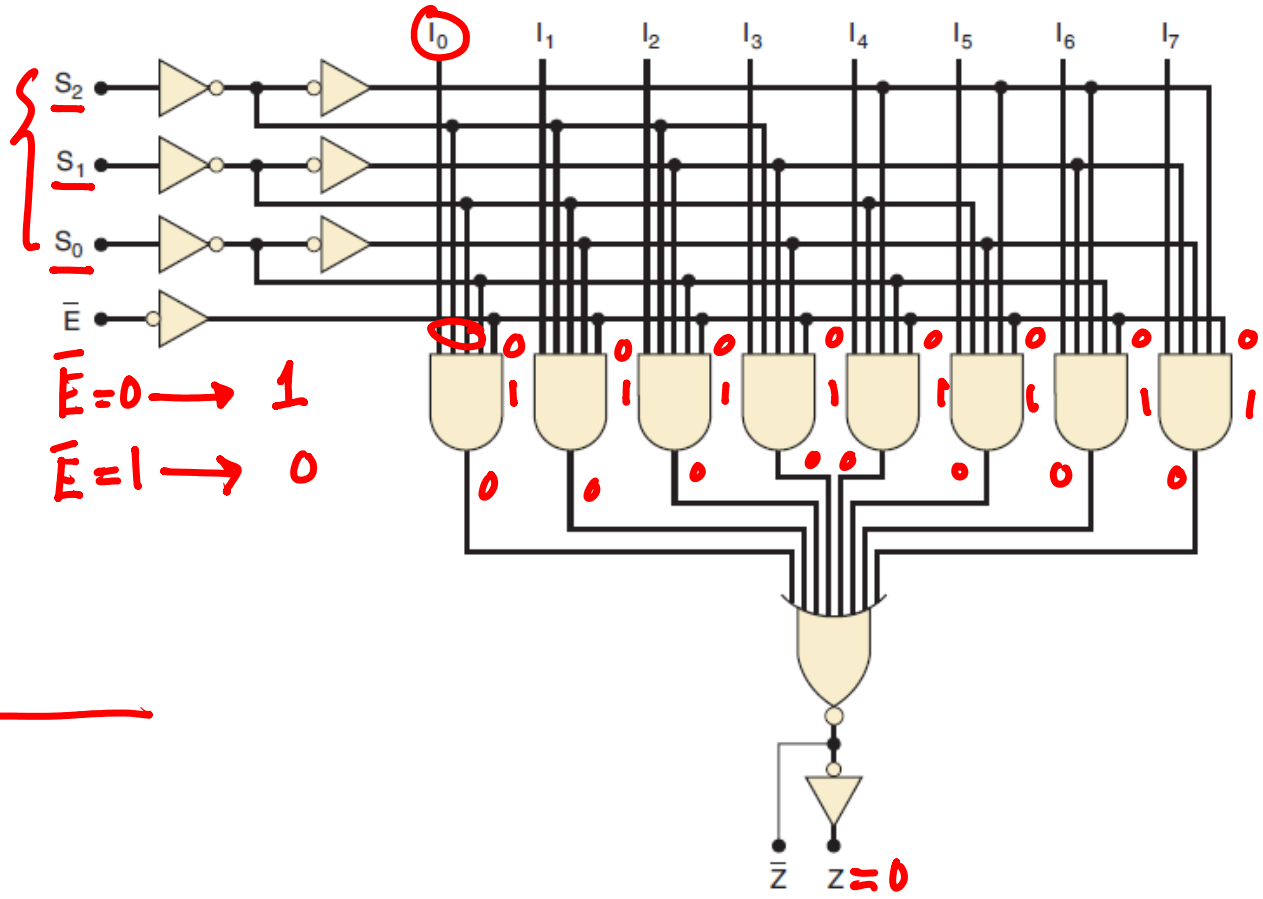
MULTIPLEXER

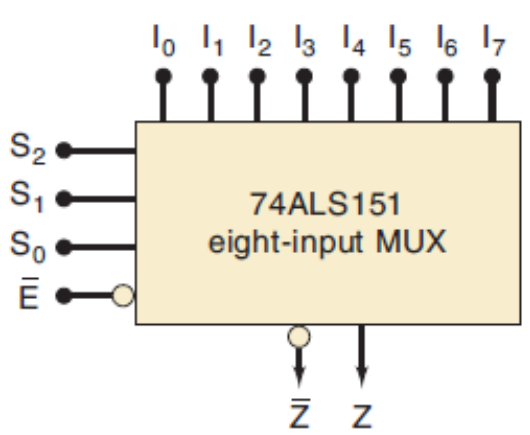
- Eight to one line multiplexer:

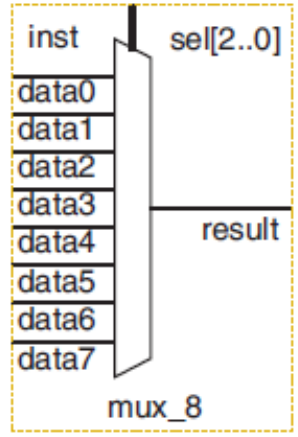


E	S_2	S_1	S_0	Z
0	0	0	0	I_0
0	0	0	1	I_1
0	0	1	0	I_2
0	0	1	1	I_3
0	1	0	0	I_4
0	1	0	1	I_5
0	1	1	0	I_6
0	1	1	1	I_7
1	X	X	X	0

Master control



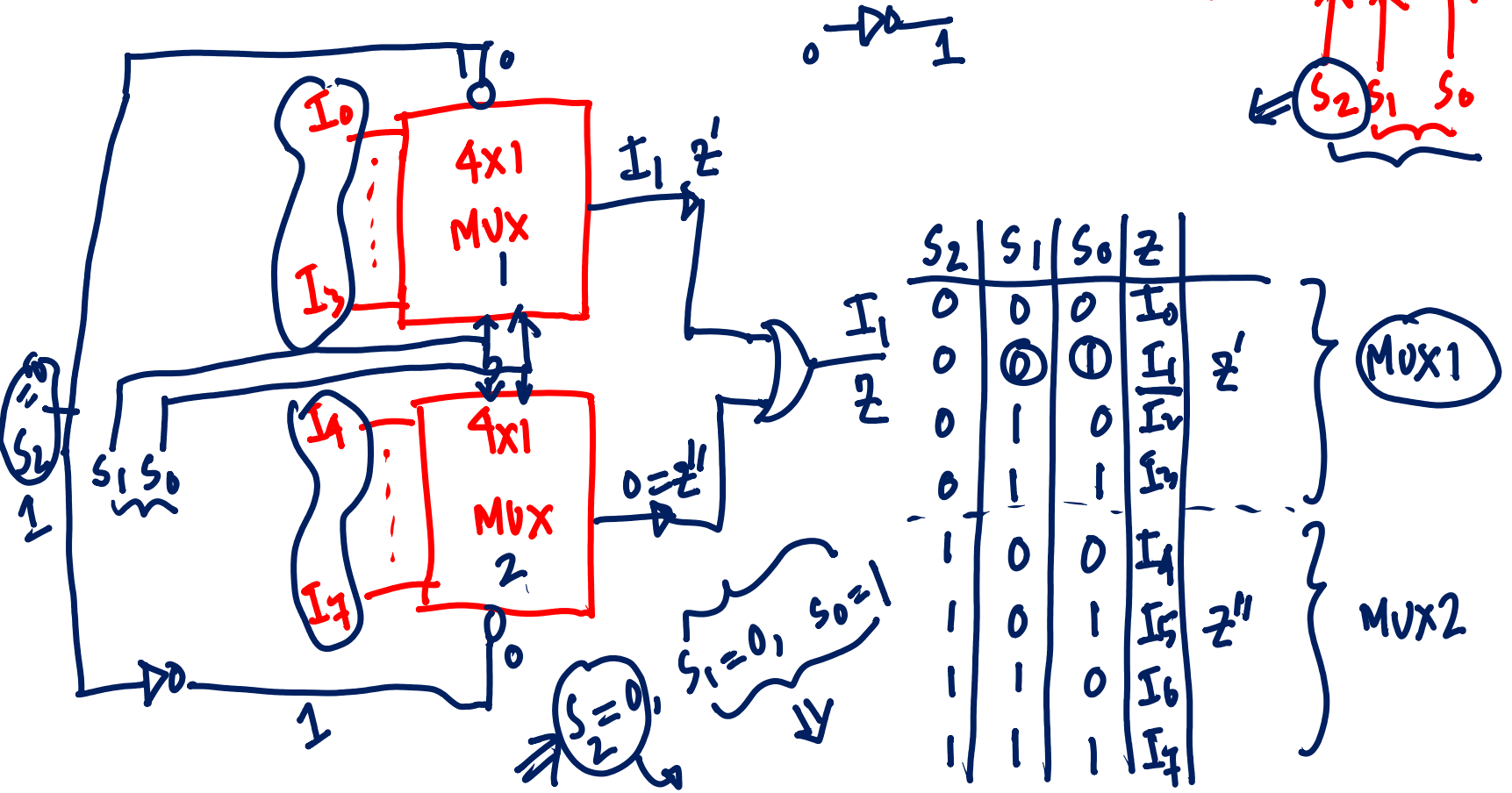




Ref (1): pp 685

MULTIPLEXER

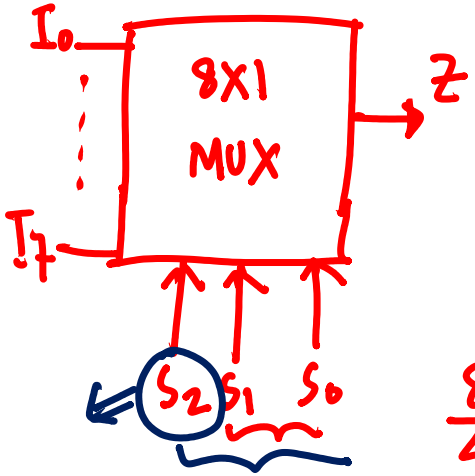
- Eight to one line multiplexer by four to one line and two to one line multiplexer :

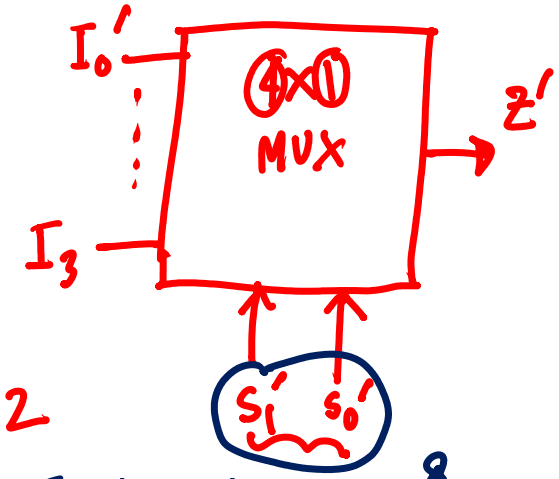


S_2	S_1	S_0	z	
0	0	0	I_0	z'
0	0	1	I_1	
0	1	0	I_2	
0	1	1	I_3	
1	0	0	I_4	z''
1	0	1	I_5	
1	1	0	I_6	
1	1	1	I_7	

MUX1

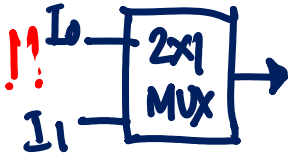
MUX2





$\frac{8}{4} = 2$

$\frac{2}{4} = !!$



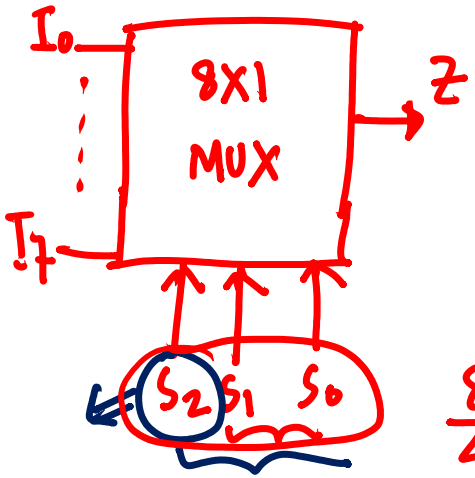
$\frac{8}{2} = 4$

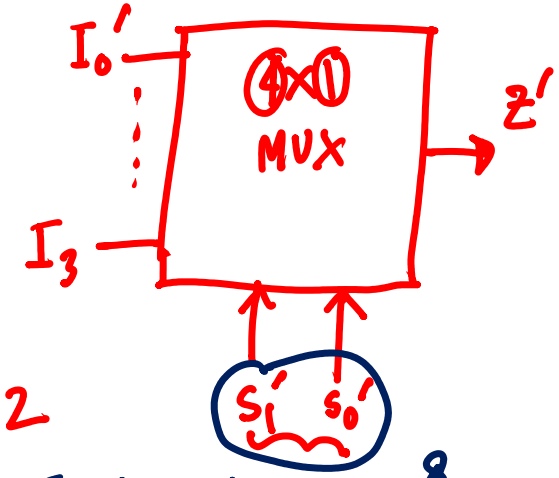
$\frac{4}{2} = 2$

$\frac{2}{2} = 1$

MULTIPLEXER

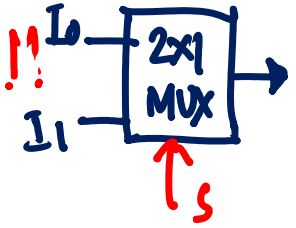
- Eight to one line multiplexer by four to one line and two to one line multiplexer :





$\frac{8}{4} = 2$

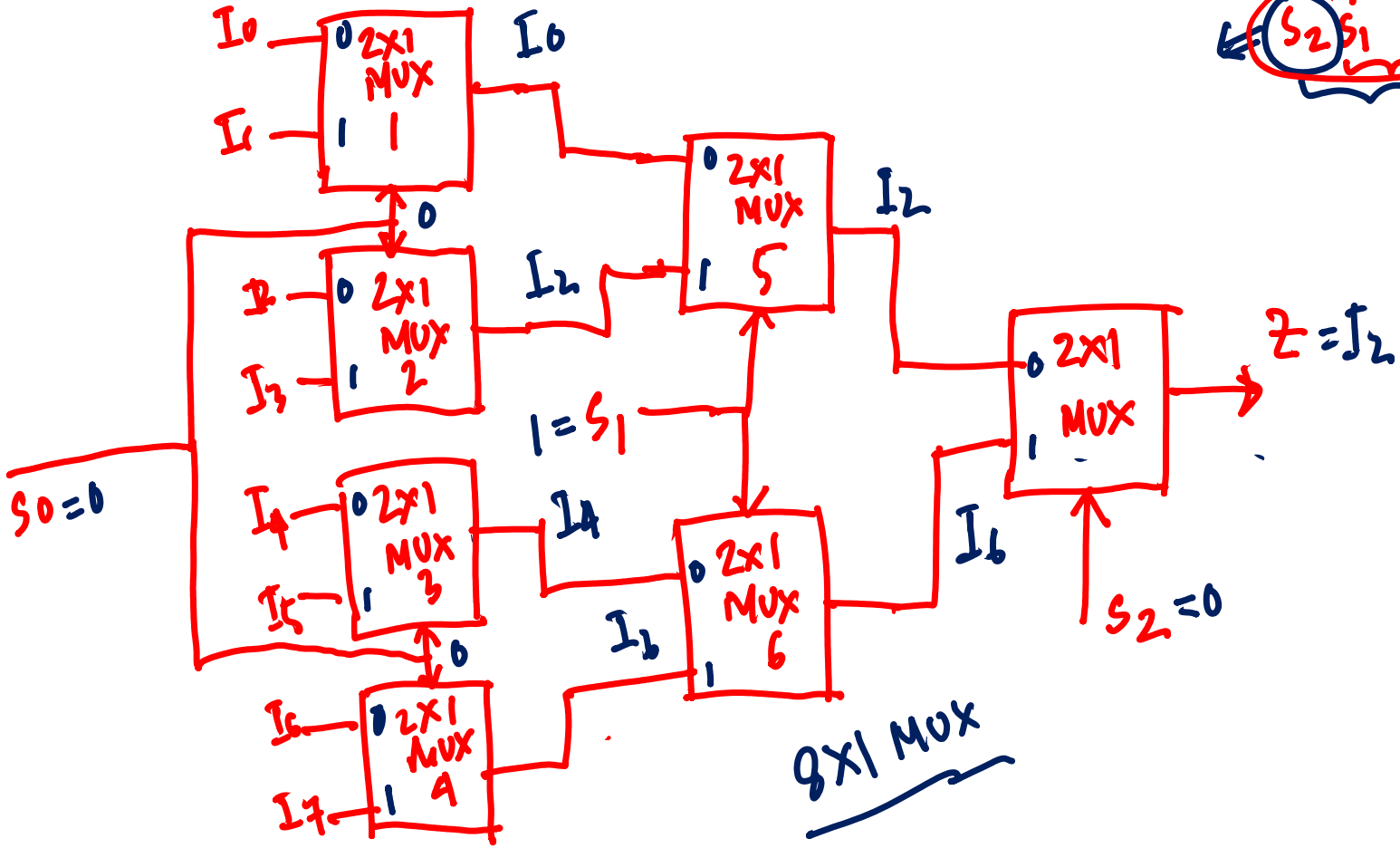
$\frac{2}{4} = !!$



$\frac{8}{2} = 4$ ✓

$\frac{4}{2} = 2$ ✓

$\frac{2}{2} = 1$



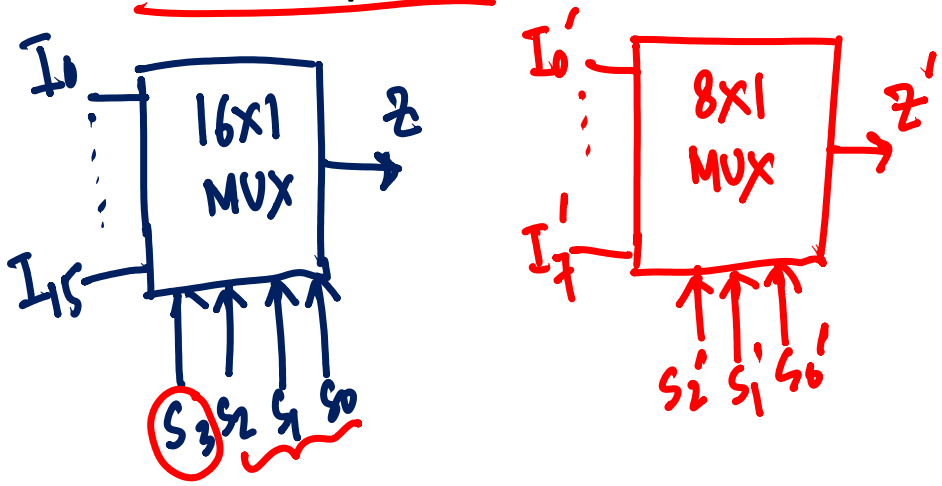
S2	S1	S0	Z
0	0	0	I0
0	0	1	I1
0	1	0	I2
0	1	1	I3
1	0	0	I4
1	0	1	I5
1	1	0	I6
1	1	1	I7

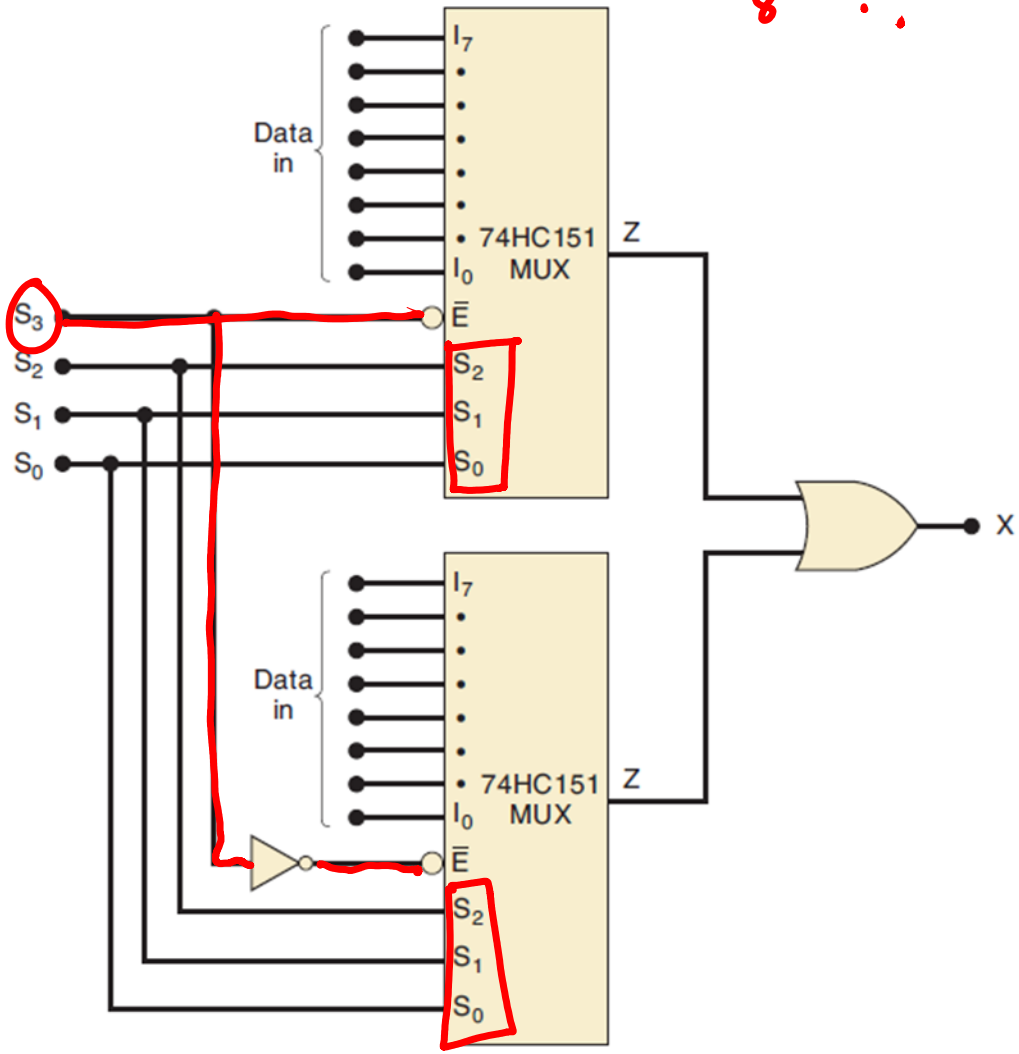
$S_2 = 0, S_1 = 1$

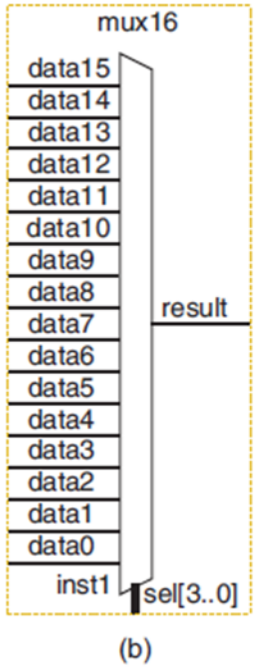
$S_0 = 0$

MULTIPLEXER

- Sixteen one line multiplexer by Eight to one line multiplexer:





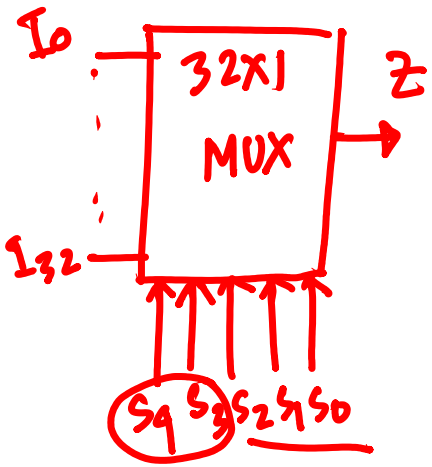


(b)

Ref (1): pp 686

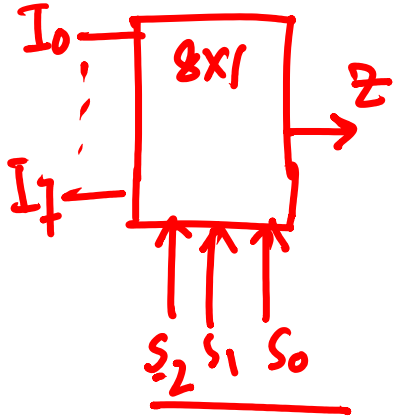
MULTIPLEXER

- Homework:
- 1) Sixteen to one line multiplexer by four to one line.
- 2) Thirty two to one line multiplexer by eight to one line and four to one line multiplexer



16/4 = 4

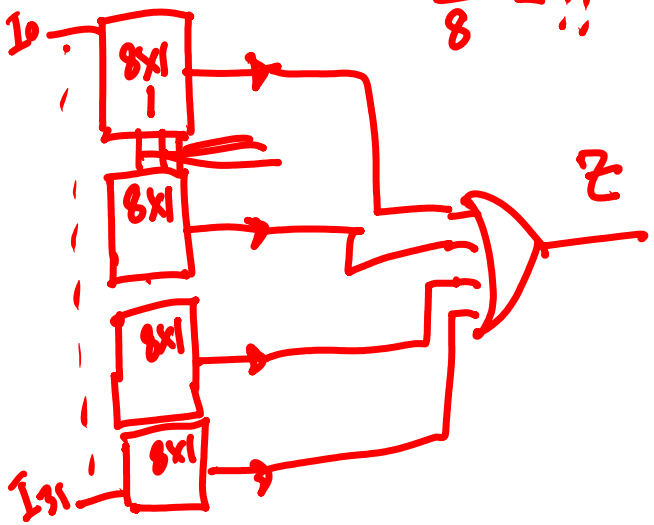
4/4 = 1



32x1 → 8x1

32/8 = 4

4/8 = 1!!



S4	S3	
0	0	MUX1
0	1	MUX2
1	0	MUX3
1	1	MUX4

32/4 = 8

8/4 = 2

2/4 = 1!!