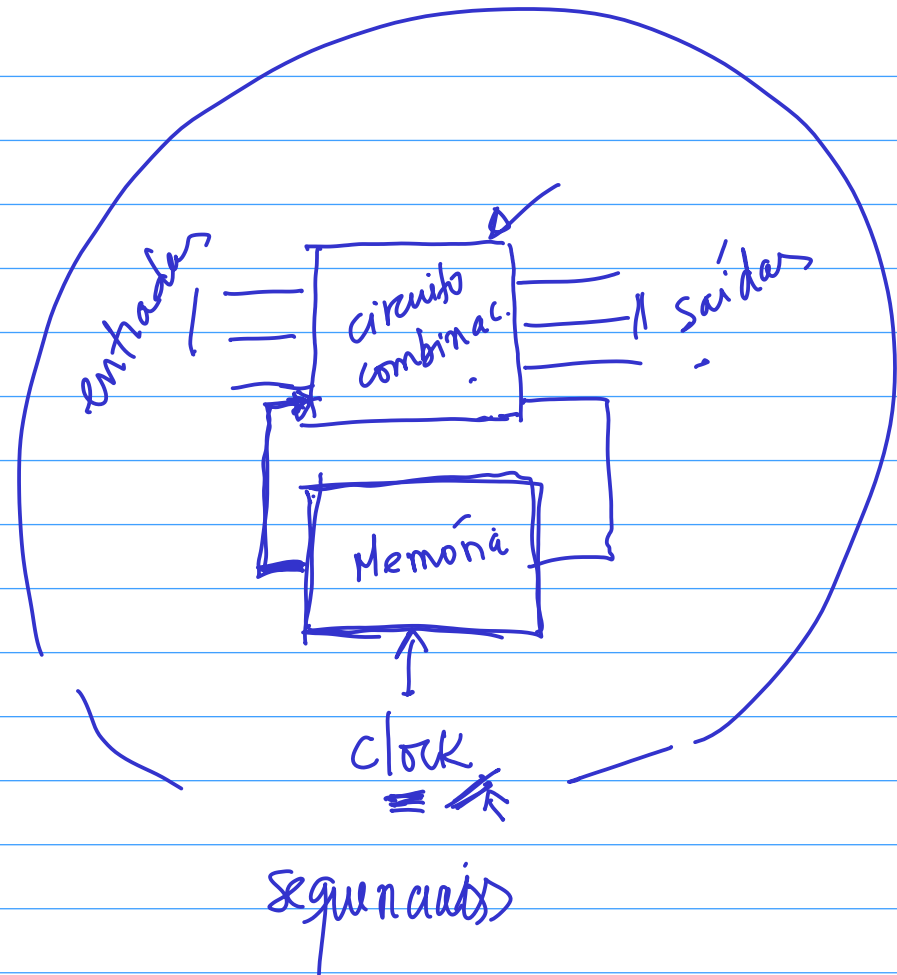
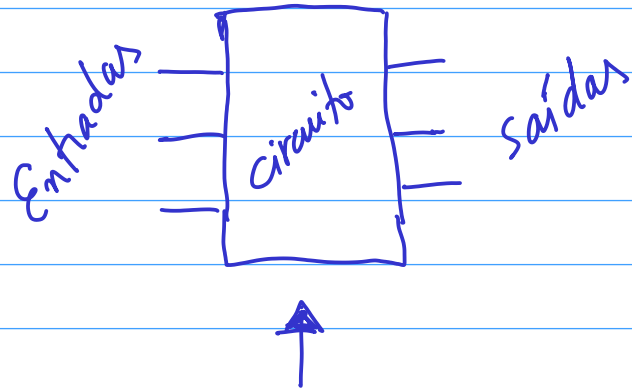
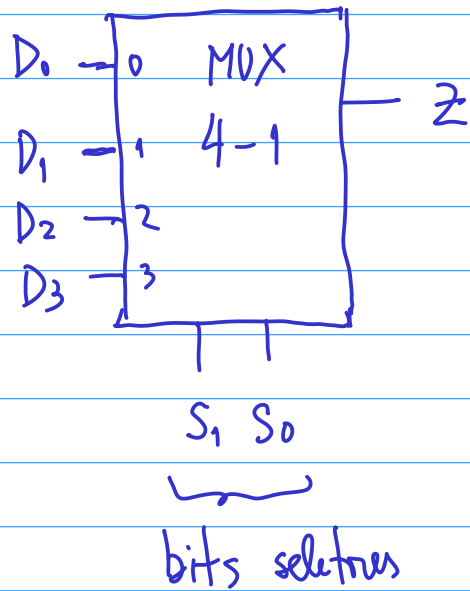


Circuitos combinacionais



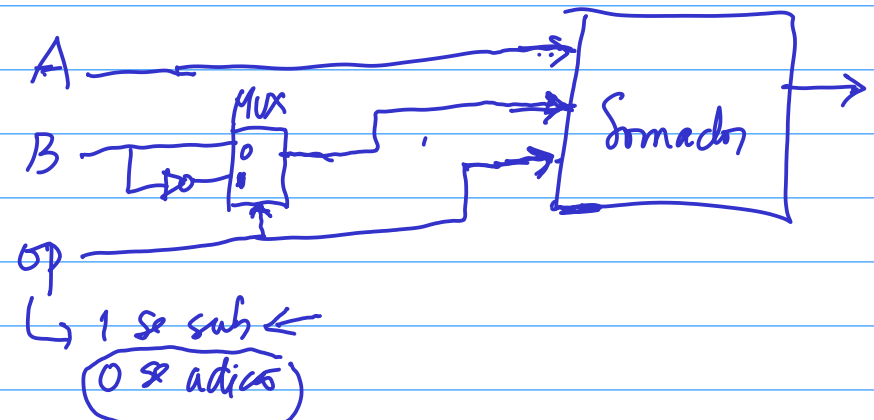
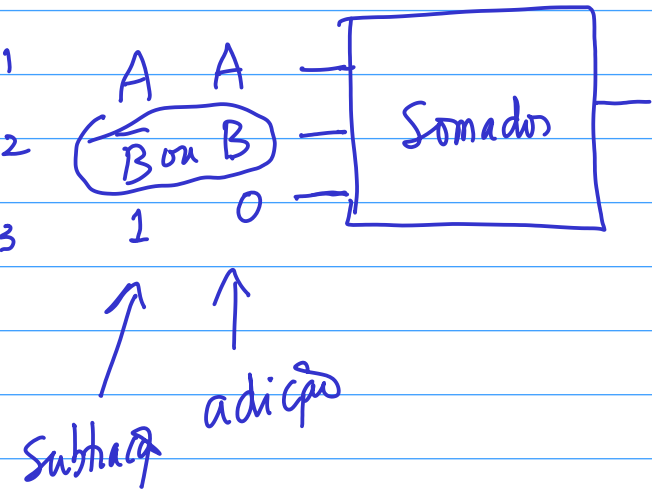
Multiplexador (seleção de dados)

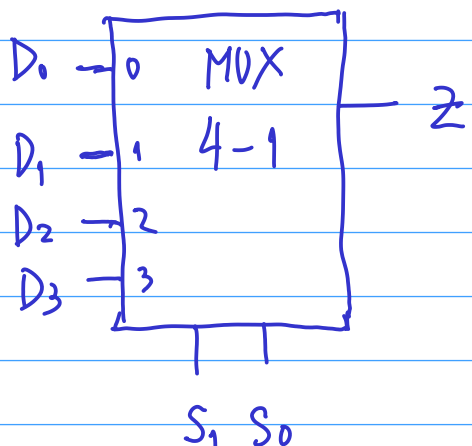


S_1, S_0	Z
0 0	D_0
0 1	D_1
1 0	D_2
1 1	D_3

$$A + B$$

$$A - B = A + (\overline{B}) + 1$$

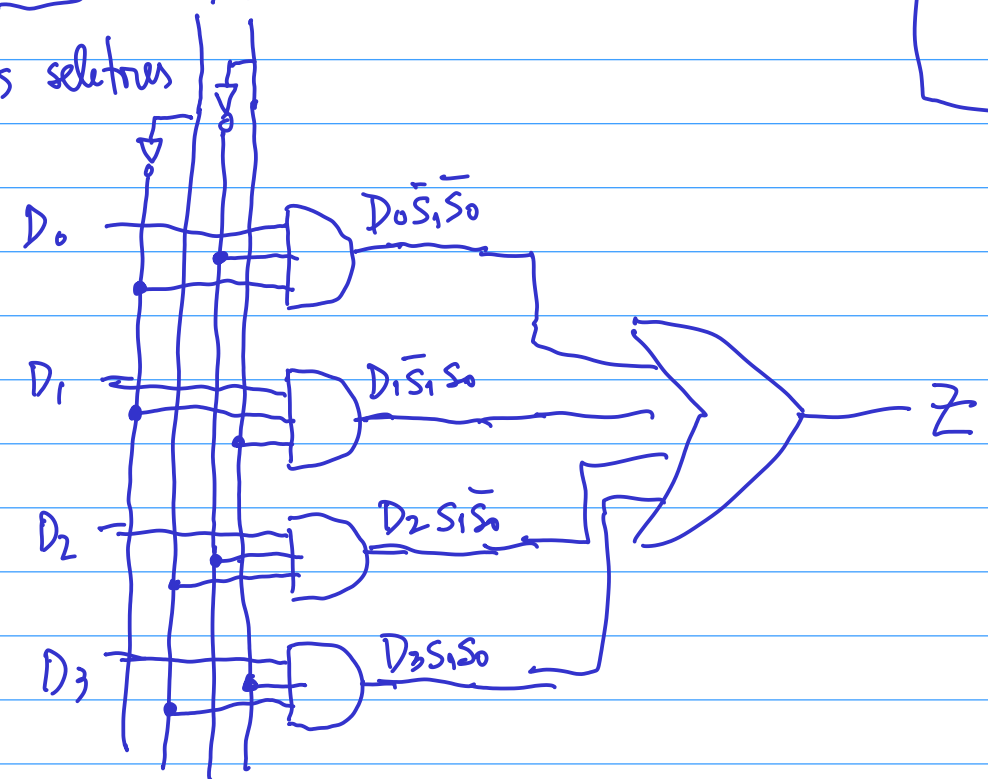




S_1, S_0	Z
0 0	$D_0 \cdot \bar{S}_1 \bar{S}_0$
0 1	$D_1 \cdot \bar{S}_1 S_0$
1 0	$D_2 \cdot S_1 \bar{S}_0$
1 1	$D_3 \cdot S_1 S_0$

$$Z(S_1, S_0) = D_0 \bar{S}_1 \bar{S}_0 + D_1 \bar{S}_1 S_0 + D_2 S_1 \bar{S}_0 + D_3 S_1 S_0$$

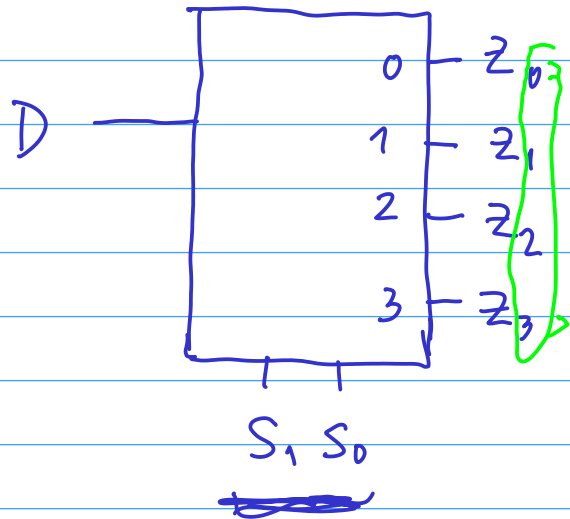
bits seletores S_1, S_0



K bits seletores
 ↓
 até 2^K entradas

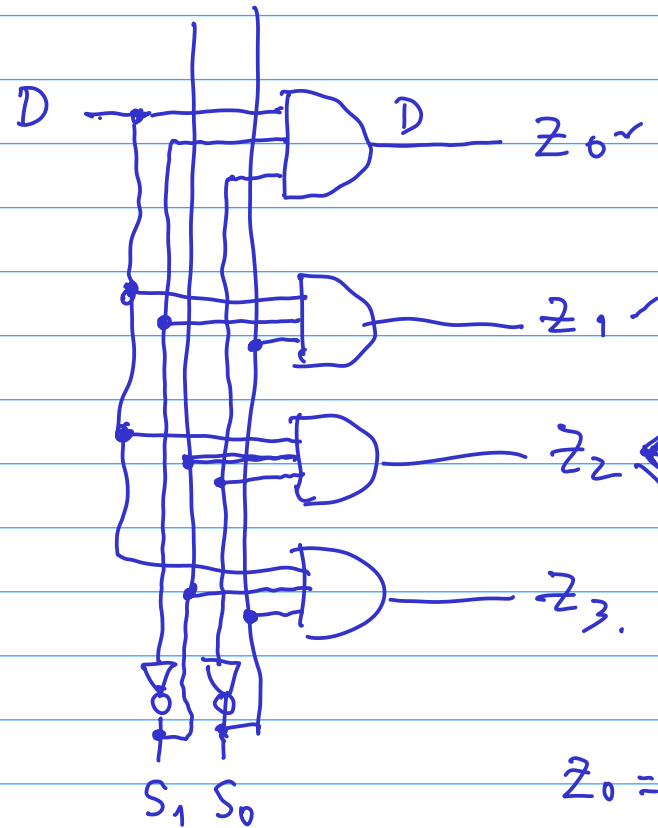


DeMUX (distribuidor de datos)



$$z_i = D \leftarrow S_1 S_0 = i_{(10)} \quad i = 0, 1, 2, 3$$

0 0
0 1
1 0
1 1



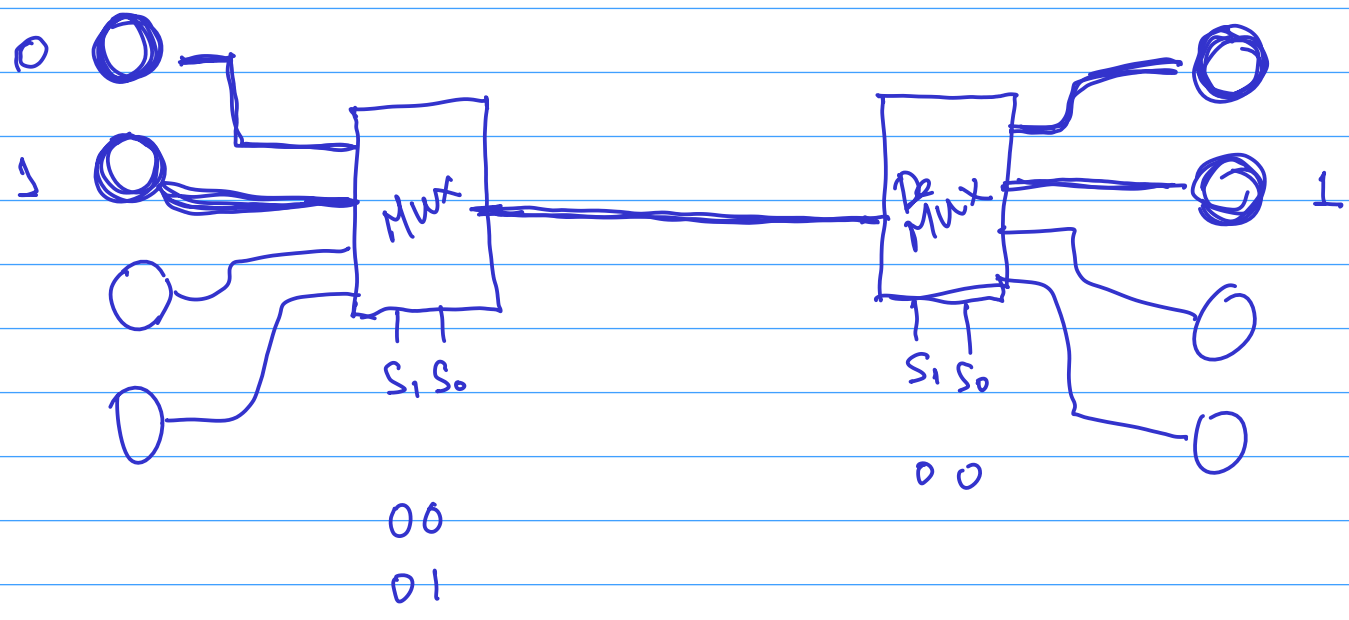
$$S_1 S_0 = \underline{10} \quad 2_{(10)}$$

$$z_2 = D S_1 \bar{S}_0 = D \quad 1 \cdot \bar{0} = 1 \cdot 1 = 1$$

$$z_0 = D \bar{S}_1 \bar{S}_0$$

$$z_3 = D S_1 S_0$$

$$z_1 = D \bar{S}_1 S_0$$

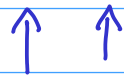


Circuitos comparador

$$A = a_1 a_0$$



$$B = b_1 b_0$$



$$A = B ?$$

$$A > B ?$$

$$A < B ?$$

$$a_1 > b_1 \Rightarrow A > B$$

$$a_1 < b_1 \Rightarrow A < B$$

$$a_1 = b_1 \Rightarrow a_0 = b_0 ? \Longrightarrow$$

$$a_0 > b_0 ? \Rightarrow A > B$$

$$a_0 < b_0 ? \Rightarrow A < B$$

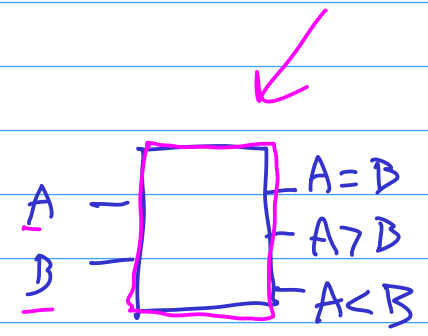
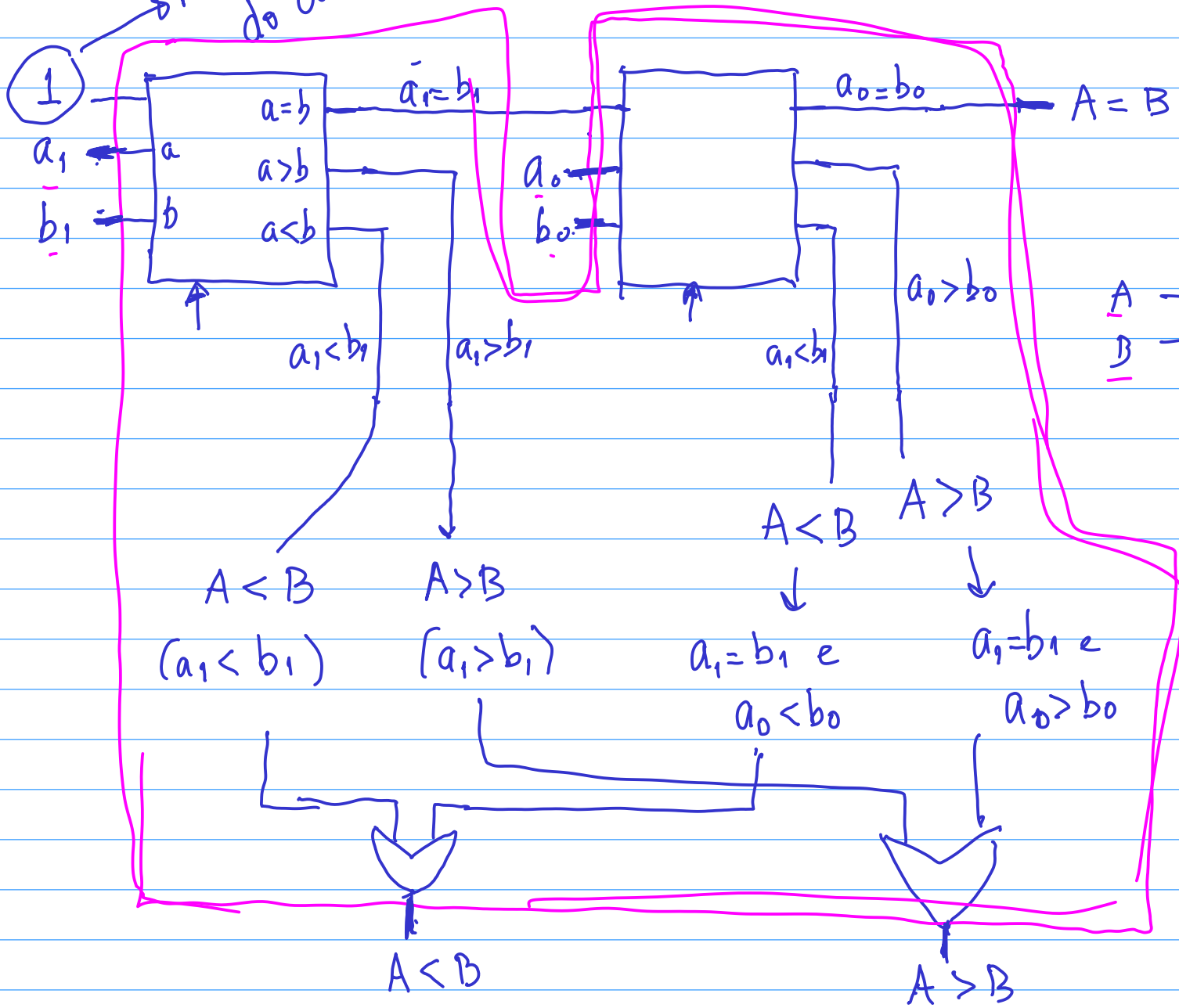
habilitador do circuito

$$A = a_1 a_0$$

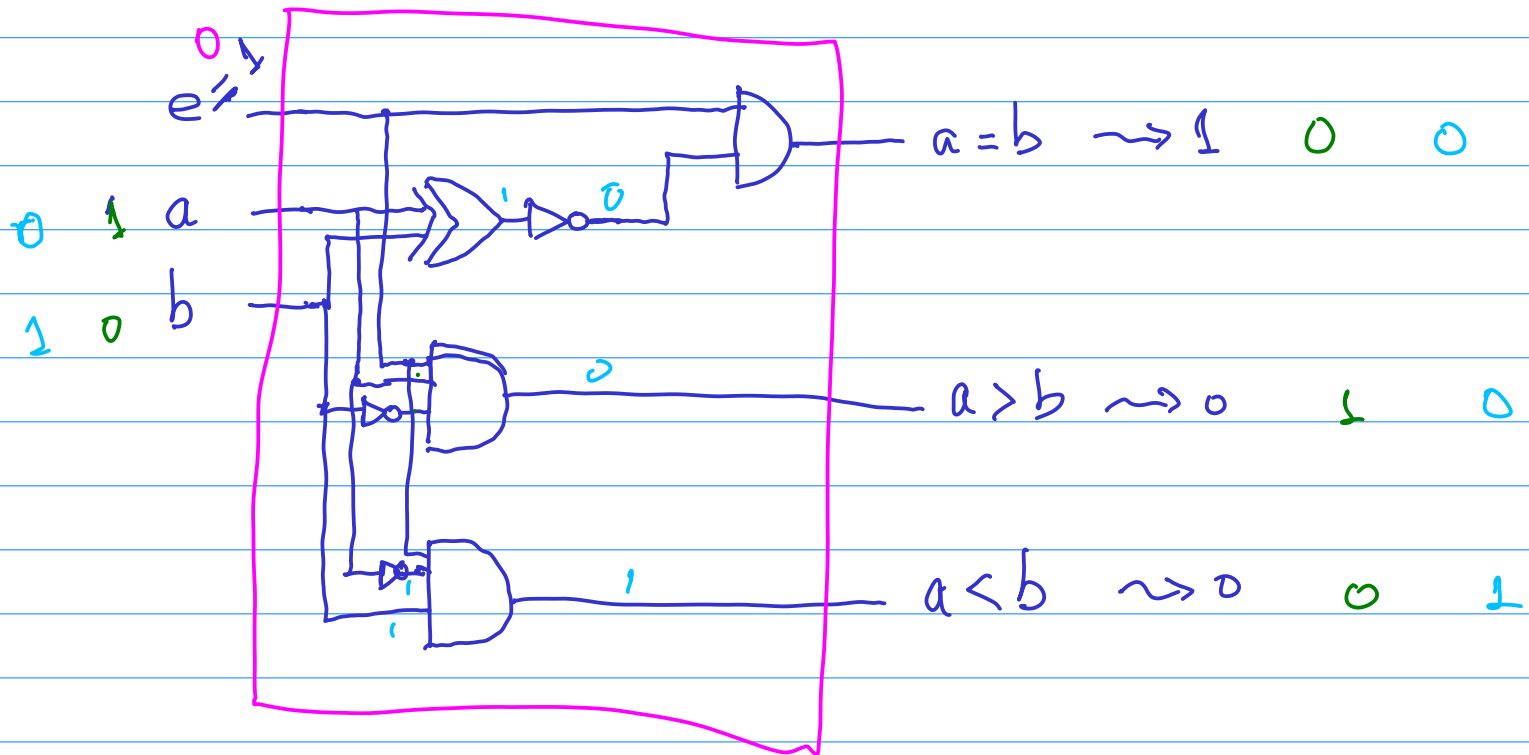
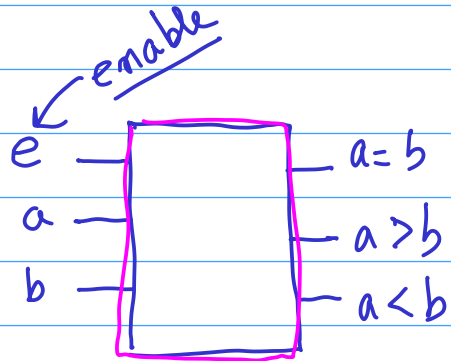
↑ ↑
 \bar{a}_1 \bar{a}_0

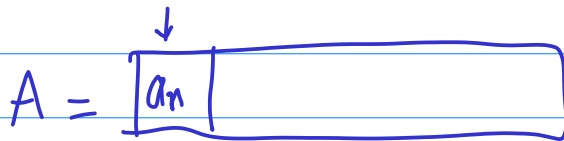
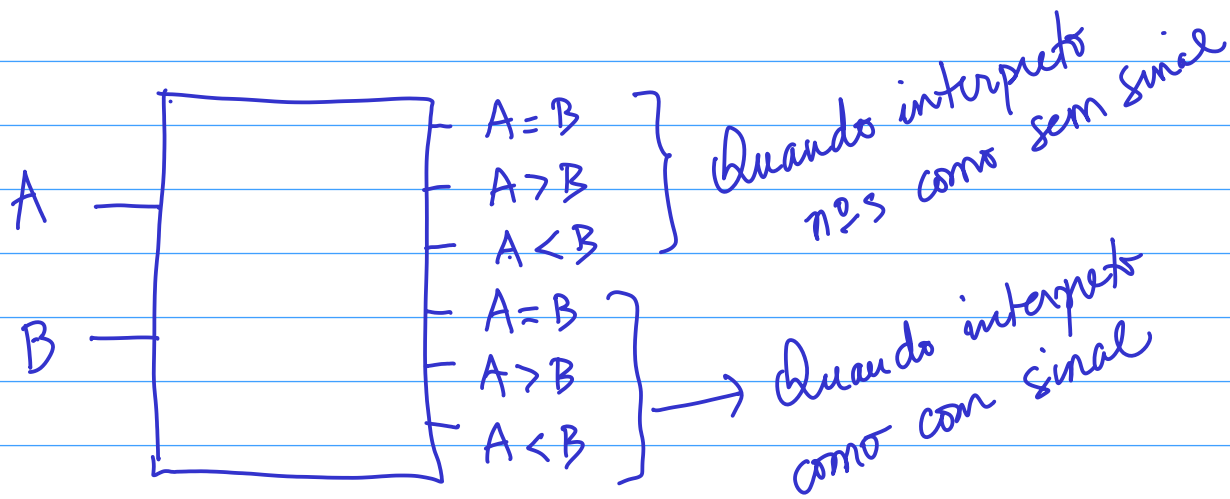
$$B = b_1 b_0$$

↑ ↑
 \bar{b}_1 \bar{b}_0



Circuito comparador de bits





Se $a_n = 1$ e $b_n = 0 \Rightarrow A < B$

Se $a_n = 0$ e $b_n = 1 \Rightarrow A > B$

Se $a_n = b_n \Rightarrow$ ambos positivos
ambos negativos