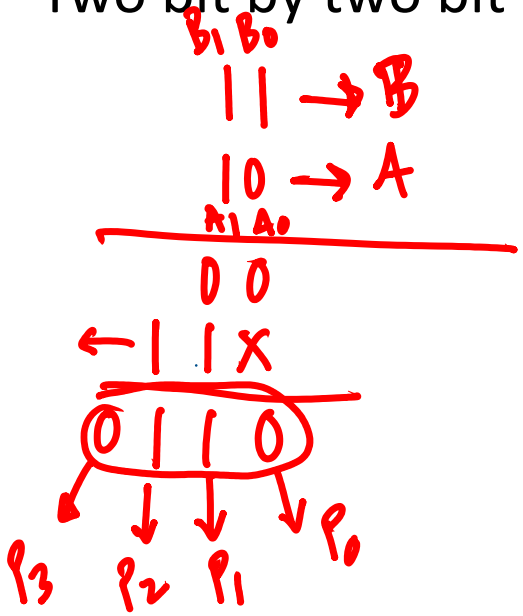
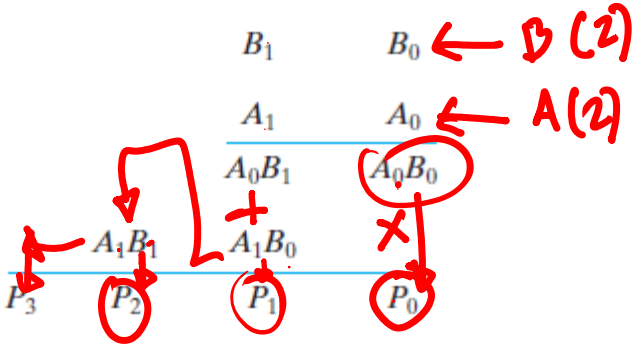
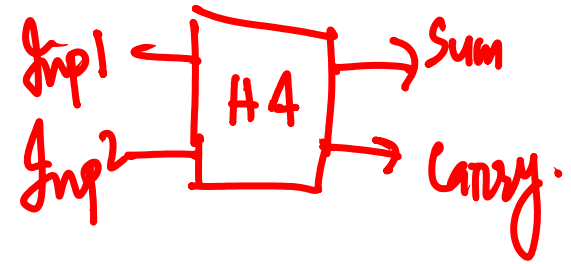
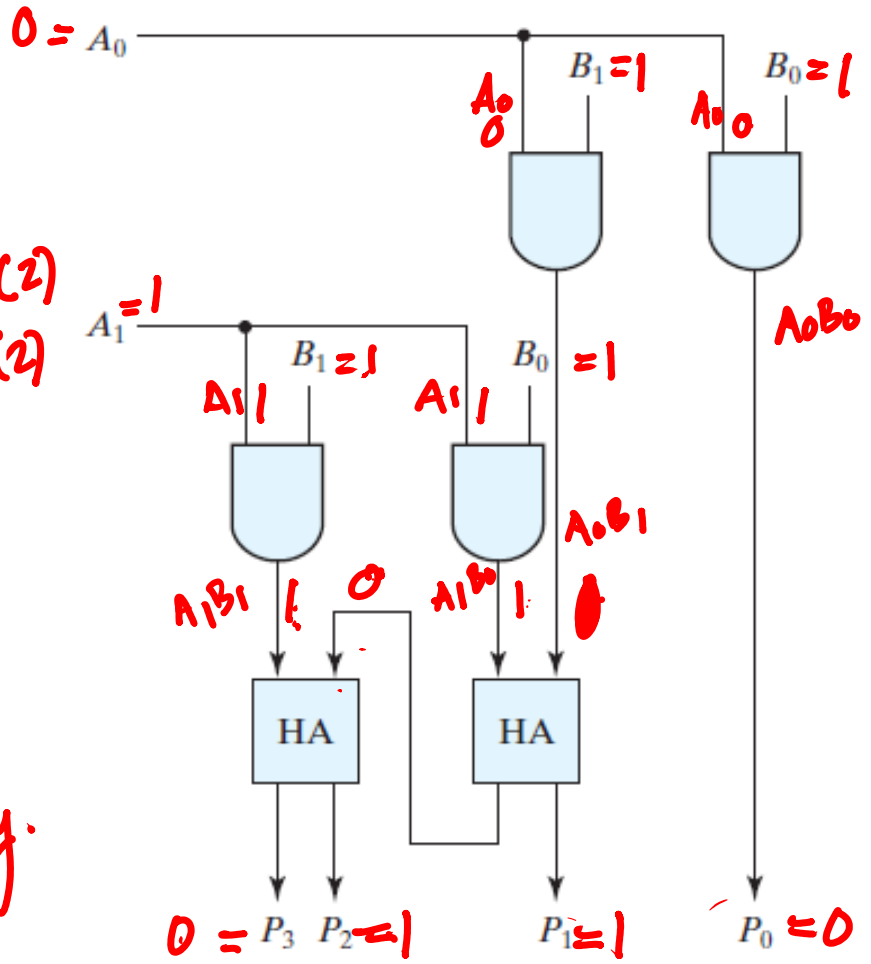
MULTIPLIER CIRCUIT

- Two bit by two bit multiplier:





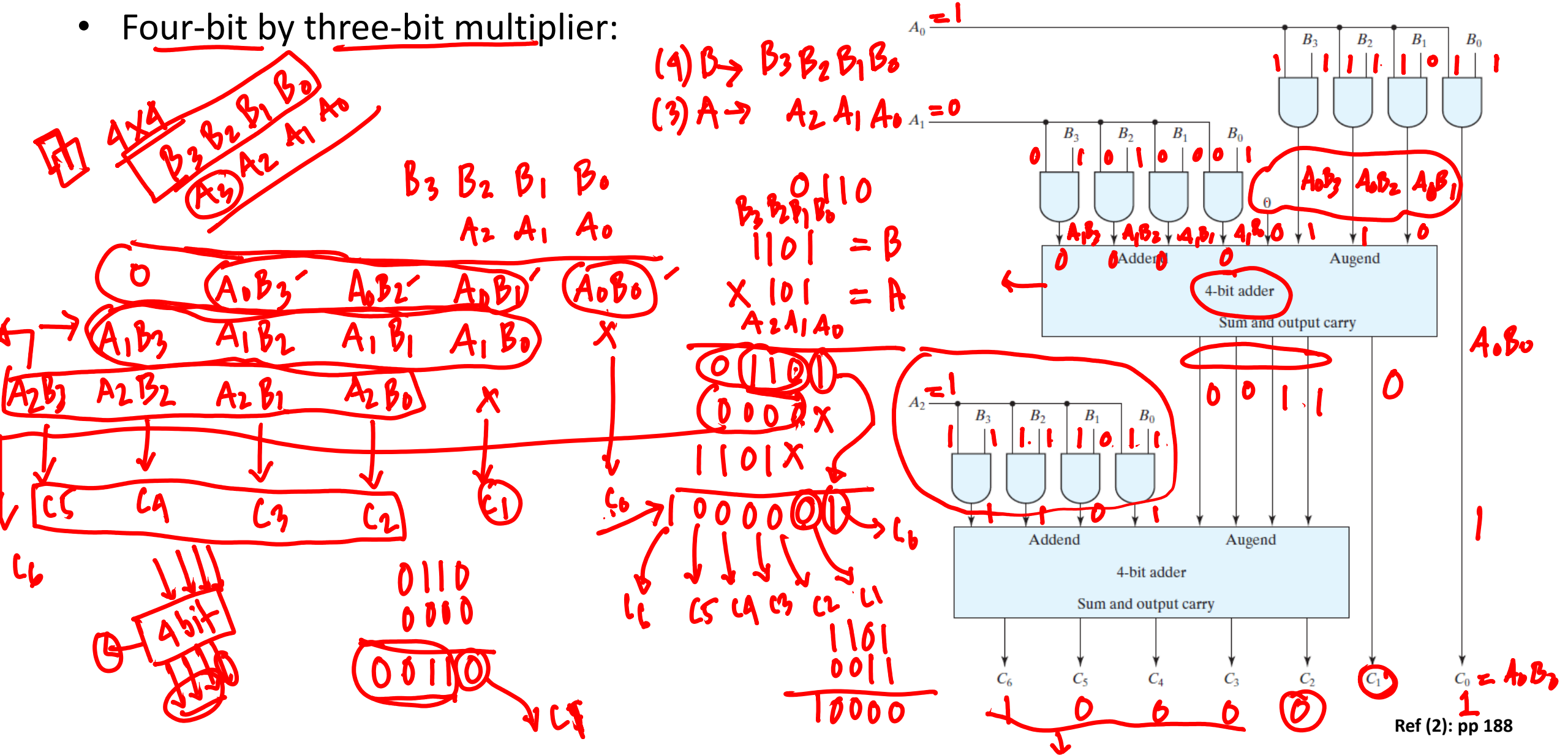




Ref (2): pp 187

MULTIPLIER CIRCUIT

- Four-bit by three-bit multiplier:

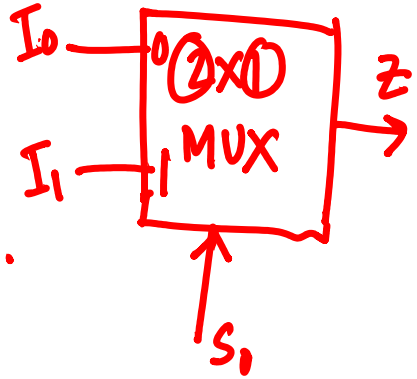


Ref (2): pp 188

MULTIPLEXER (Data selector).

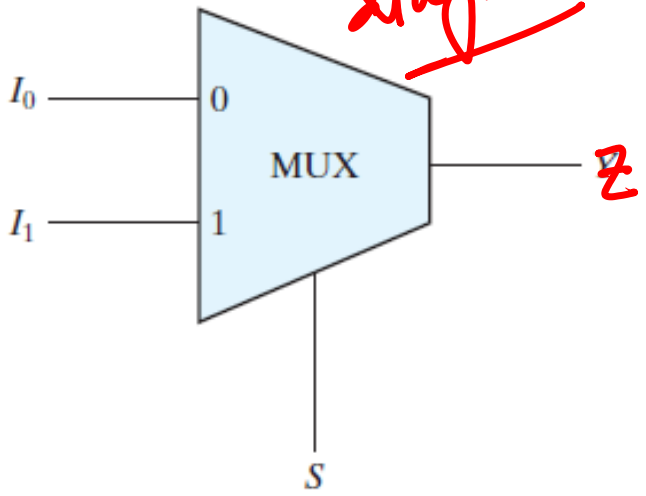
- Two to one line multiplexer:

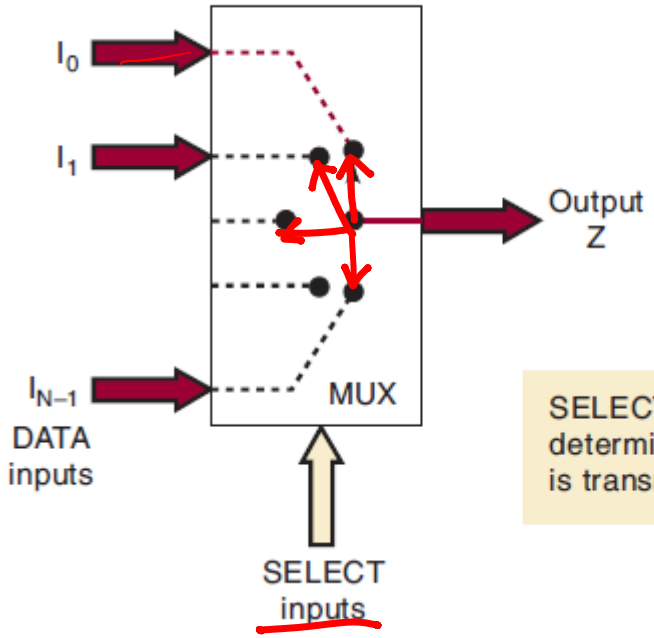
Multiplexer
→ So many inputs.
→ only one output.



$2^1 = 2$

Block diagram

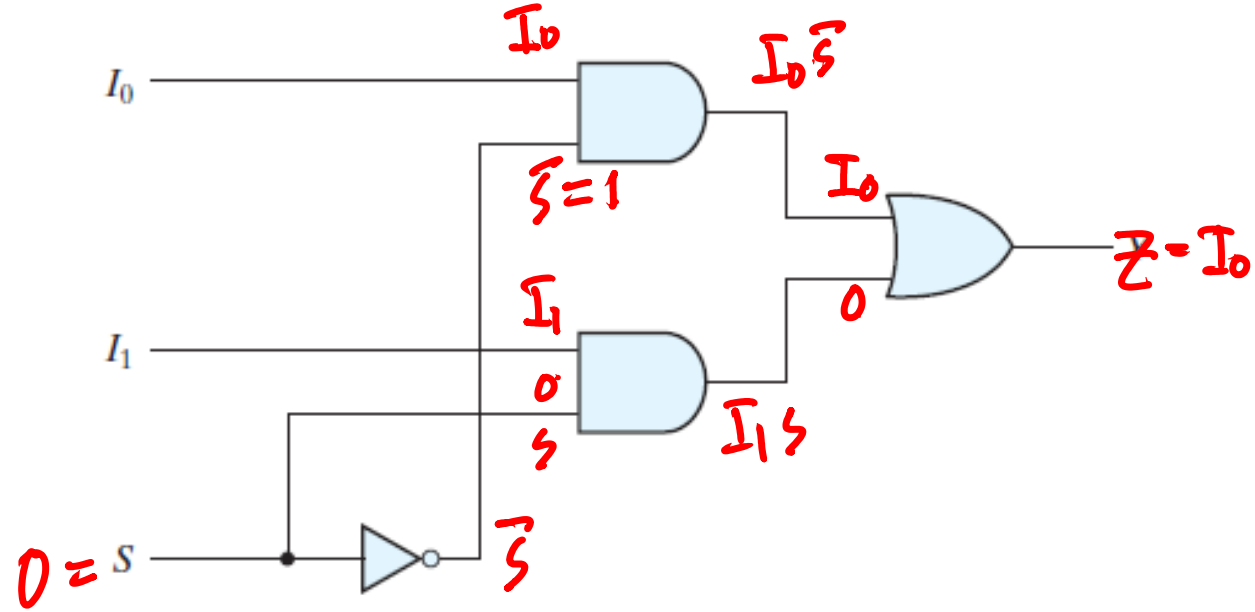




SELECT input code determines which input is transmitted to output Z.

S	Z
0	I_0
1	I_1

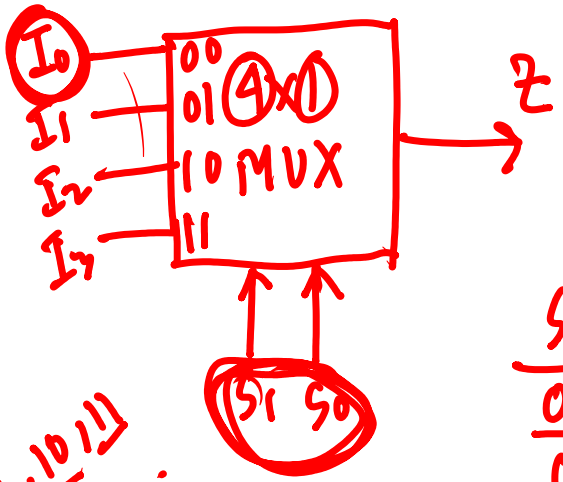
$Z = \bar{S} I_0 + S I_1$

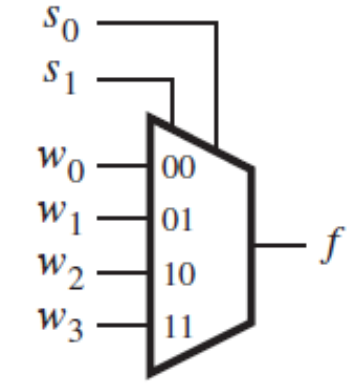


Ref (2): pp 199

MULTIPLEXER

- Four to one line multiplexer:

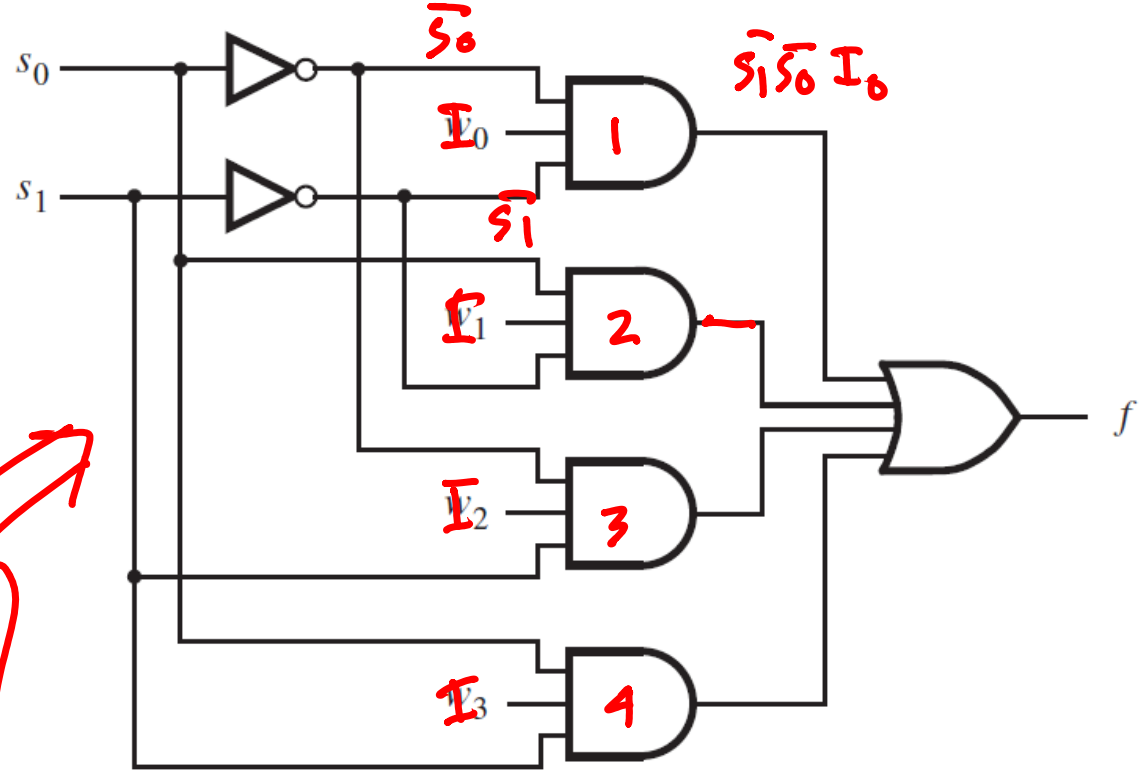




s_1	s_0	f
0	0	w_0
0	1	w_1
1	0	w_2
1	1	w_3

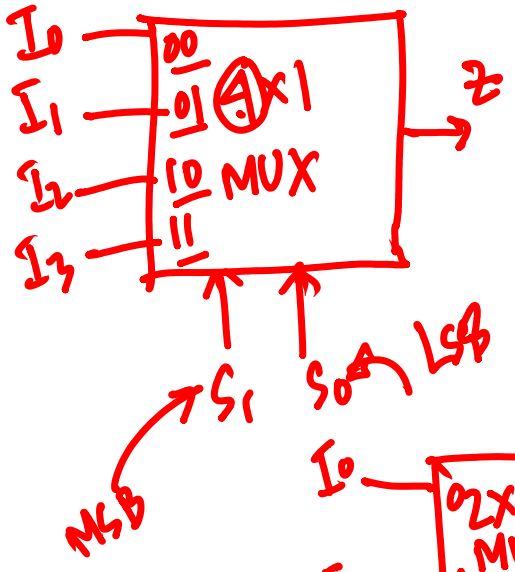
S_1	S_0	Z
0	0	I_0
0	1	I_1
1	0	I_2
1	1	I_3

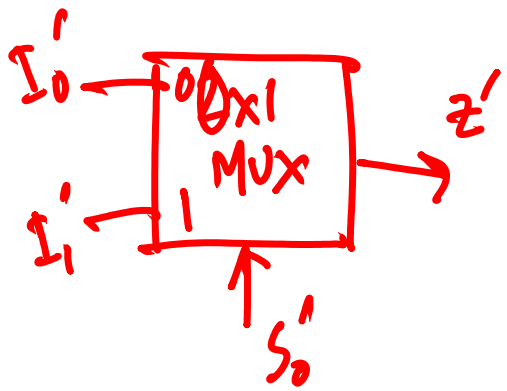
$$Z = \bar{S_1}\bar{S_0}I_0 + \bar{S_1}S_0I_1 + S_1\bar{S_0}I_2 + S_1S_0I_3$$



MULTIPLEXER

- Four to one line multiplexer by two to one line multiplexer :





MSB S_1	LSB S_0	Z
0	0	I_0
0	1	I_1
1	0	I_2
1	1	I_3