Exercício prático 2

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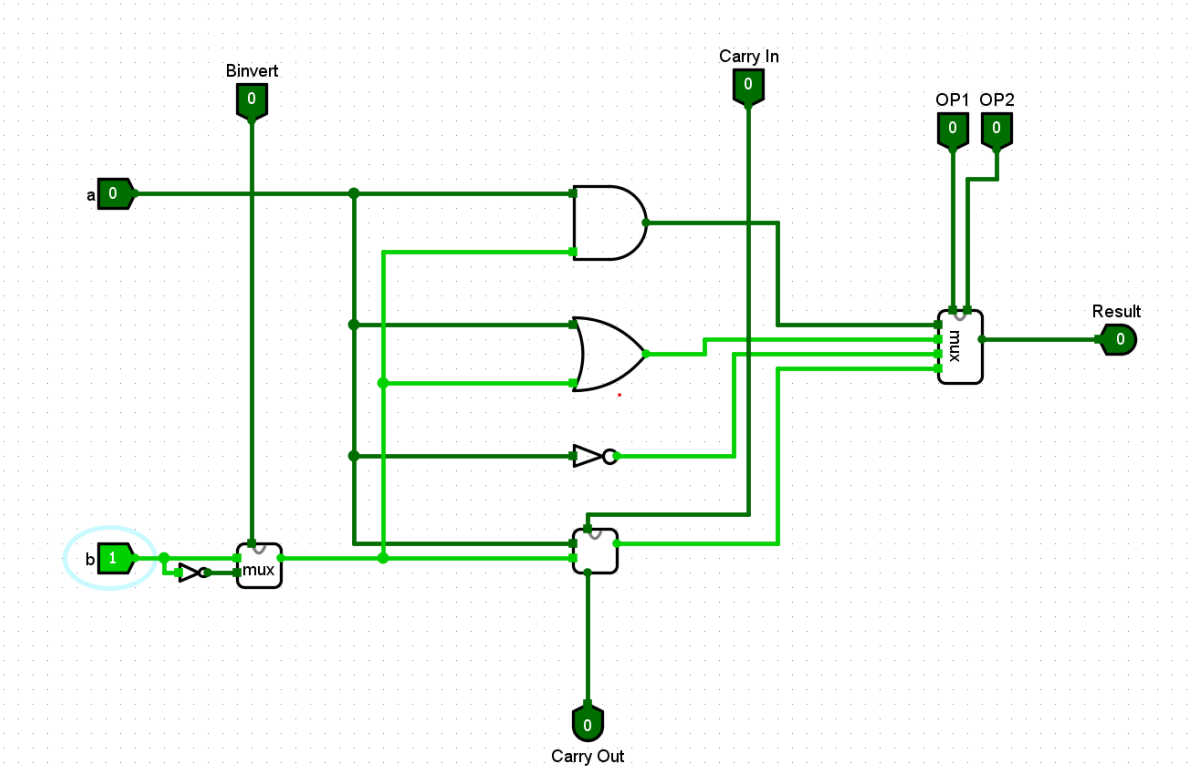
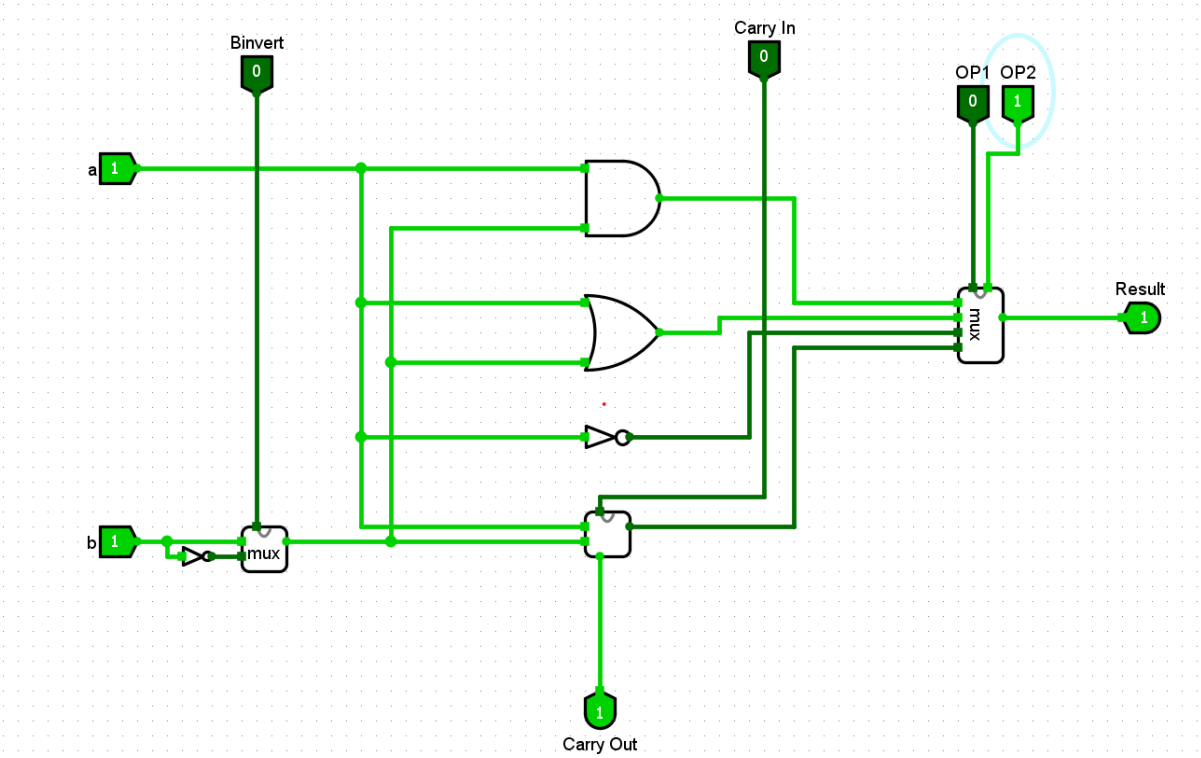
PARTE 1

1) Teste da ULA de 1 bit:

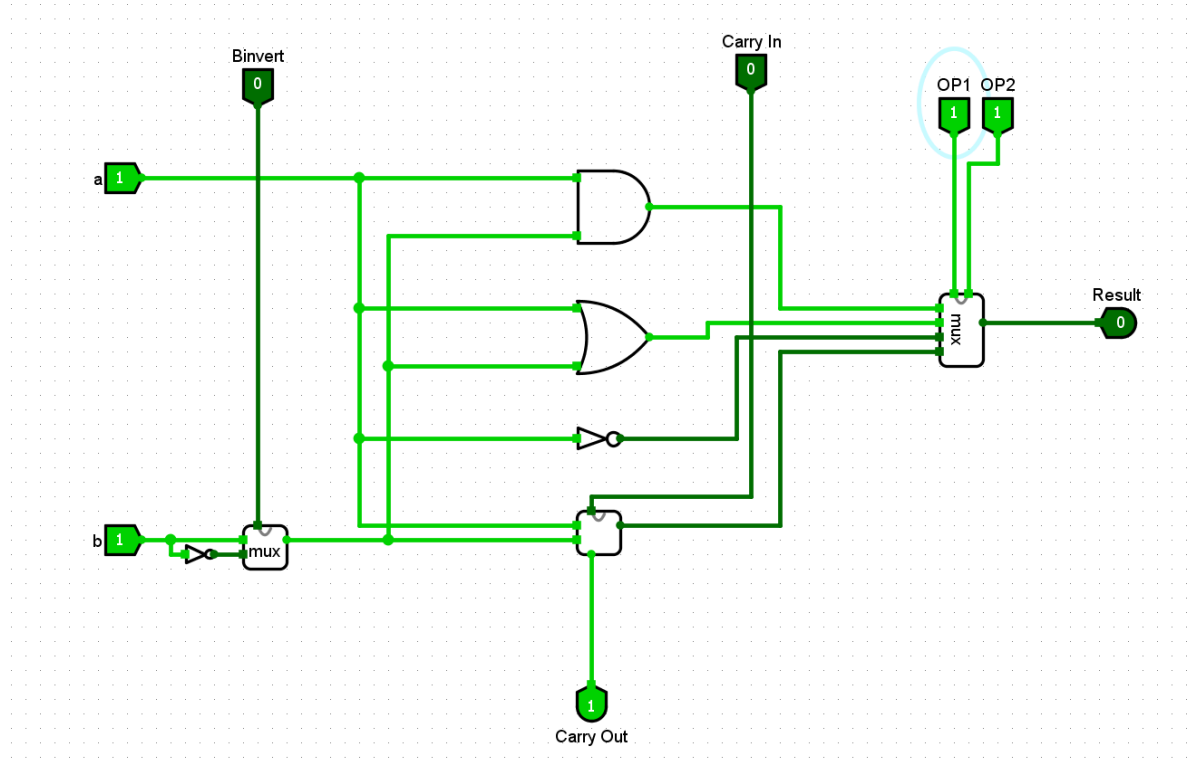
A = 0; B= 1; AND(A,B):



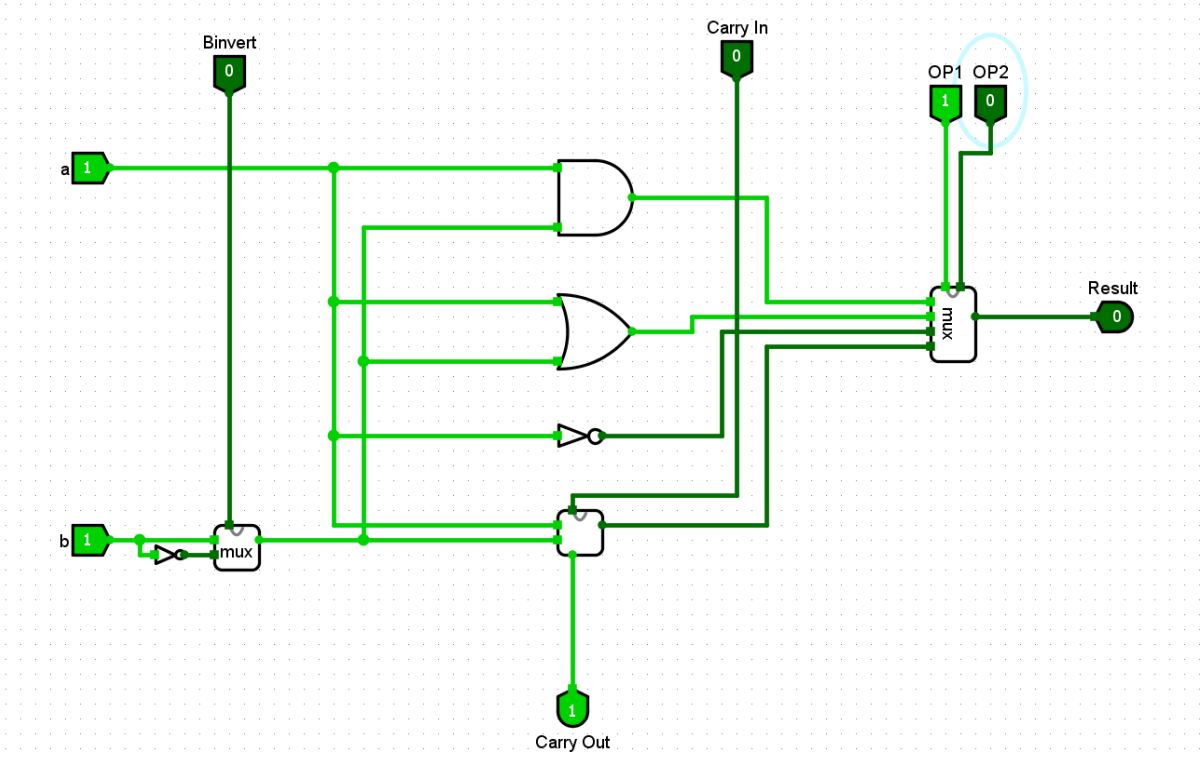
A = 1; B = 1; OR(A,B):



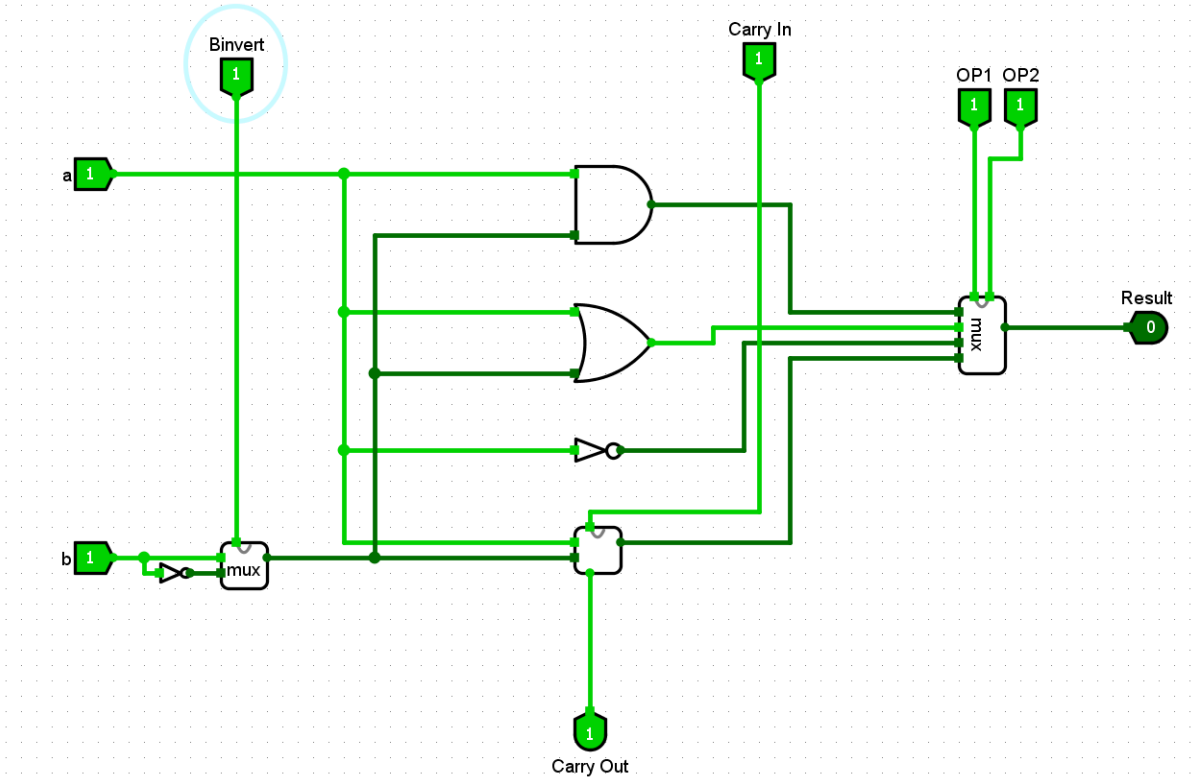
SOMA(A,B):



NOT(A):

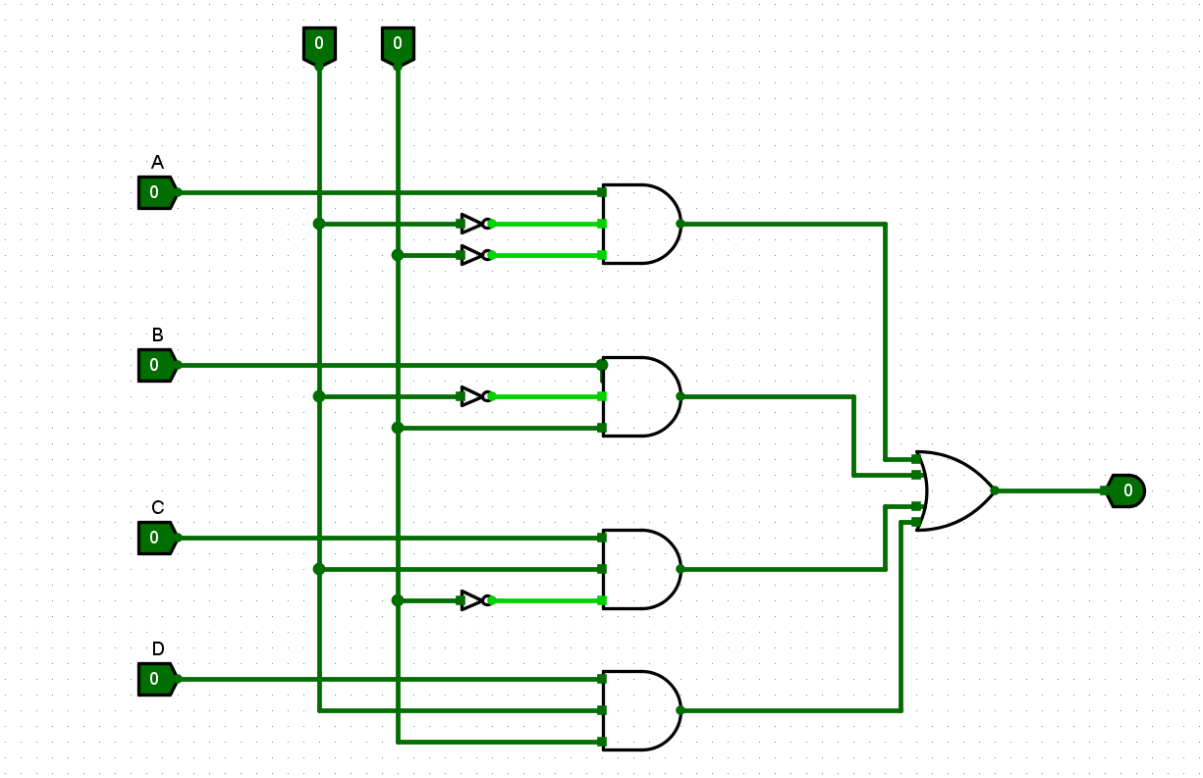

Binvert
0
Carry In
0
OP1
1
OP2
0
a
1
Result
0
mux
b
1
mux
1
Carry Out

SOMA(A, -B):

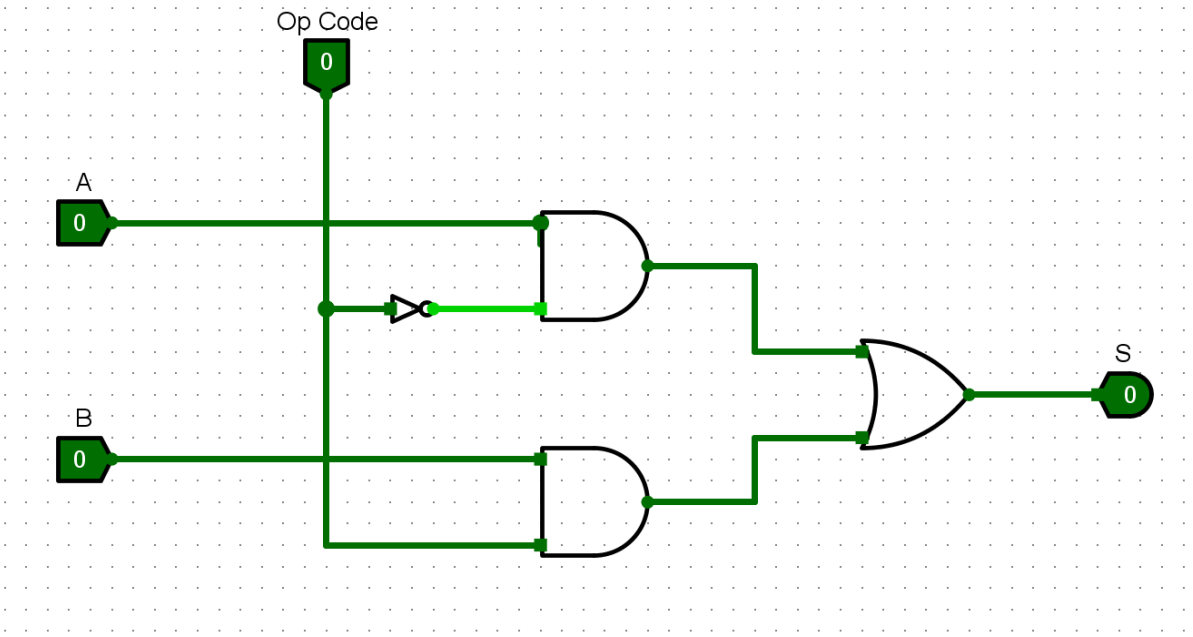

Binvert
1
Carry In
1
OP1
1
OP2
1
a
1
Result
0
mux
b
1
mux
1
Carry Out

Subcircuitos ULA 1 bit

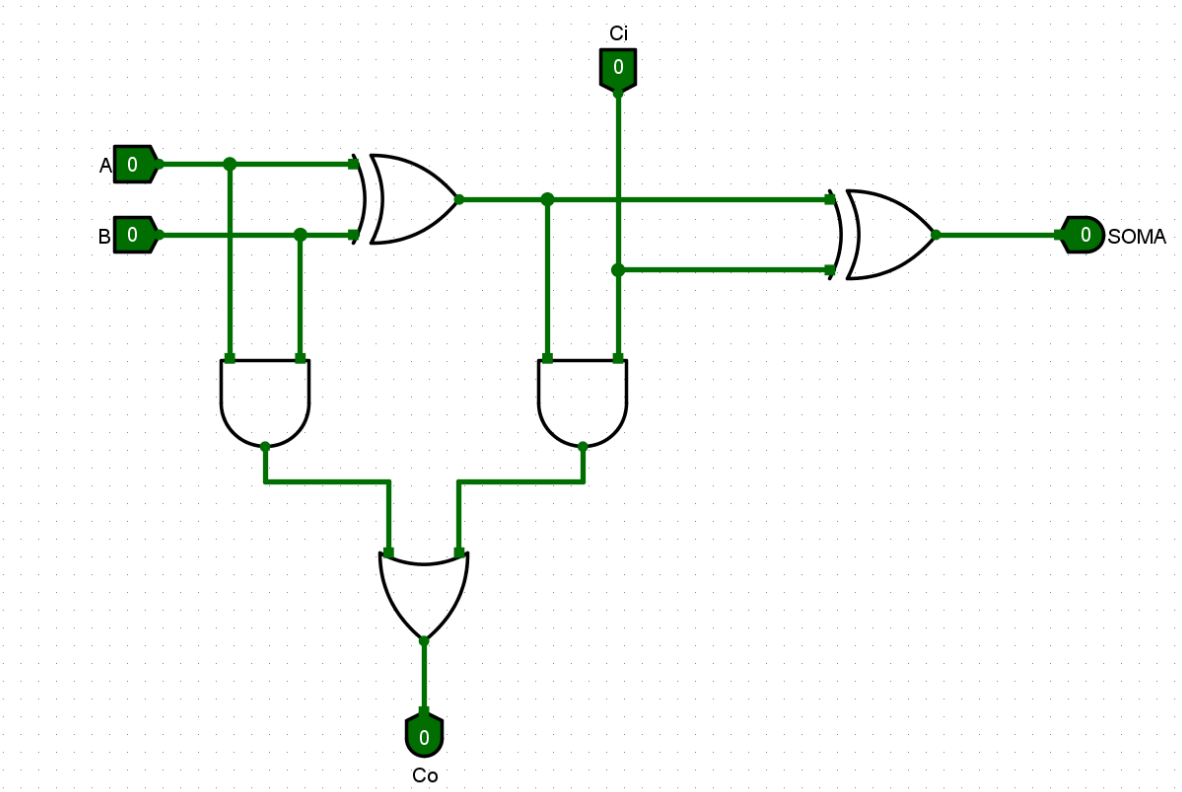
- MUX DE 4 OPERAÇÕES



-MUX DE 2 OPERAÇÕES

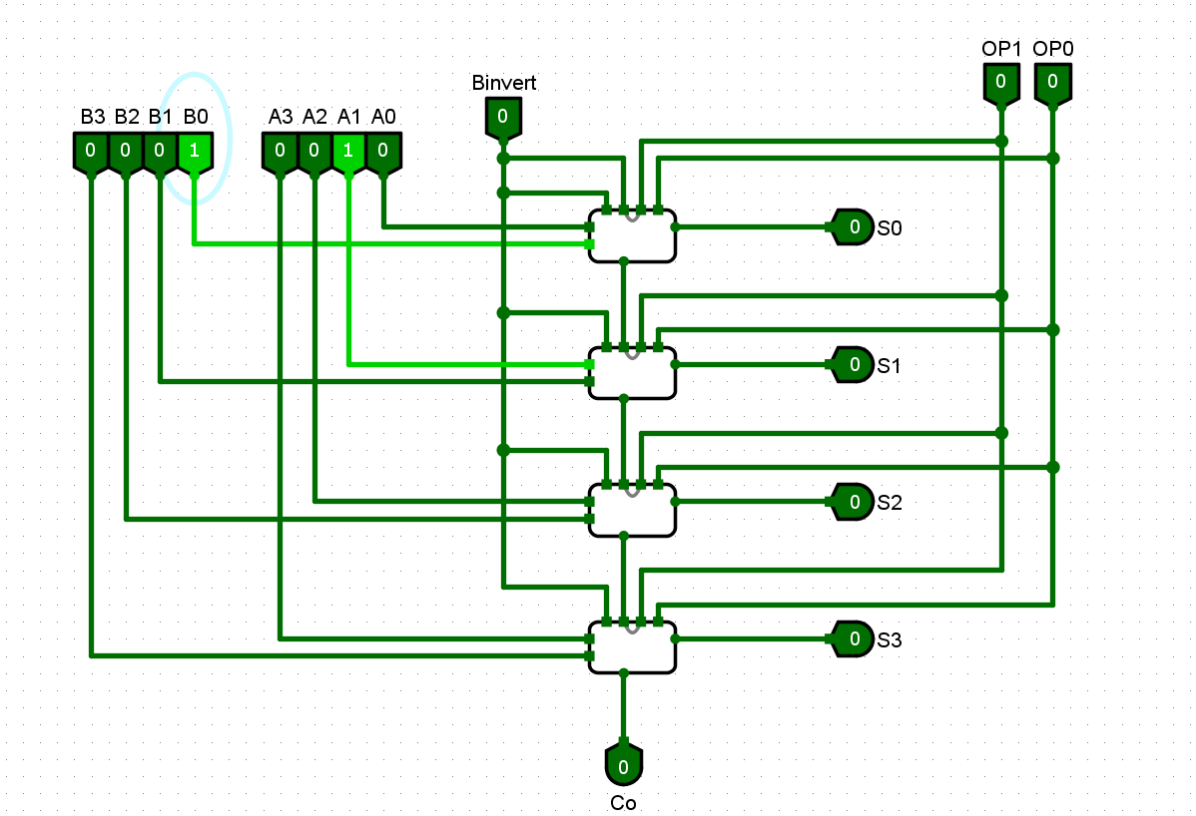


-SOMADOR 1 BIT:

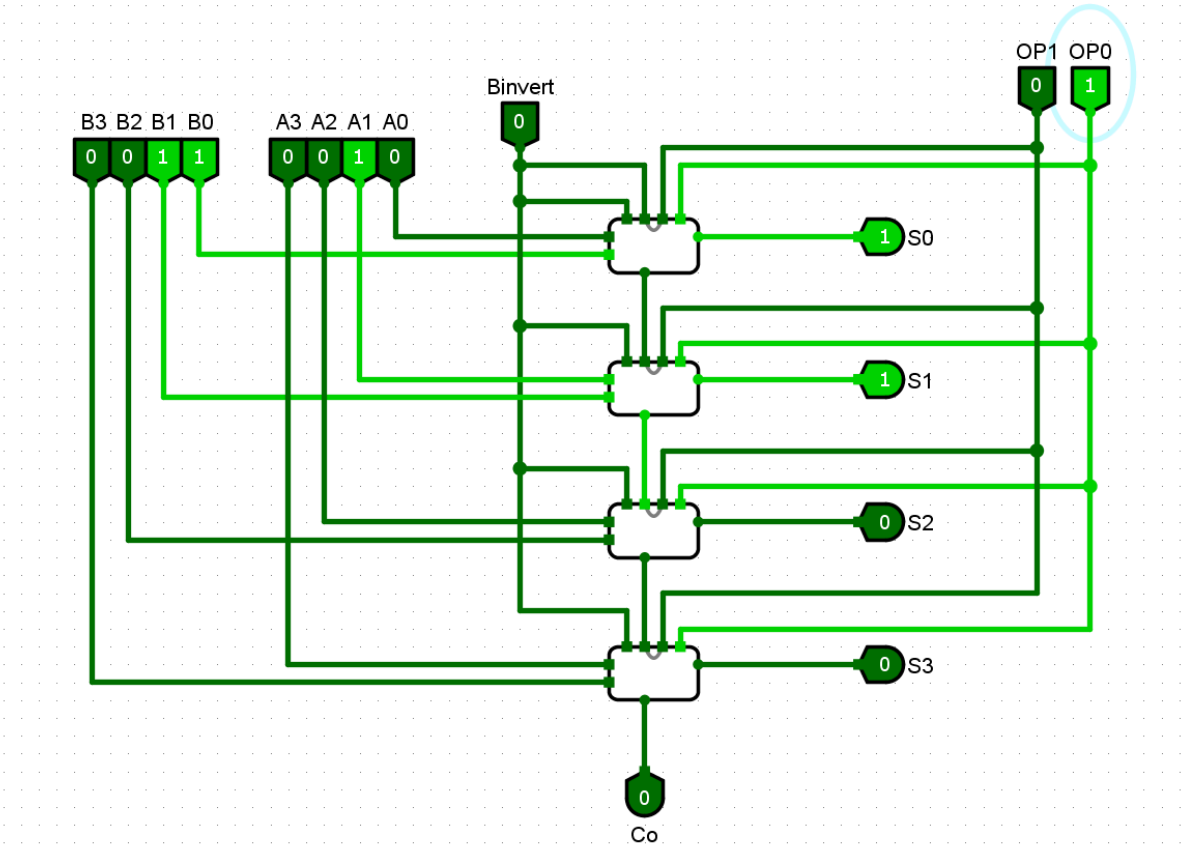


2) Teste da ULA de 4 bits:

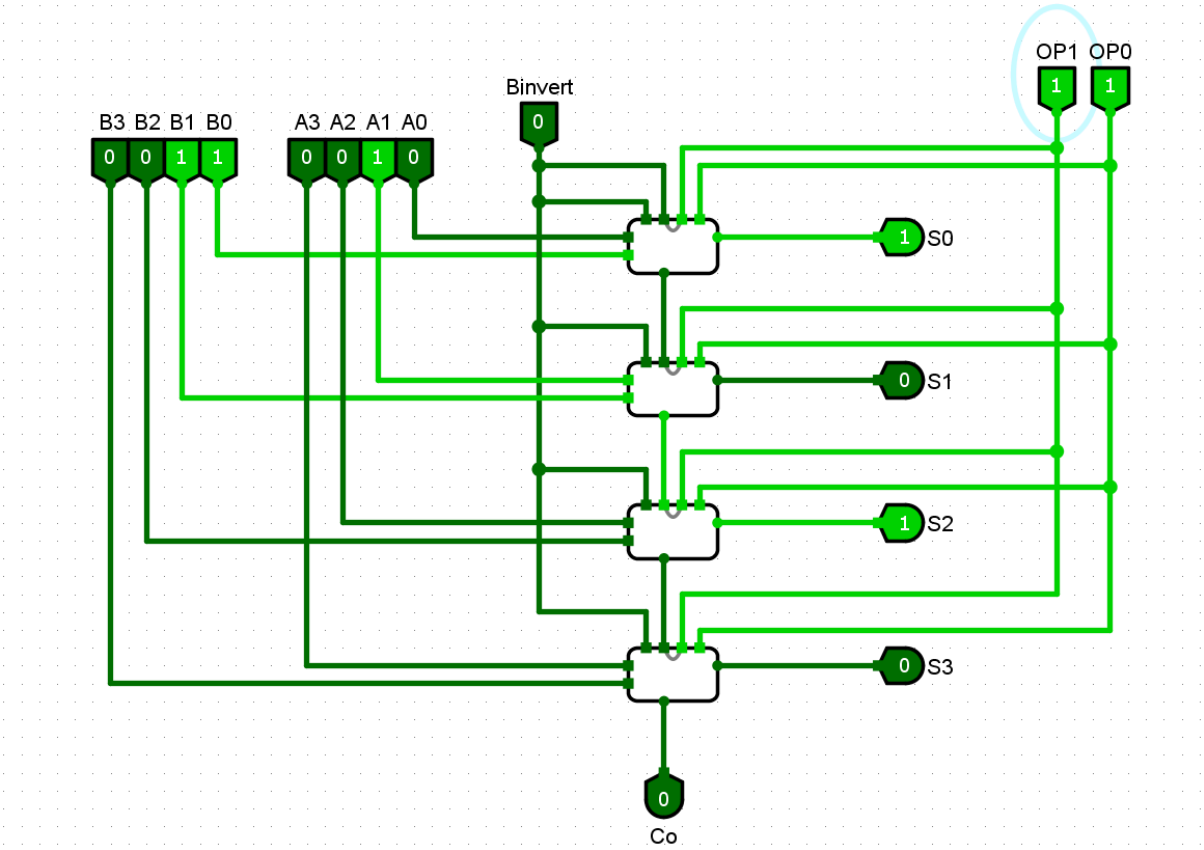
A = 2; B = 1; AND(A,B):



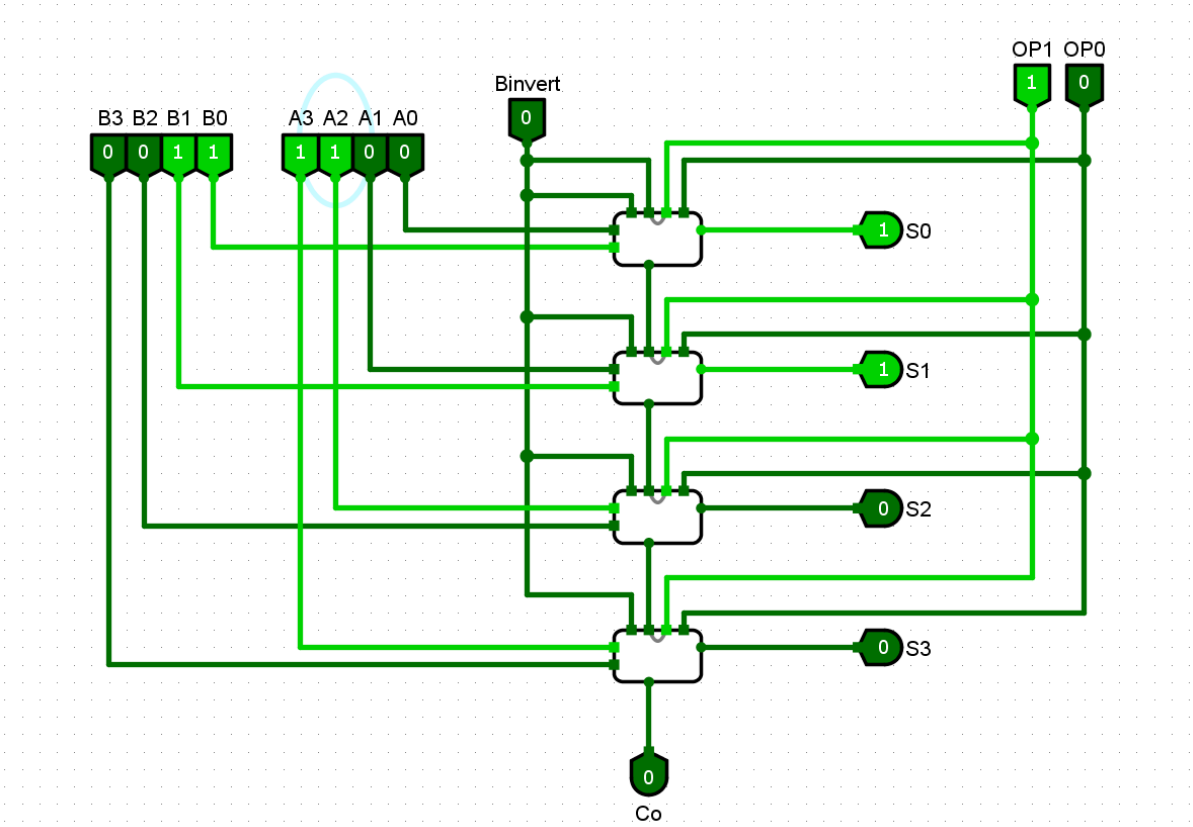
B = 3; OR(A,B):


OP1 OP0
0 1
Binvert
0
B3 B2 B1 B0
0 0 1 1
A3 A2 A1 A0
0 0 1 0
1 S0
1 S1
0 S2
0 S3
0
Co

SOMA(A,B):


OP1 OP0
1 1
Binvert
0
B3 B2 B1 B0
0 0 1 1
A3 A2 A1 A0
0 0 1 0
1 S0
0 S1
1 S2
0 S3
0
Co

A = 12; NOT(A):


B3 B2 B1 B0
0 0 1 1
A3 A2 A1 A0
1 1 0 0
Binvert
0
OP1 OP0
1 0
1 S0
1 S1
0 S2
0 S3
0
Co

B = 13; AND(B,A):

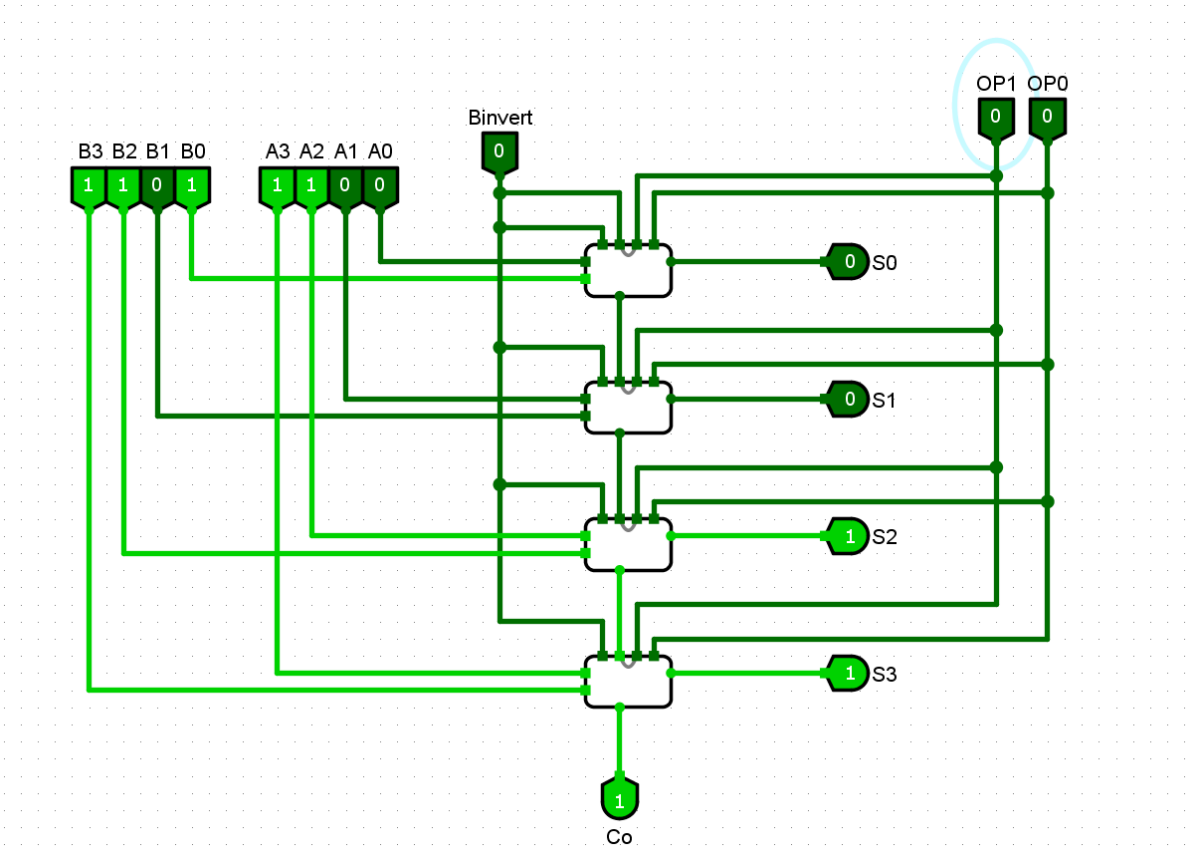

B3 B2 B1 B0
1 1 0 1
A3 A2 A1 A0
1 1 0 0
Binvert
0
OP1 OP0
0 0
0 S0
0 S1
1 S2
1 S3
1
Co

TABELA:

Instrução Realizada	Binário	Valor em Hexa	Resultado em binário
AND(A,B)	0010 0001 00	(0000 1000 0100) = 0x084	0000
OR(A,B)	0010 0011 01	0000 1000 1101 = 0x08D	0011
SOMA(A,B)	0010 0011 11	0000 1000 1111 = 0x08F	0101
NOT(A)	1100 0011 10	0011 0000 1110 = 0x30E	0011
AND(B,A)	1100 1101 00	0011 0011 0100 = 0x334	1100

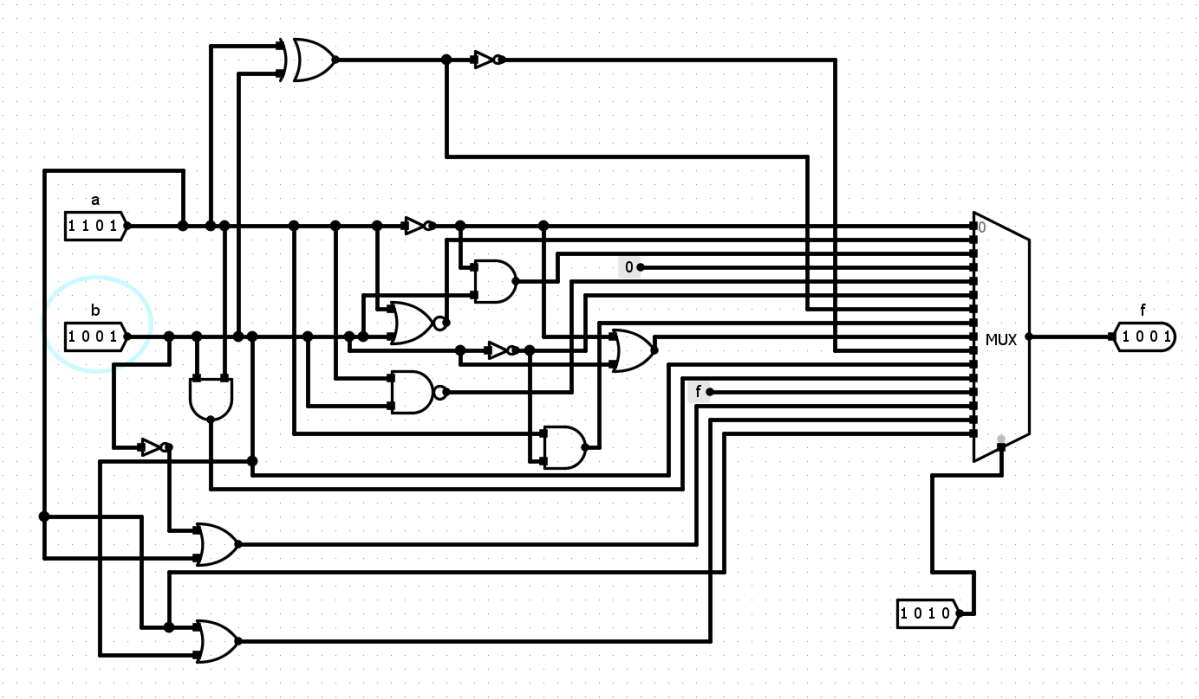
PARTE 2:

TABELA:

Instruções	Binário	Resultado da operação
450	010001010000	B
CB1	110010110001	0
A32	101000110010	1
C43	110001000011	0
124	000100100100	F
785	011110000101	7
9B6	100110110110	2
CD7	110011010111	0
FE8	111111101000	E
649	011001001001	D
D9A	110110011010	9
FCB	111111001011	C
63C	011000111100	F
98D	100110001101	F
76E	011101101110	7
23F	001000111111	2

Teste com instrução da tabela sendo executada:

Instrução D9A:



Se o objetivo fosse realmente testar esta ULA, quantas linhas a nossa tabela verdade deveria ter, ou seja na verdade a tabela que você preencheu deveria ter quantas linhas?

A tabela verdade deveria ter **4096** linhas.