

1. Exercice 1

✍ Simplifier les équations suivantes en utilisant les règles de l'algèbre de Boole.

$$a + a \cdot b = a \cdot (1 + b)$$

$$a + a \cdot b = a \cdot 1$$

$$a + a \cdot b = a$$

$$\bar{a} \cdot \bar{b} \cdot c + \bar{a} \cdot b \cdot c = \bar{a} \cdot c \cdot (\bar{b} + b)$$

$$\bar{a} \cdot \bar{b} \cdot c + \bar{a} \cdot b \cdot c = \bar{a} \cdot c \cdot (1)$$

$$\bar{a} \cdot \bar{b} \cdot c + \bar{a} \cdot b \cdot c = \bar{a} \cdot c \cdot 1$$

$$\bar{a} \cdot \bar{b} \cdot c + \bar{a} \cdot b \cdot c = \bar{a} \cdot c$$

$$\overline{a \cdot b + a \cdot \bar{b}} = \overline{a \cdot b} \cdot \overline{a \cdot \bar{b}}$$

$$\overline{a \cdot b + a \cdot \bar{b}} = \overline{a \cdot b} \cdot \overline{a \cdot \bar{b}}$$

$$\overline{a \cdot b + a \cdot \bar{b}} = \overline{a \cdot a} \cdot \overline{b \cdot \bar{b}}$$

$$\overline{a \cdot b + a \cdot \bar{b}} = \overline{a \cdot 0}$$

$$\overline{a \cdot b + a \cdot \bar{b}} = 0$$

$$a \cdot \bar{b} \cdot \bar{c} + a \cdot b + a \cdot c = a \cdot (\bar{b} + \bar{c}) + a \cdot b + a \cdot c$$

$$a \cdot \bar{b} \cdot \bar{c} + a \cdot b + a \cdot c = a \cdot \bar{b} + a \cdot \bar{c} + a \cdot b + a \cdot c$$

$$a \cdot \bar{b} \cdot \bar{c} + a \cdot b + a \cdot c = a \cdot (\bar{b} + \bar{c} + b + c)$$

$$a \cdot \bar{b} \cdot \bar{c} + a \cdot b + a \cdot c = a \cdot (b + \bar{b} + c + \bar{c})$$

$$a \cdot \bar{b} \cdot \bar{c} + a \cdot b + a \cdot c = a \cdot (1 + 1)$$

$$a \cdot \bar{b} \cdot \bar{c} + a \cdot b + a \cdot c = a \cdot 1$$

$$a \cdot \bar{b} \cdot \bar{c} + a \cdot b + a \cdot c = a$$

2. Exercice 2

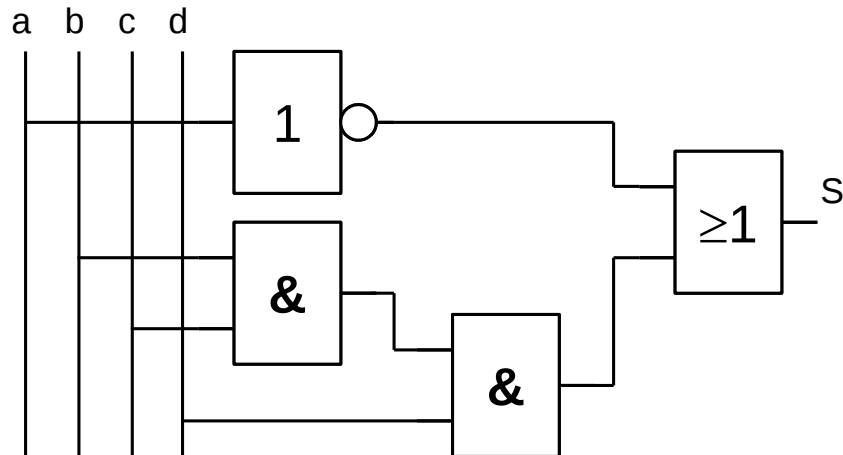
✍ Extraire l'équation logique de la table de vérité.

a	b	c	S
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

$$S = \bar{a} \cdot \bar{b} \cdot \bar{c} + \bar{a} \cdot \bar{b} \cdot c + \bar{a} \cdot b \cdot c + a \cdot \bar{b} \cdot c + a \cdot b \cdot c$$

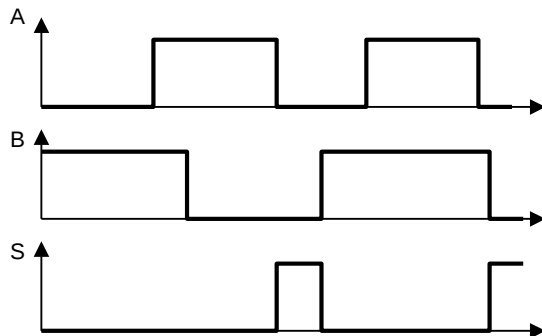
3. Exercice 3

✎ Tracer le logigramme de $S = \bar{a} + b \cdot c \cdot d$.

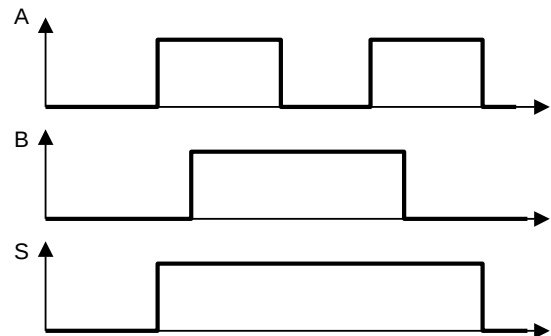


4. Exercice 4

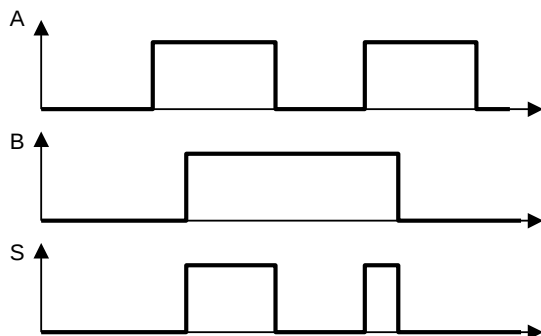
✎ Trouver la relation entre la sortie S et les entrées A et B



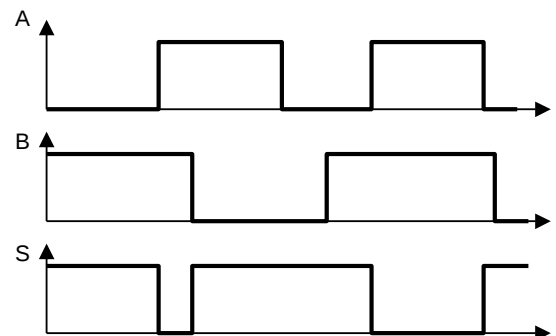
$$S = \bar{A} \cdot \bar{B}$$



$$S = A + B$$



$$S = A \cdot B$$



$$S = \bar{A} \cdot \bar{B} = \bar{A} + \bar{B}$$