Organização de Computadores

Versão Hands-on com Logisim

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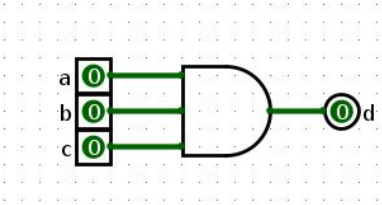
Decoder

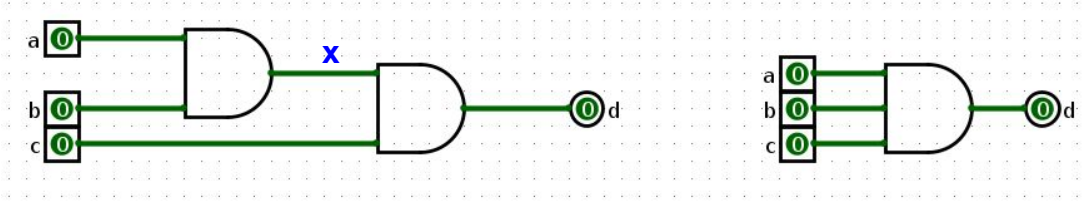
Portas lógicas

a	b	c	d
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	



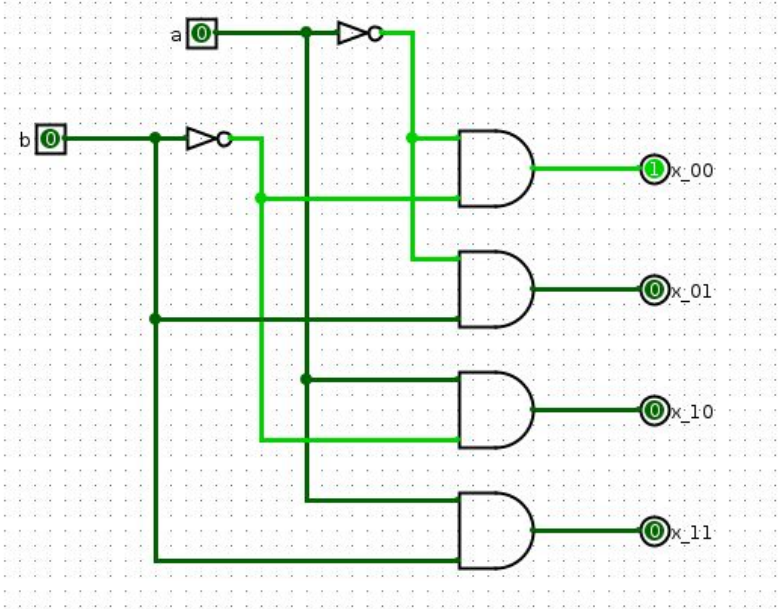
Portas lógicas

a	b	x	c	d
0	0		0	
0	0		1	
0	1		0	
0	1		1	
1	0		0	
1	0		1	
1	1		0	
1	1		1	



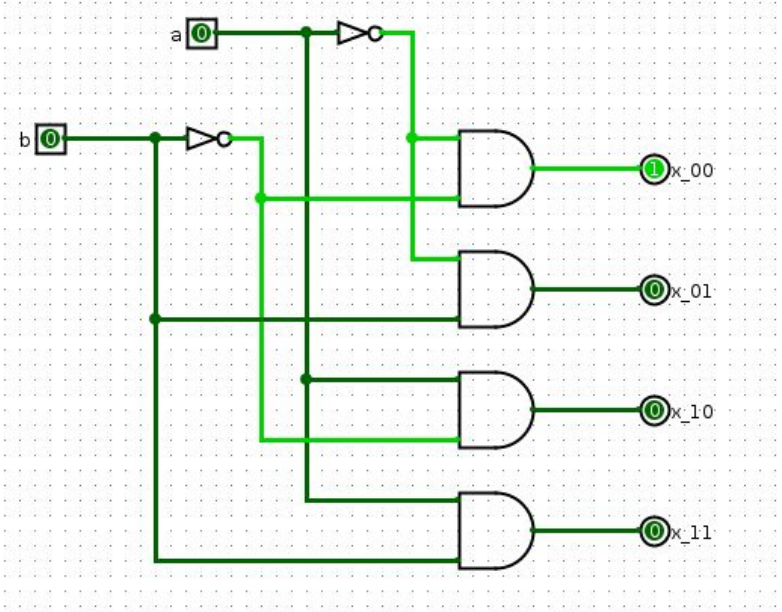
Decoder 2x4

a	b	x1	x2	x3	x4
0	0	**1**	0	0	0
0	1	0	**1**	0	0
1	0	0	0	**1**	0
1	1	0	0	0	**1**



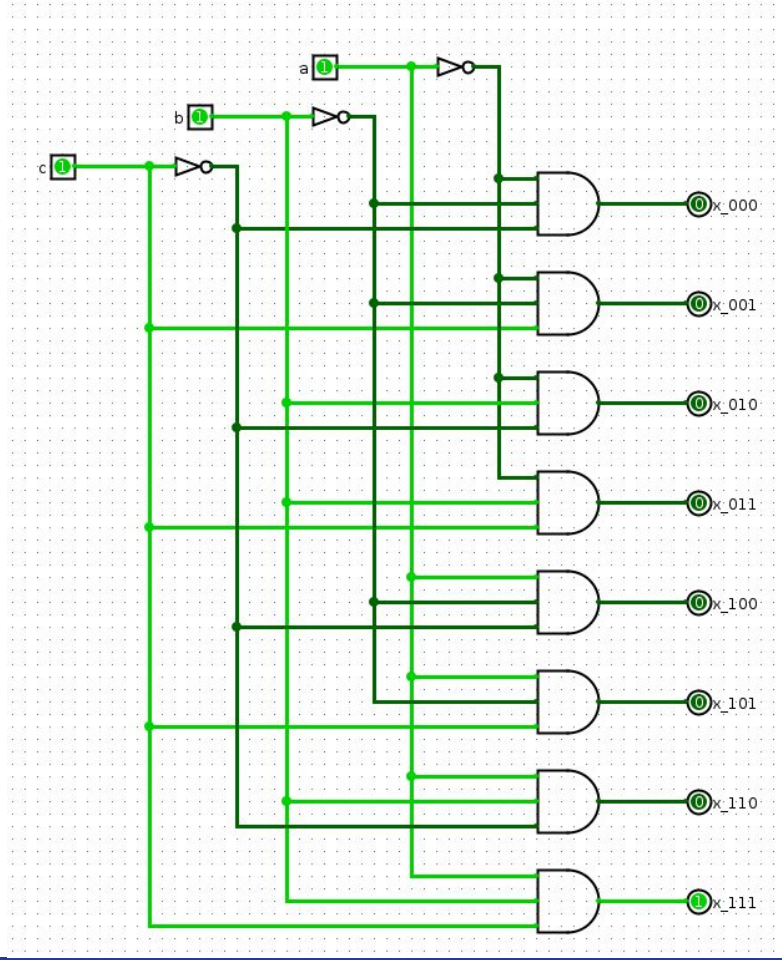
Decoder 2x4

a	b	x1	x2	x3	x4
0	0				
0	1				
1	0				
1	1				



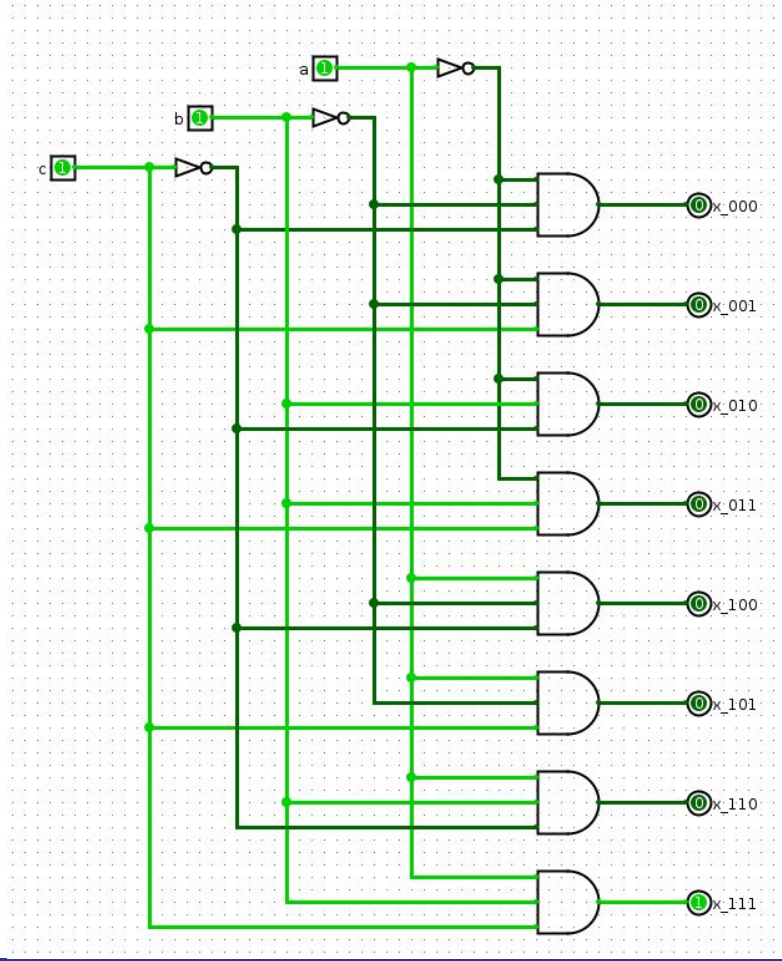
Decoder 3x8

a	b	c	x1	x2	x3	x4	x5	x6	x7	x8
0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0
0	1	1	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	1	0	0	0
1	0	1	0	0	0	0	0	1	0	0
1	1	0	0	0	0	0	0	0	1	0
1	1	1	0	0	0	0	0	0	0	1

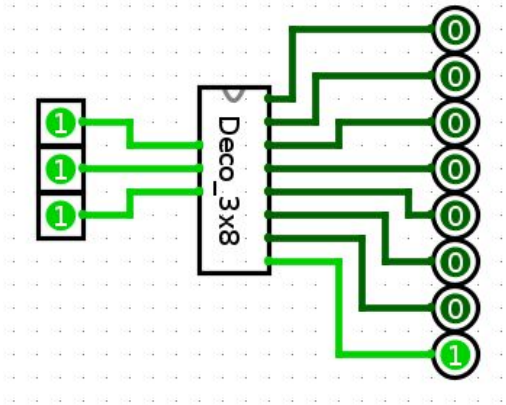


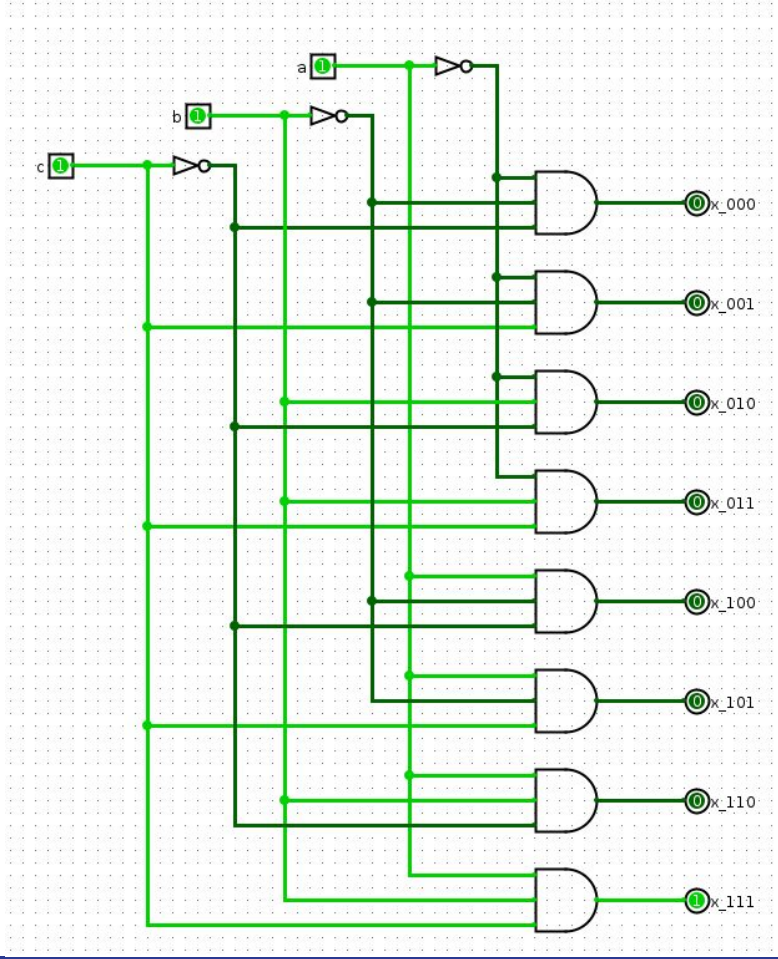
Decoder 3x8

a	b	c	x1	x2	x3	x4	x5	x6	x7	x8
0	0	0								
0	0	1								
0	1	0								
0	1	1								
1	0	0								
1	0	1								
1	1	0								
1	1	1								

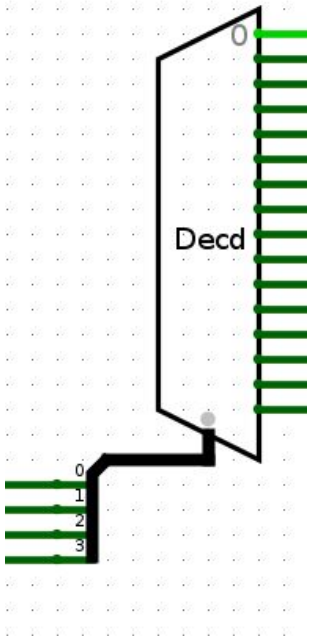


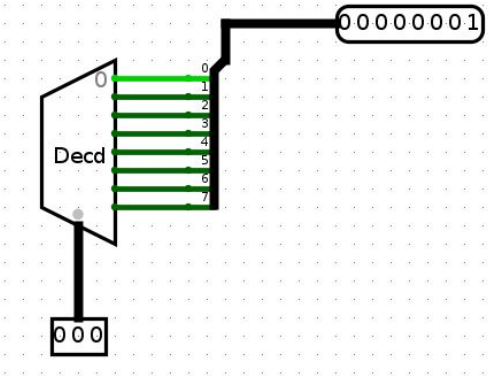
Decoder 3x8


1
1
1
Deco_3x8
0
0
0
0
0
0
1


a
b
c
x_000
x_001
x_010
x_011
x_100
x_101
x_110
x_111

Decoder 4x16

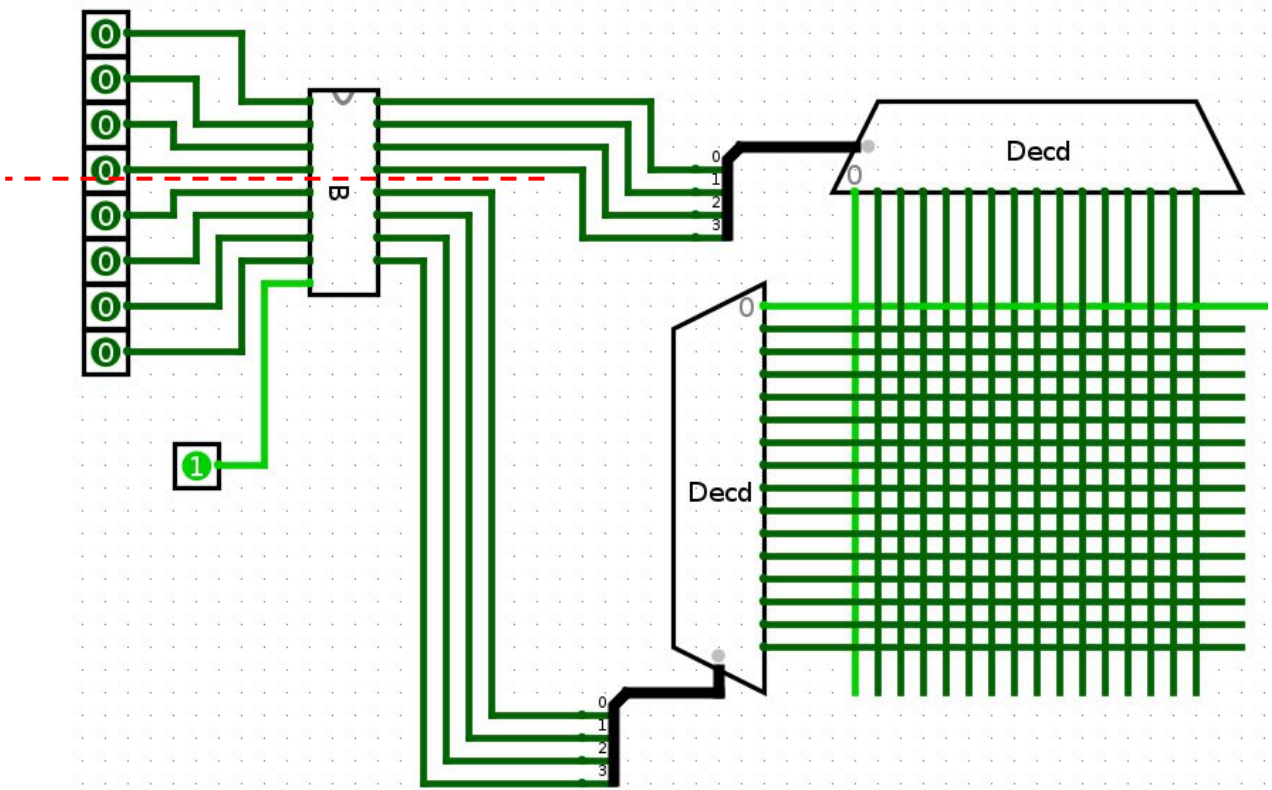




Usando o módulo pronto do Logisim

Memória com 256 B

Memória de 16x16

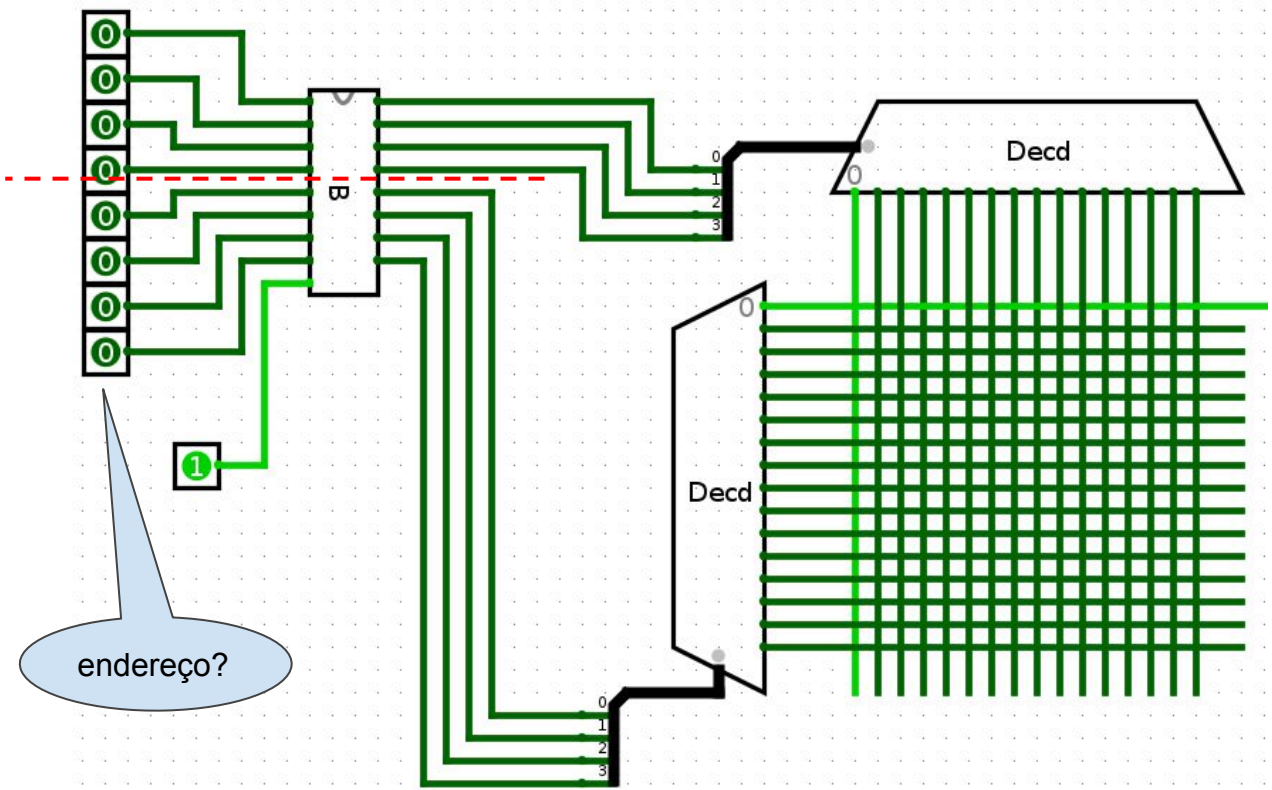


Considerando um byte:

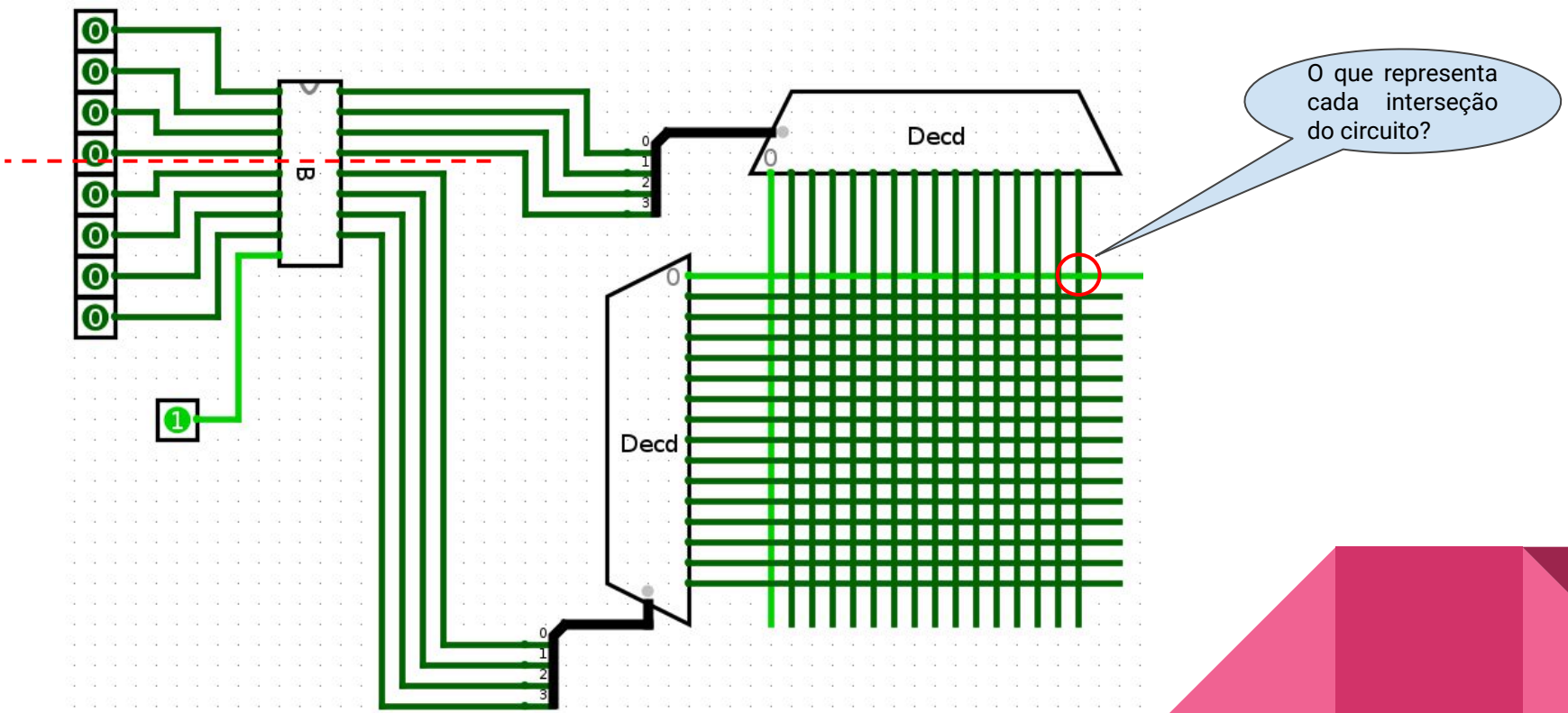
input: 0000 0000
msb lsb

Os quatro primeiros bits ativam o decode vertical e os quatro bits menos significativos ativam o decoder horizontal

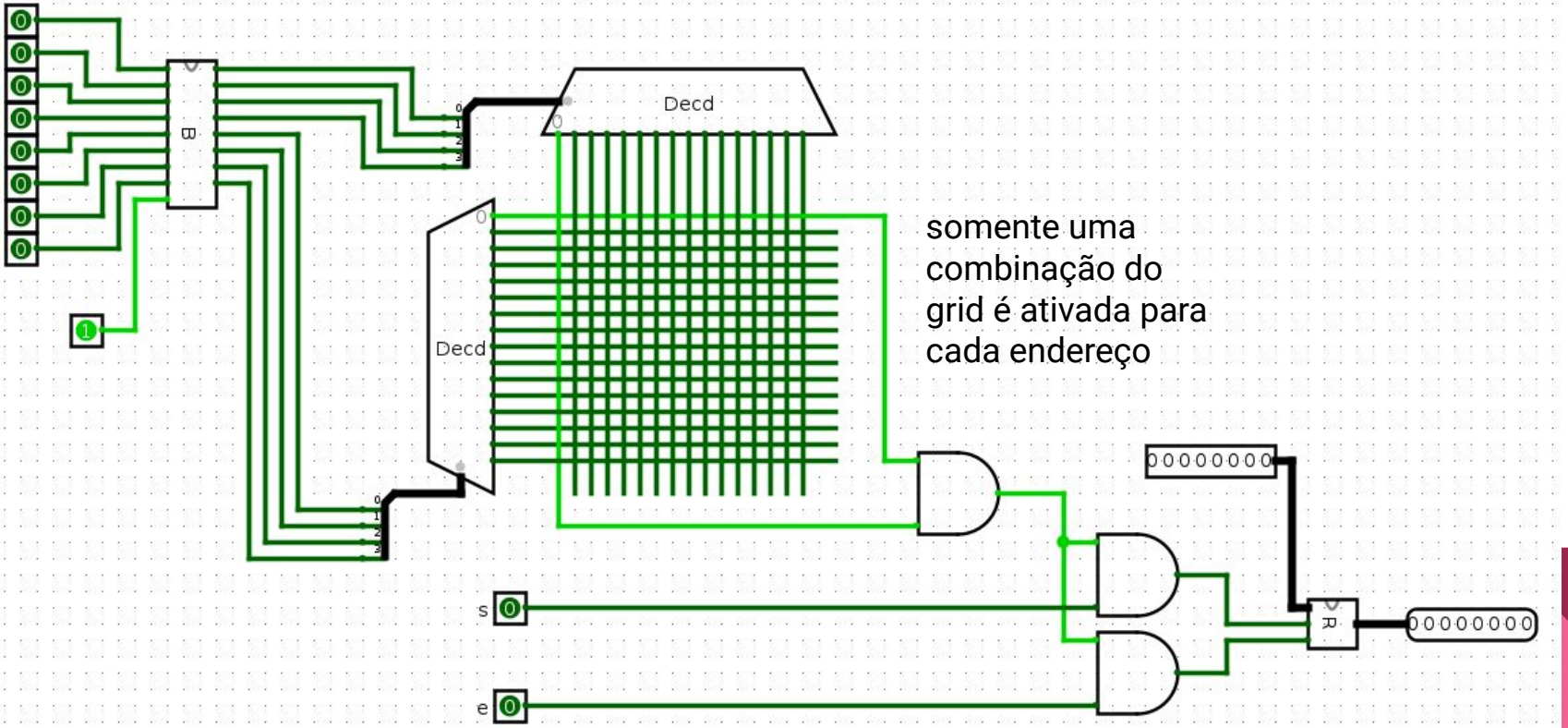
Memória de 16x16



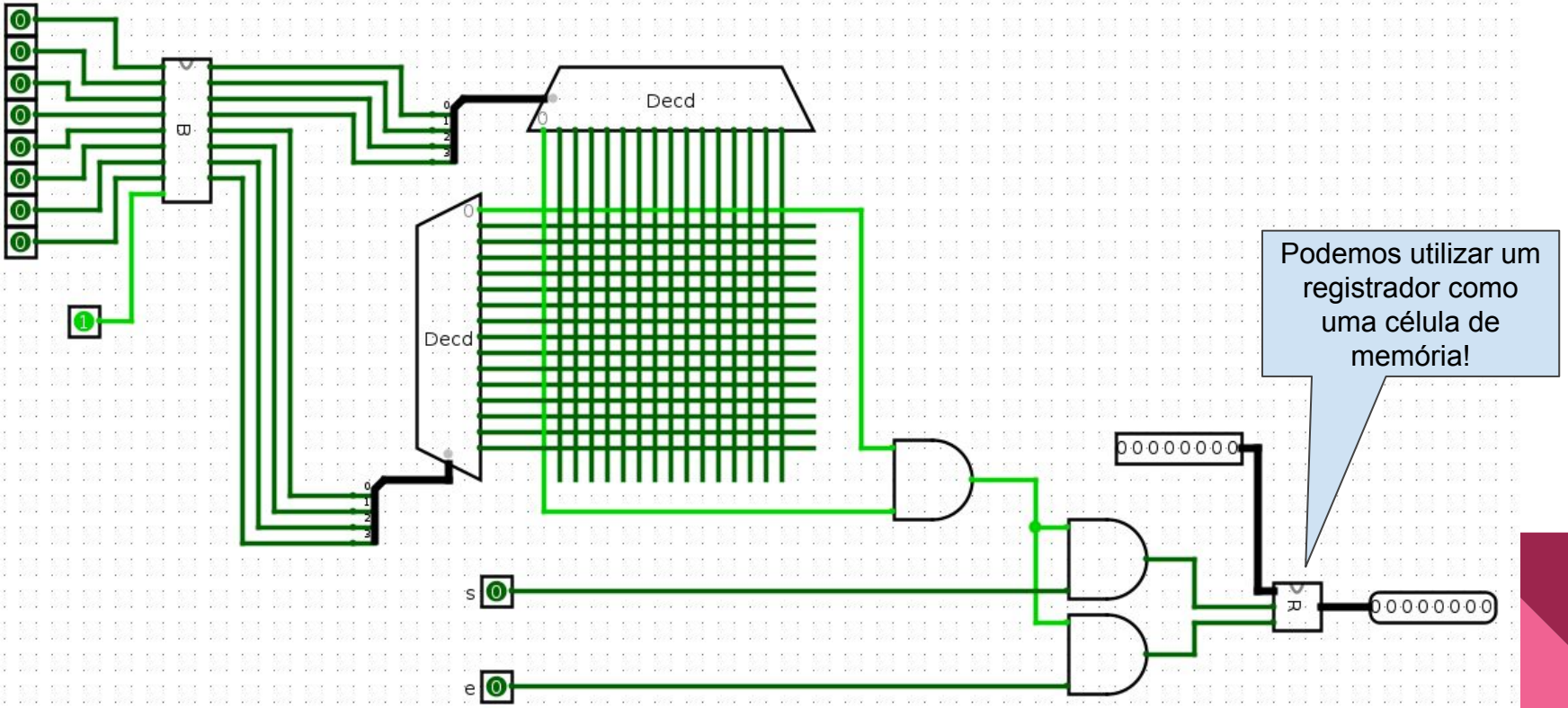
Memória de 16x16



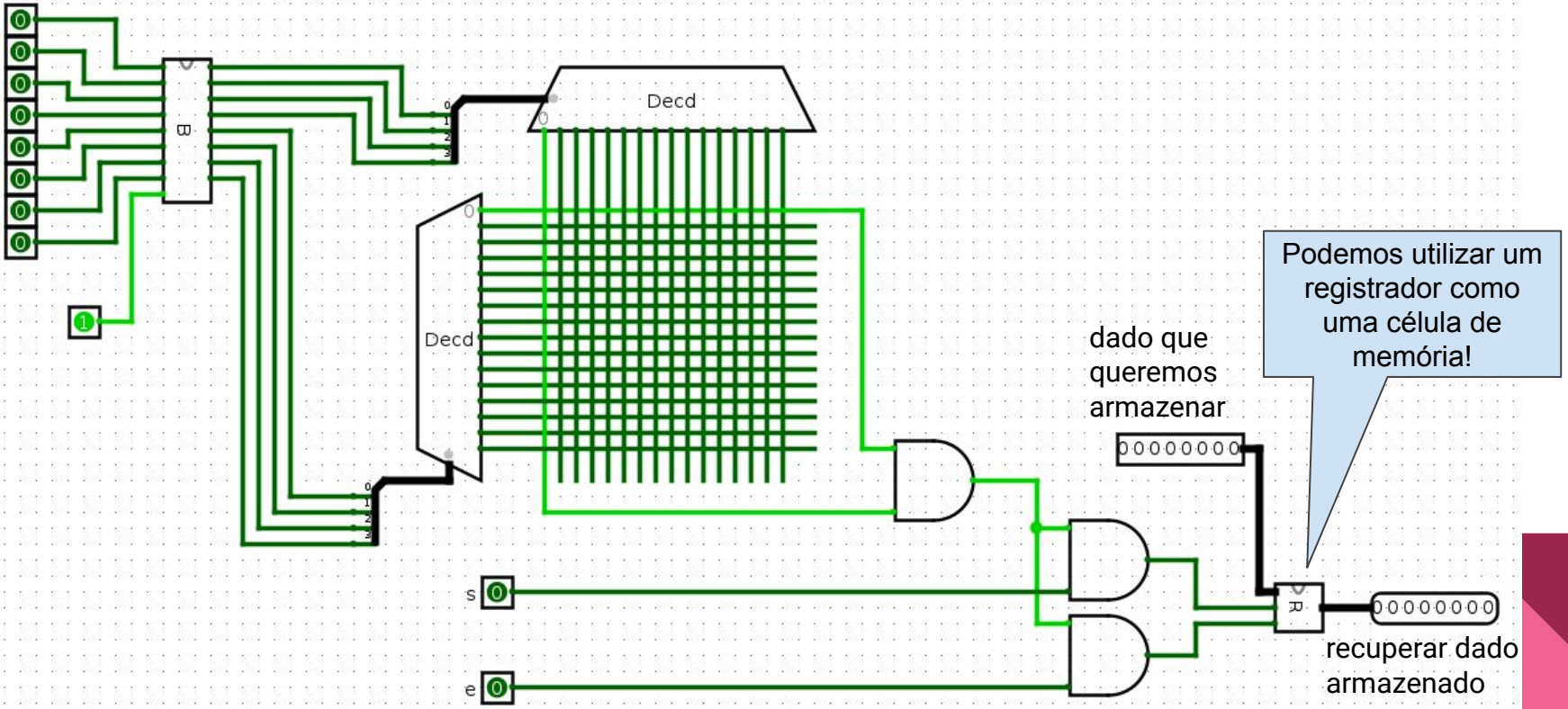
Memória de 16x16



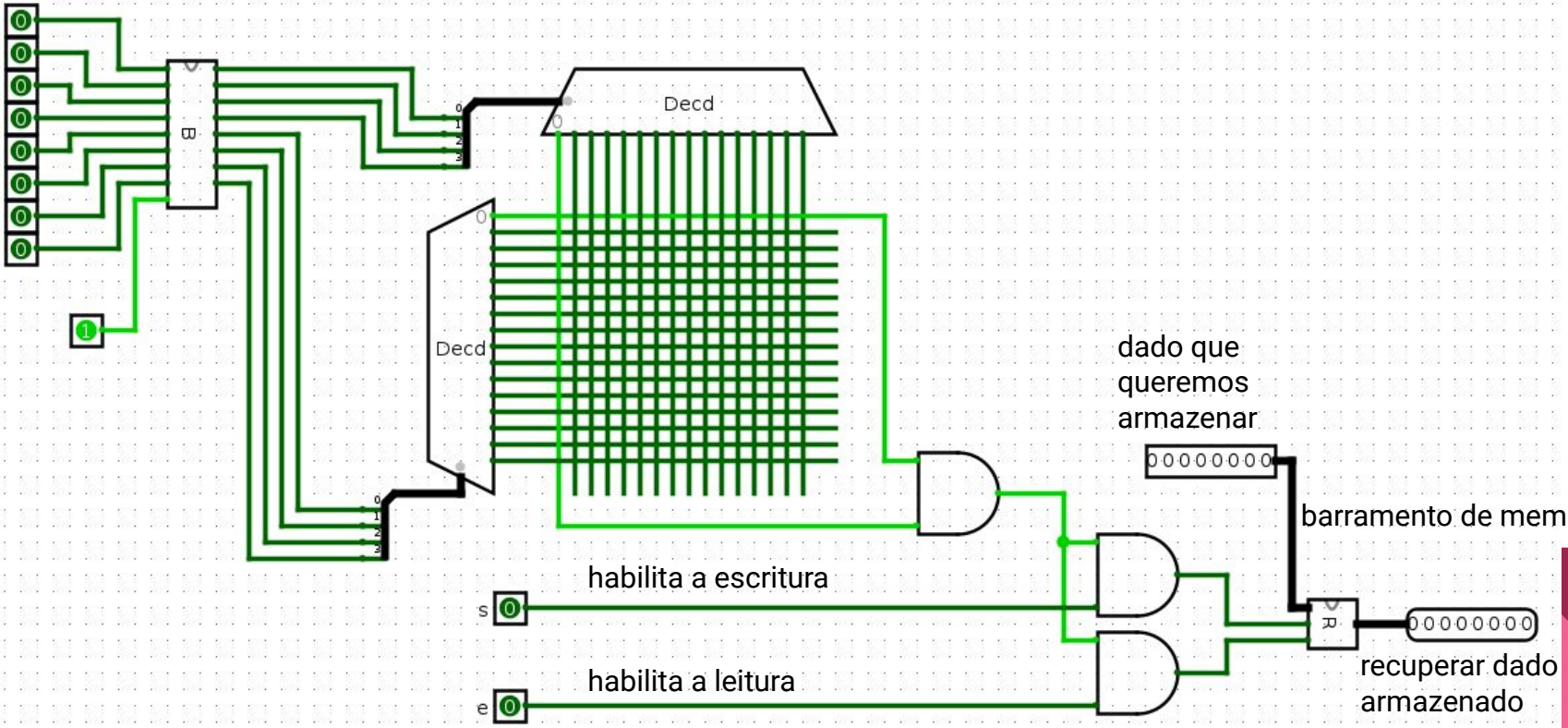
Memória de 16x16



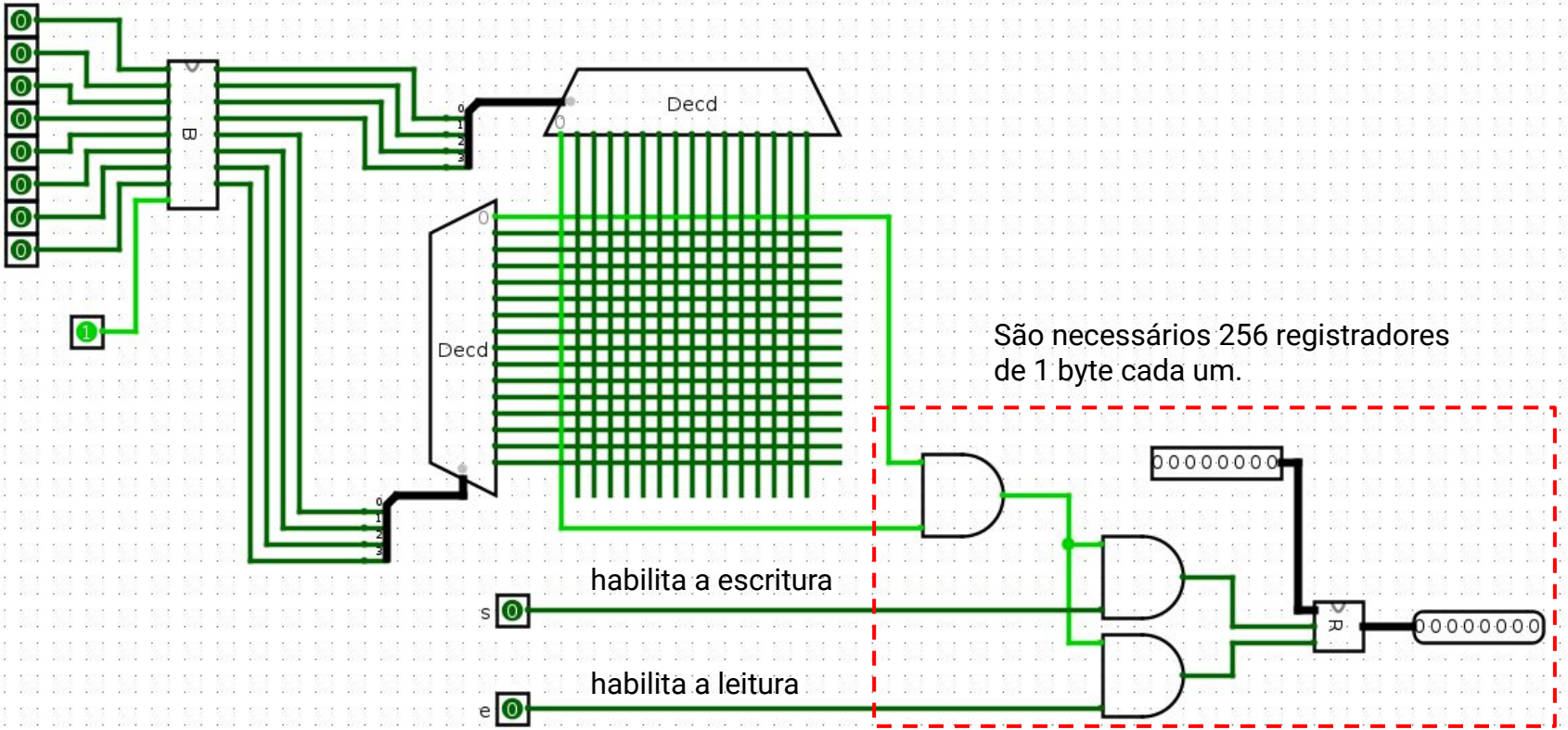
Memória de 16x16



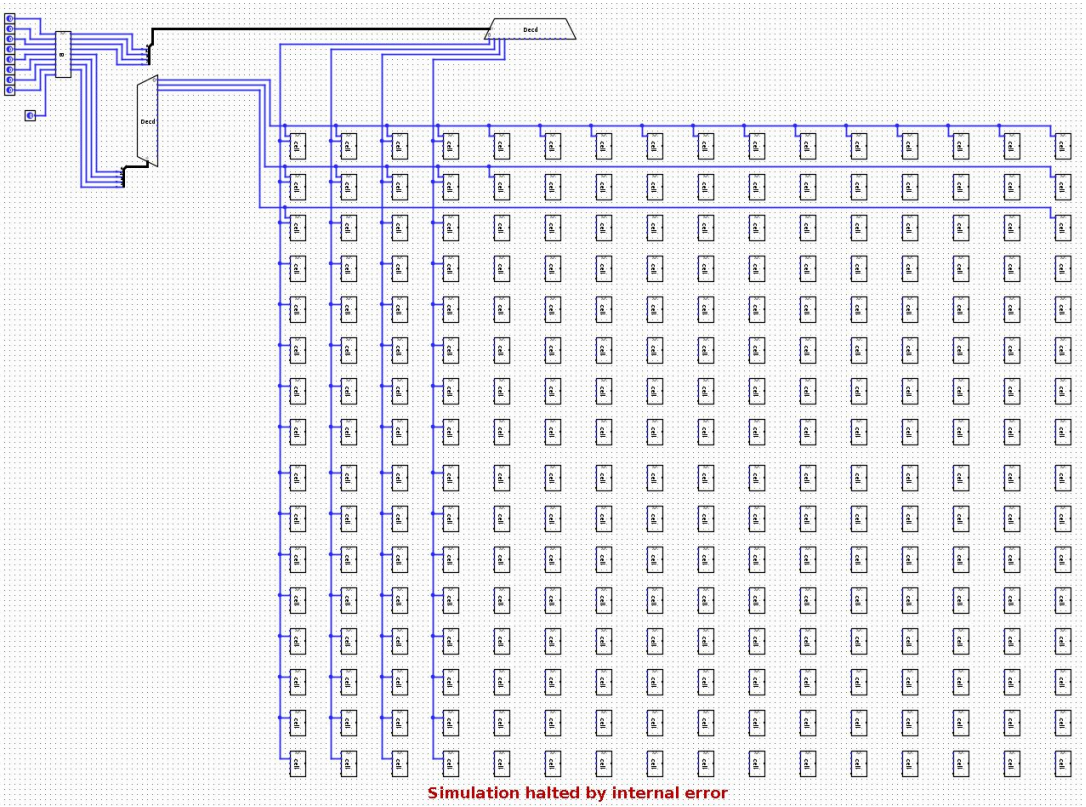
Memória de 16x16

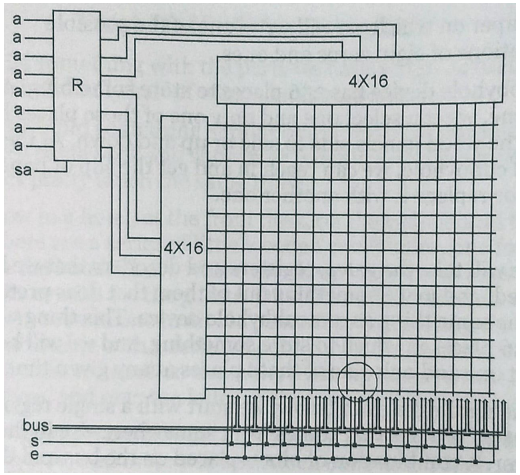


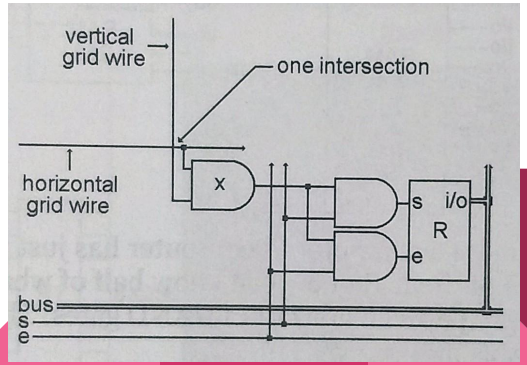
Memória de 16x16



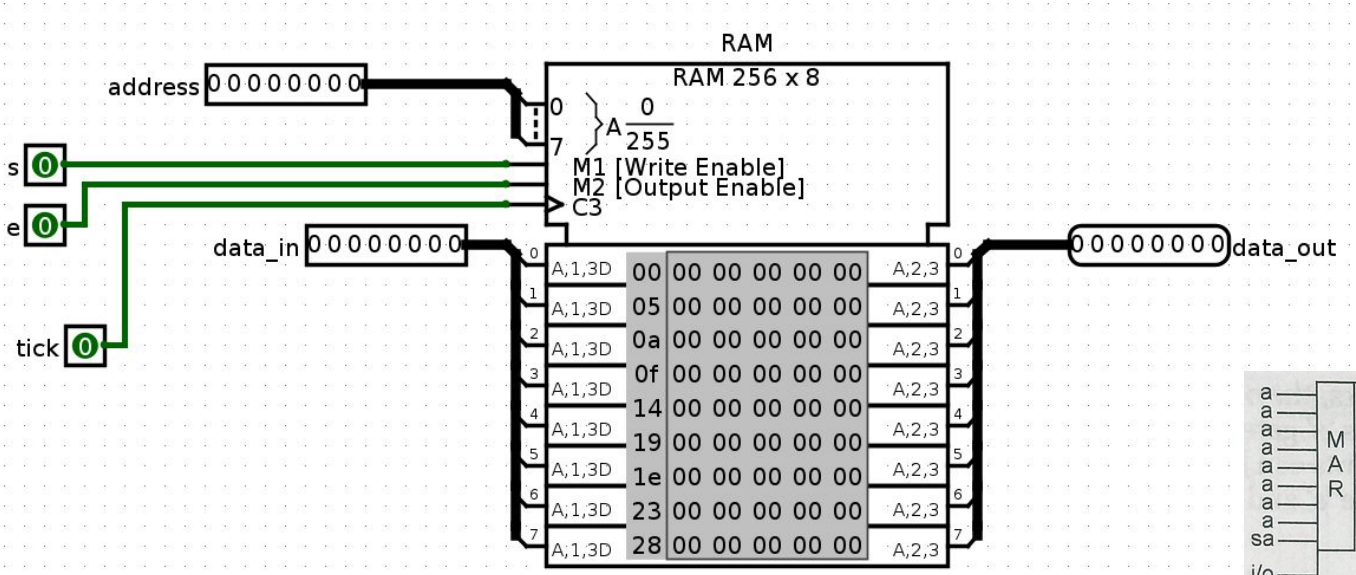
Memória de 16x16





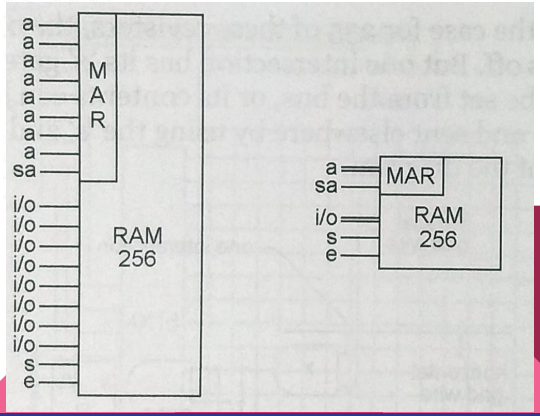


Memória RAM no Logisim

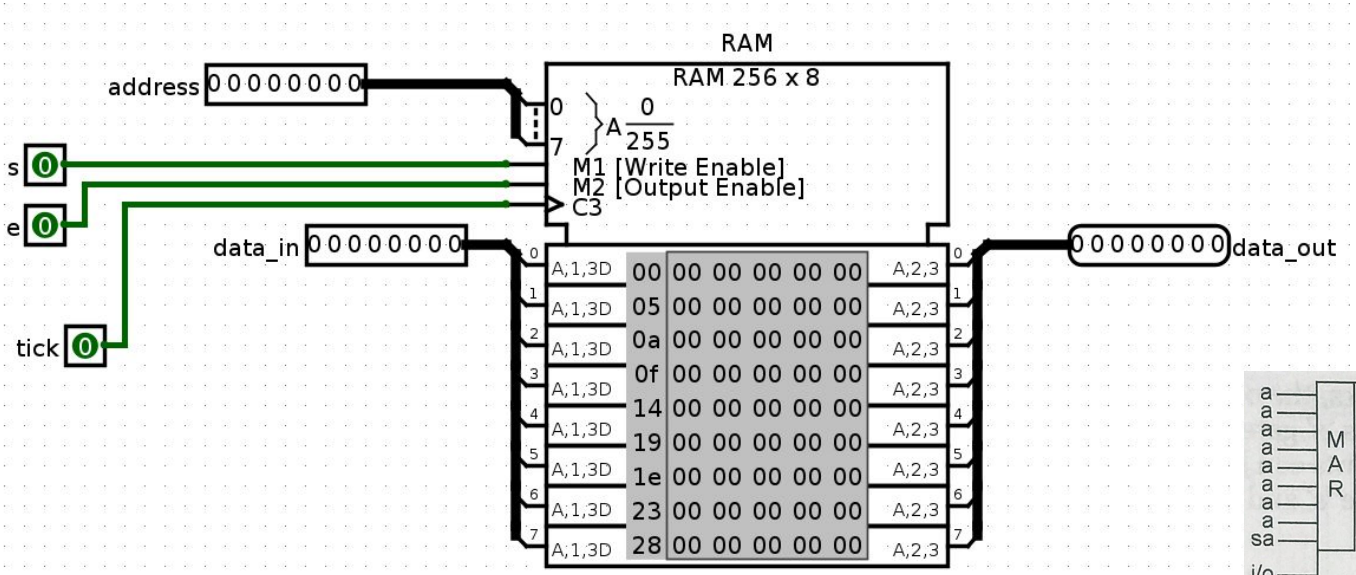


"256x8" significa que armazena 256 bytes e que os endereços são de 8 bits

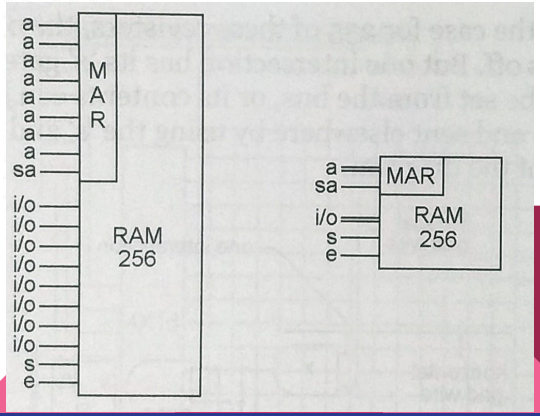
MAR = Memory Address Register



Memória RAM no Logisim



São necessários os mesmos sinais e barramentos com exceção do “clock”



Atividades

- Enviar o circuito
- Simular um dado saíndo do registrador e entrando na RAM
- Simular um dado saíndo da RAM e entrando num registrador