

Sistema digital que sume '5' a números de estado
descritos por 3 bits

← necesito 4 bits para sumar
'5' a '7' (número máximo con 3 bits)

abc	f_3	f_2	f_1	f_0
000	0	1	0	1
001	0	1	1	0
010	0	1	1	1
011	1	0	0	0
100	1	0	0	1
101	1	0	1	0
110	1	0	1	1
111	1	1	0	0

f_3

abc	00	01	11	10
c	0	1	1	1
a	0	1	1	1
b	1	1	1	1

f_2

abc	00	01	11	10
c	0	1	1	1
a	0	1	1	1
b	1	1	1	1

f_1

abc	00	01	11	10
c	0	1	1	1
a	0	1	1	1
b	1	1	1	1

f_0

abc	00	01	11	10
c	0	1	1	1
a	0	1	1	1
b	1	1	1	1

$$f_3 = a + bc, \quad f_2 = \bar{a}\bar{c} + \bar{a}\bar{b} + abc, \quad f_1 = b\bar{c} + \bar{b}c = b \oplus c$$

$$f_0 = \bar{c}$$

→ NAND de 2 estados

$$f_3 = a + bc = \overline{\overline{a + bc}} = \overline{\overline{a} \cdot \overline{bc}} = \overline{\overline{a} \cdot \overline{b} \cdot \overline{c}}$$

$$f_1 = b\bar{c} + \bar{b}c = \overline{\overline{b\bar{c} + \bar{b}c}} = \overline{\overline{b\bar{c}} \cdot \overline{\bar{b}c}}$$

$$f_0 = c = \bar{\bar{c}} = \overline{\overline{c} \cdot \overline{c}}$$

$$f_2 = \bar{a}\bar{c} + \bar{a}\bar{b} + abc = \dots = \overline{\overline{\bar{a}\bar{c}} \cdot \overline{\bar{a}\bar{b}} \cdot \overline{abc}} = \dots$$

$$\dots = \overline{\overline{\overline{a} \cdot \overline{c}} \cdot \overline{\overline{a} \cdot \overline{b}} \cdot \overline{a \cdot b \cdot c}} = \overline{\overline{\overline{a} \cdot \overline{c}} \cdot \overline{\overline{a} \cdot \overline{b}} \cdot \overline{a \cdot b \cdot c}}$$