

# Tarefa Aula 6

Vítor Amorim Fróis

NUSP: 12543440

Projetar um circuito somador completo, com carry out e carry in.

*Circuito somador completo*

A	B	Carry In	S	Carry Out	ci	A	B	C
0	0	0	0	0	0	0	0	0
0	1	0	1	0	0	0	1	1
1	0	0	1	0	0	1	0	1
1	1	0	0	1	0	1	1	1
0	0	1	1	0	1	0	0	0
0	1	1	0	1	1	0	1	1
1	0	1	0	1	1	1	0	0
1	1	1	1	1	1	1	1	1

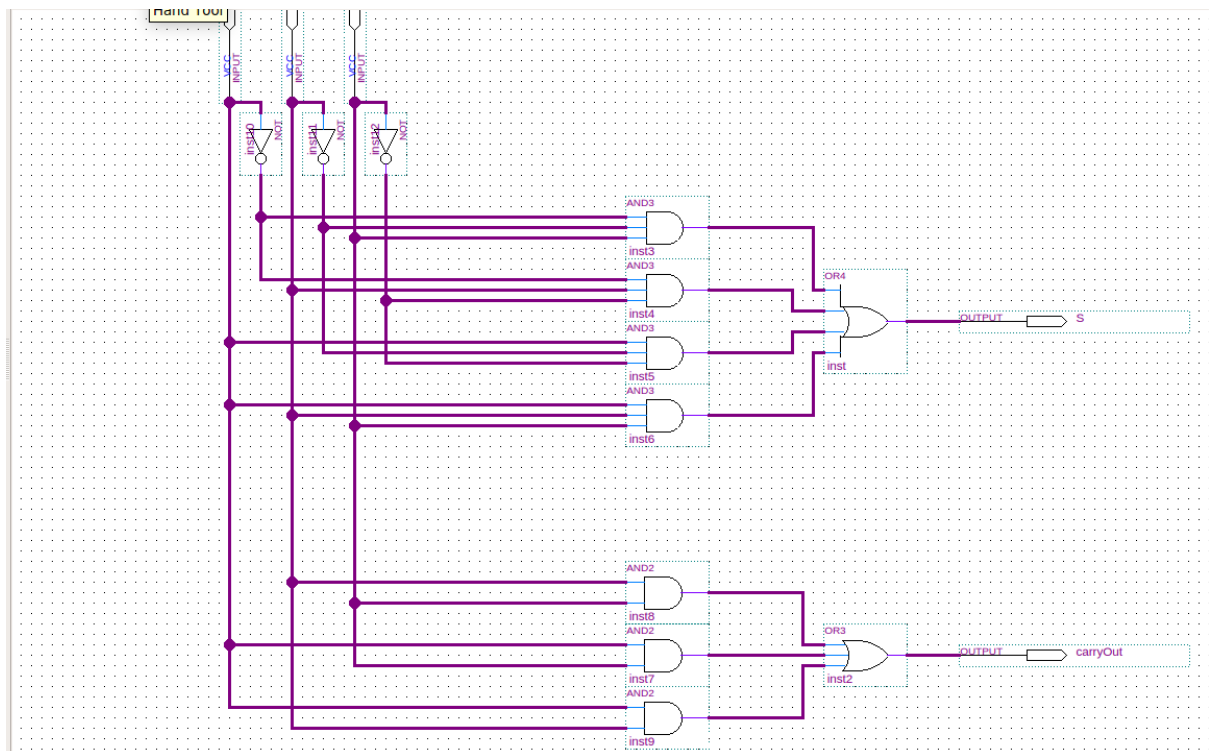
$$\text{Saída} = \bar{A}\bar{B}C + \bar{A}B\bar{C} + A\bar{B}\bar{C} + ABC$$

$$\bar{A}(\bar{B}C + B\bar{C}) + A(\bar{B}\bar{C} + BC) + 1$$

$$+ A$$

$$\text{Carry Out} = BC + AC + AB$$

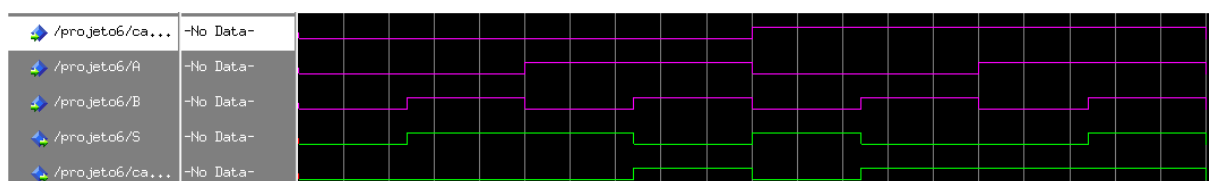
Rascunho do projeto somador



Projeto montado no quartus

✓	Status	in carryOn	Location	PIN_AC28	Yes
✓		in A	Location	PIN_AB28	Yes
✓		in B	Location	PIN_AC27	Yes
✓		out carryOut	Location	PIN_G16	Yes
✓		out S	Location	PIN_H16	Yes

Pinagem das entradas e saídas do projeto



Formas de onda resultantes na simulação pelo ModelSim

O circuito somador completo funciona adequadamente, realizando soma entre bits (com ou sem carry in) e exibindo o carry out caso preciso.