Portas lógicas

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Baseado em: Tangon, LG; Santos, RC.
Arquitetura e organização de computadores.
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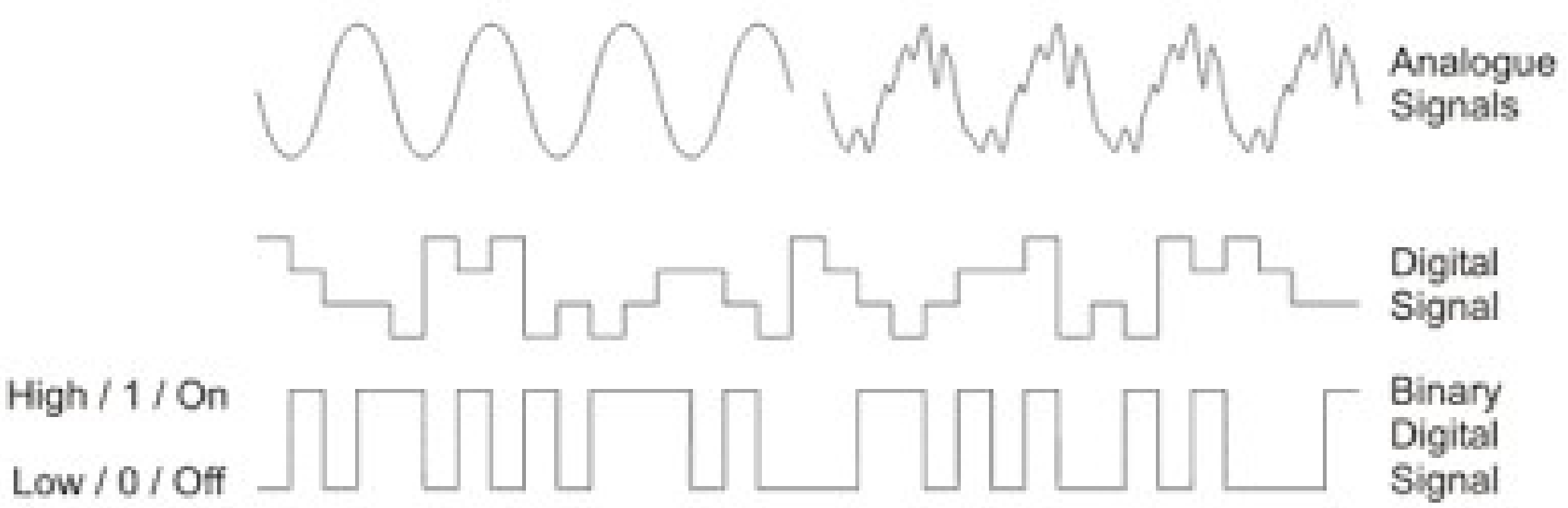
Portas lógicas

- Elementos e/ou componentes básicos da eletrônica digital
  - Ex.: microcontroladores, processadores, circuitos integrados

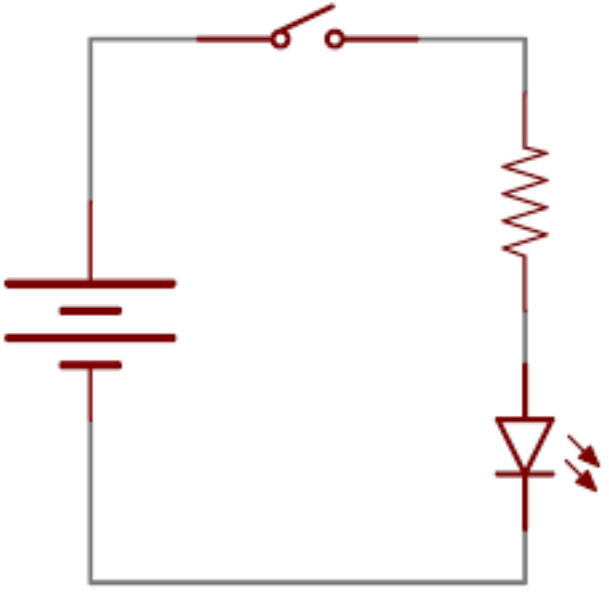
- Sistema binário, níveis lógicos, tensão

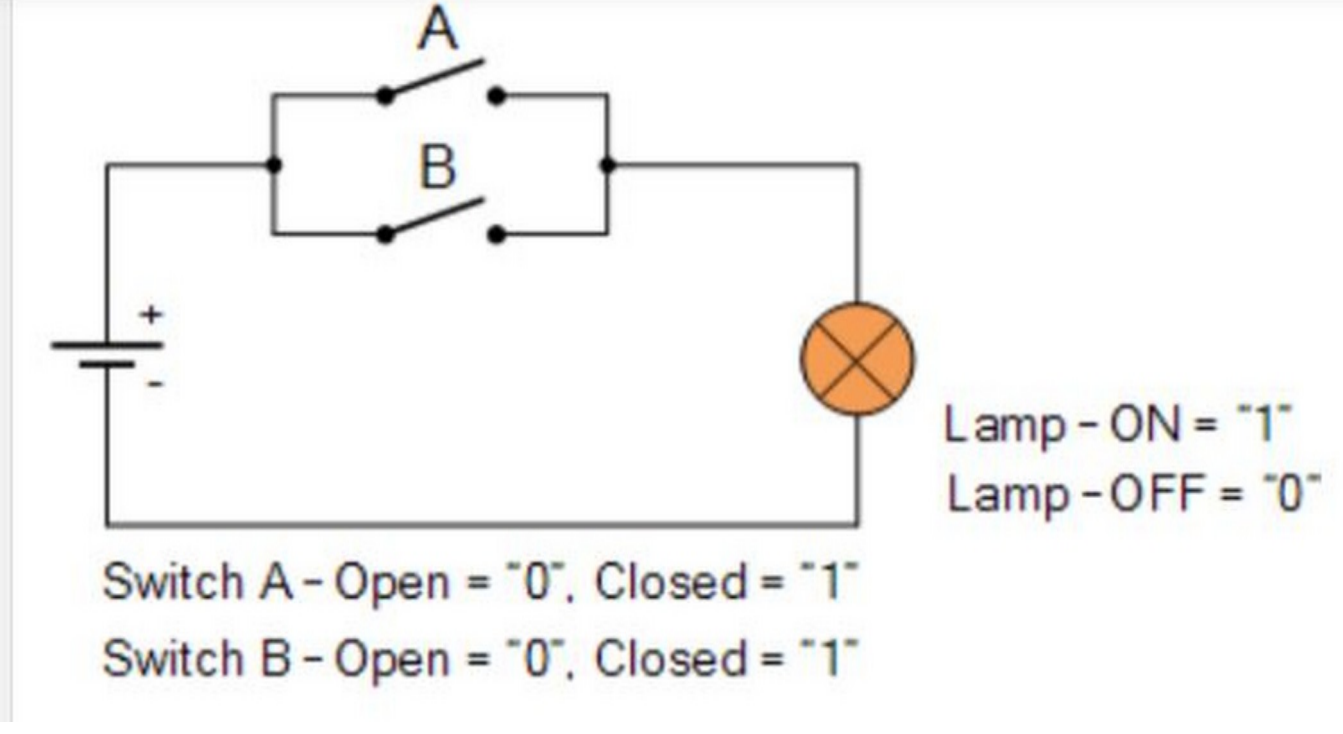


Simbologia

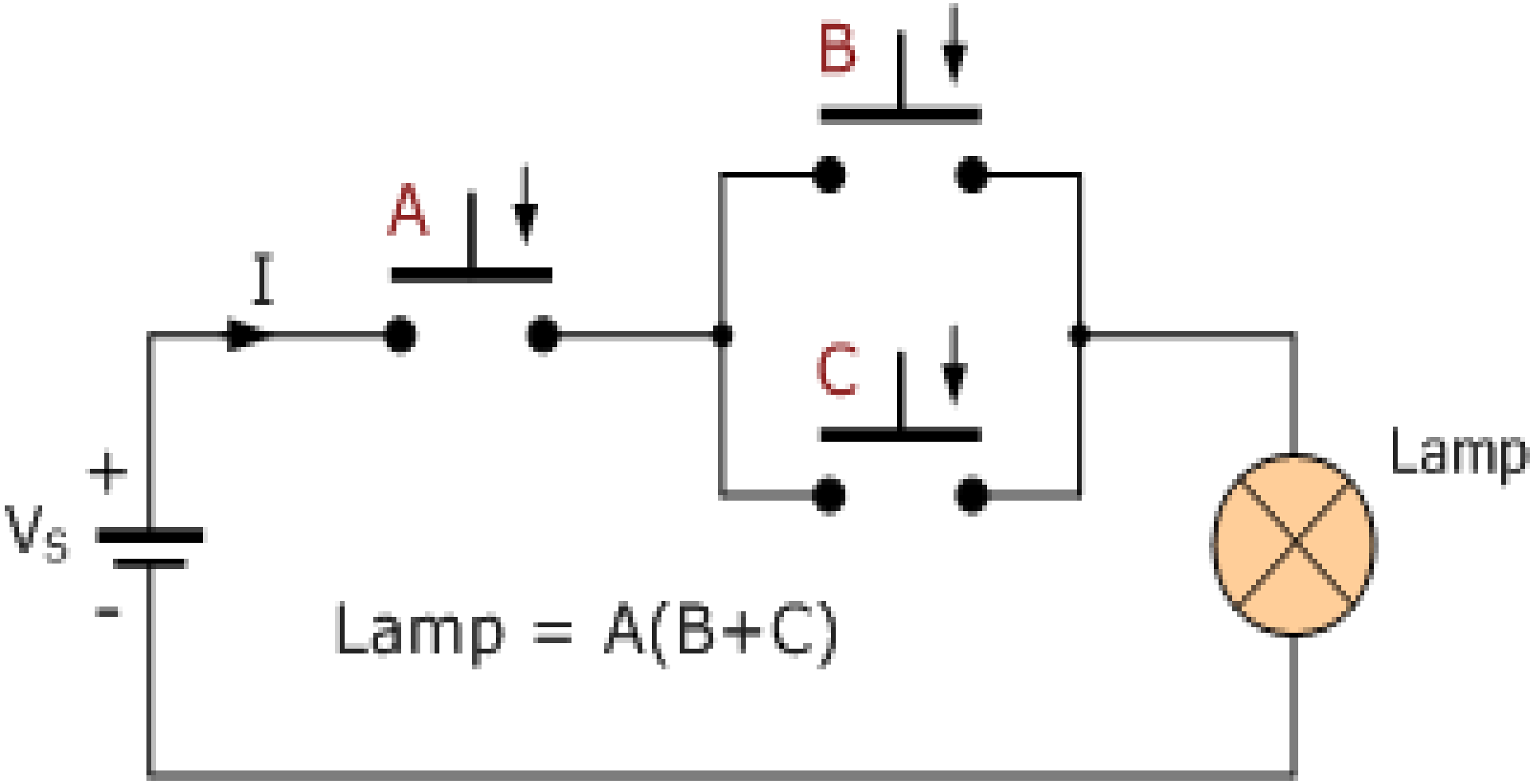
- Representação da entrada, saída, etc.
- Bloco lógico: simbologia da junção entre as entradas e saídas lógicas
- Entradas assumem valores 0 ou 1
- Tabela-verdade pode ser usada

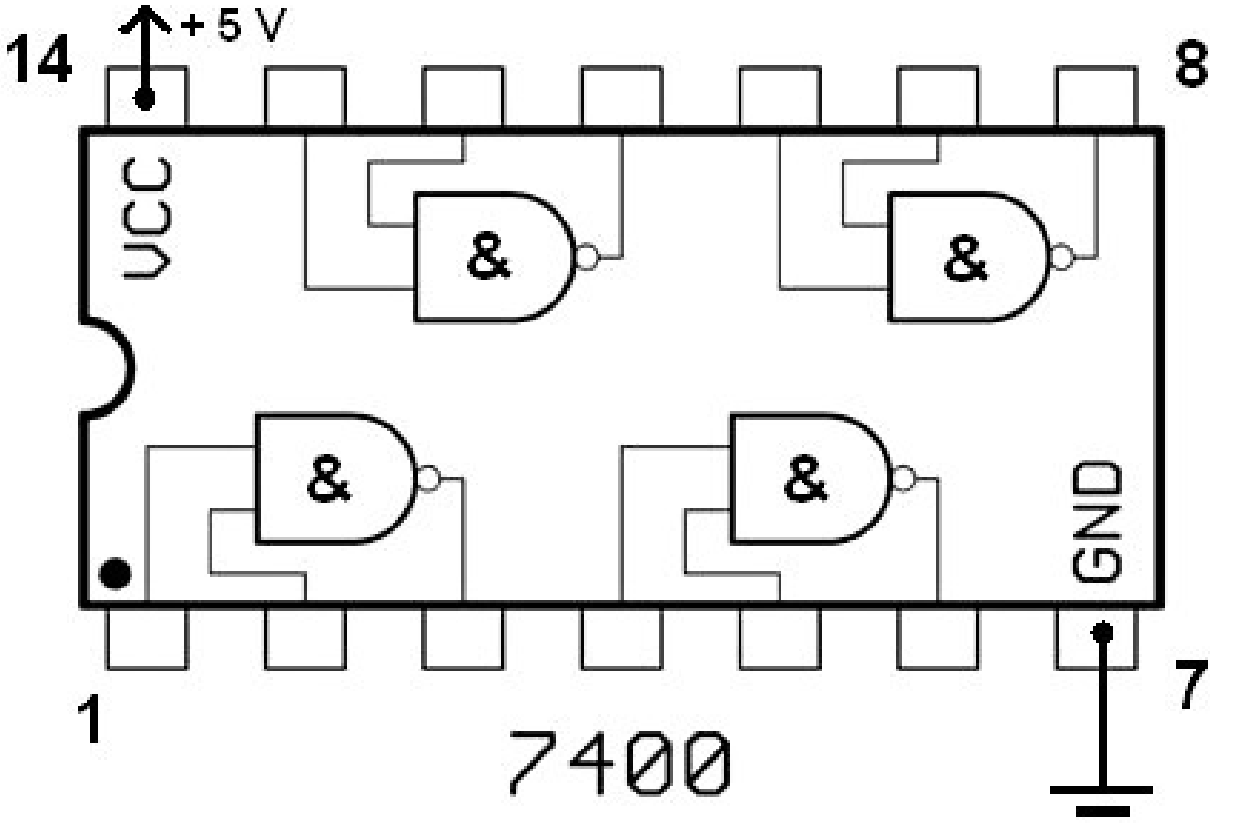
Portas

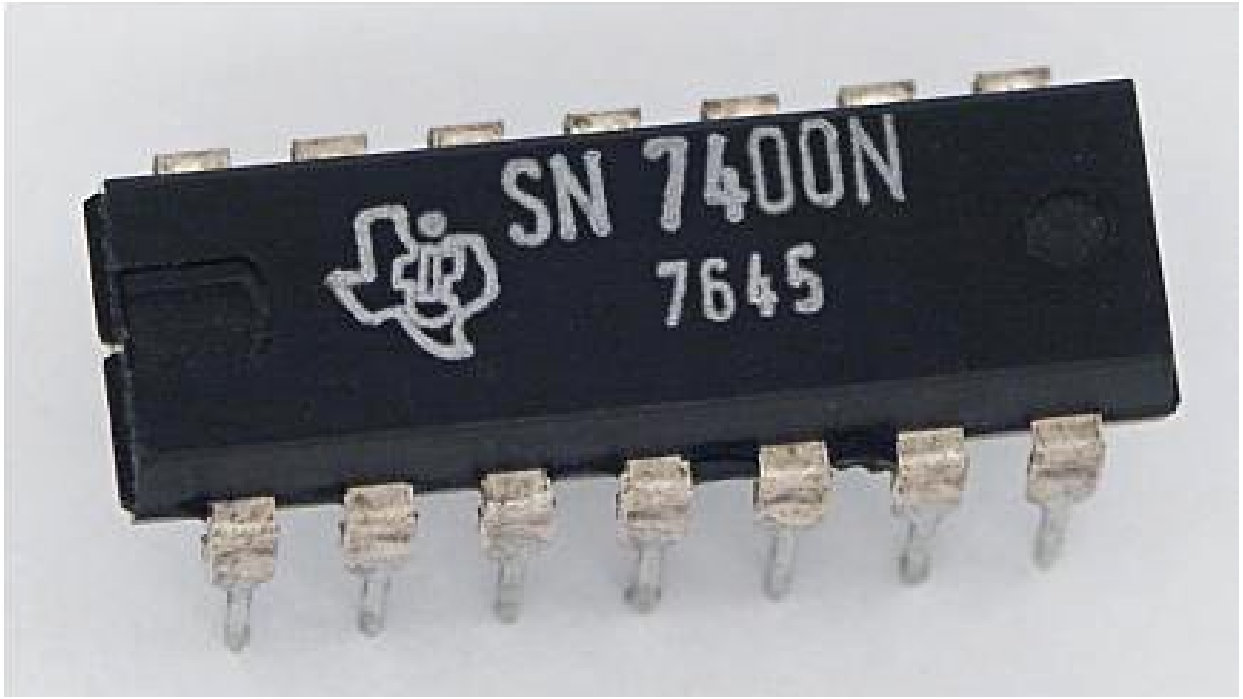


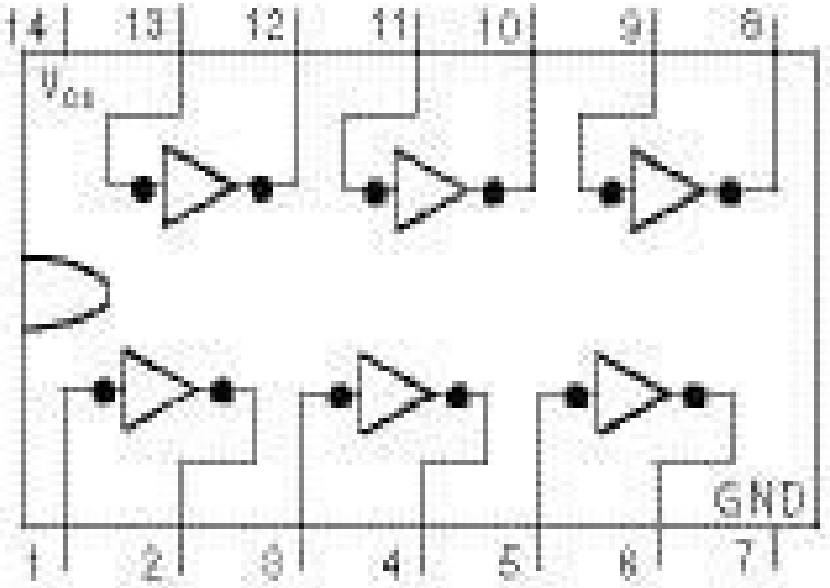

A
B
+
-
Lamp - ON = "1"
Lamp - OFF = "0"
Switch A - Open = "0", Closed = "1"
Switch B - Open = "0", Closed = "1"

AND e OR

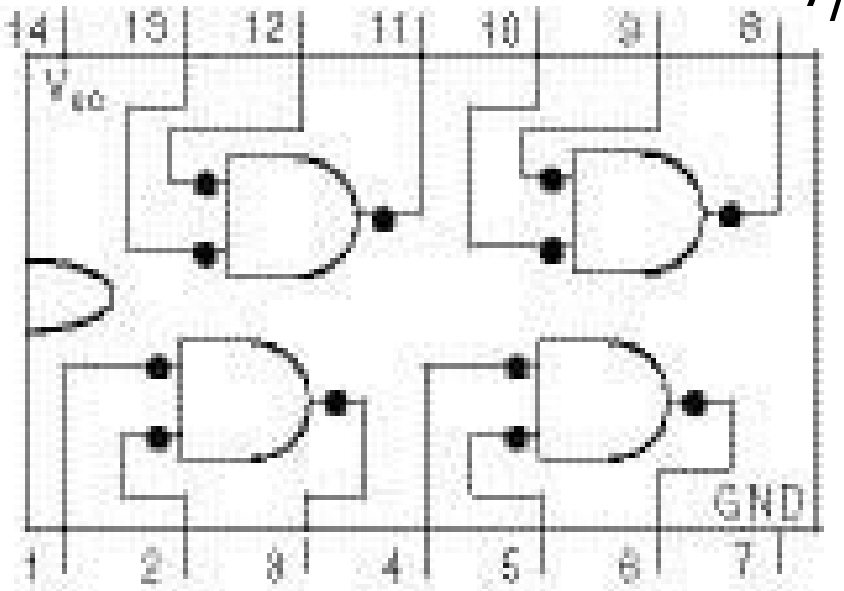



14
+5 V
8
VCC
&
&
&
&
GND
1
7
7400

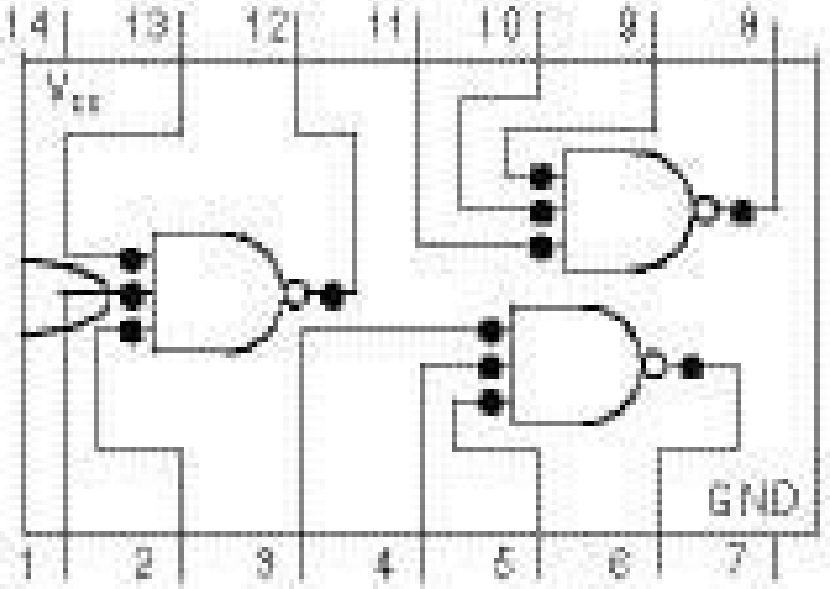

SN 7400N
7645



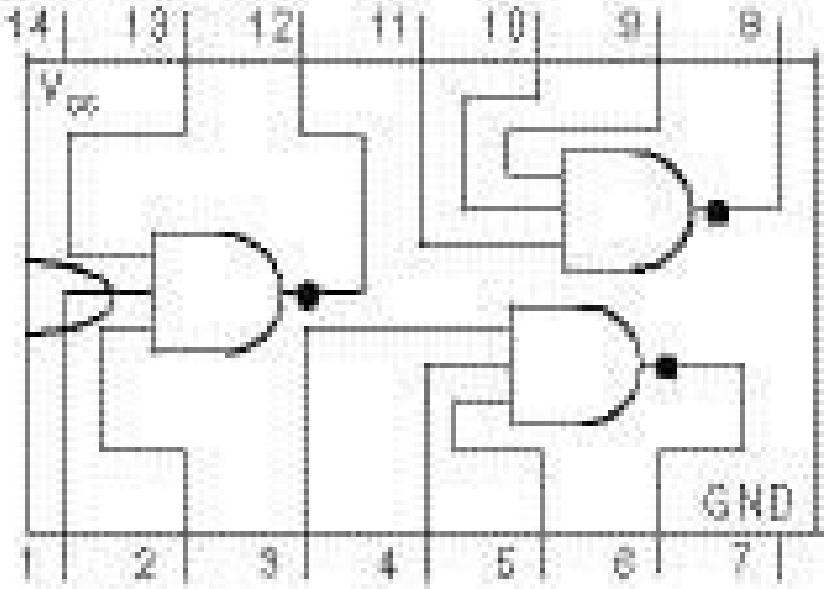
7407*7417



7408/7409*



7410/7412*



7411/7415*

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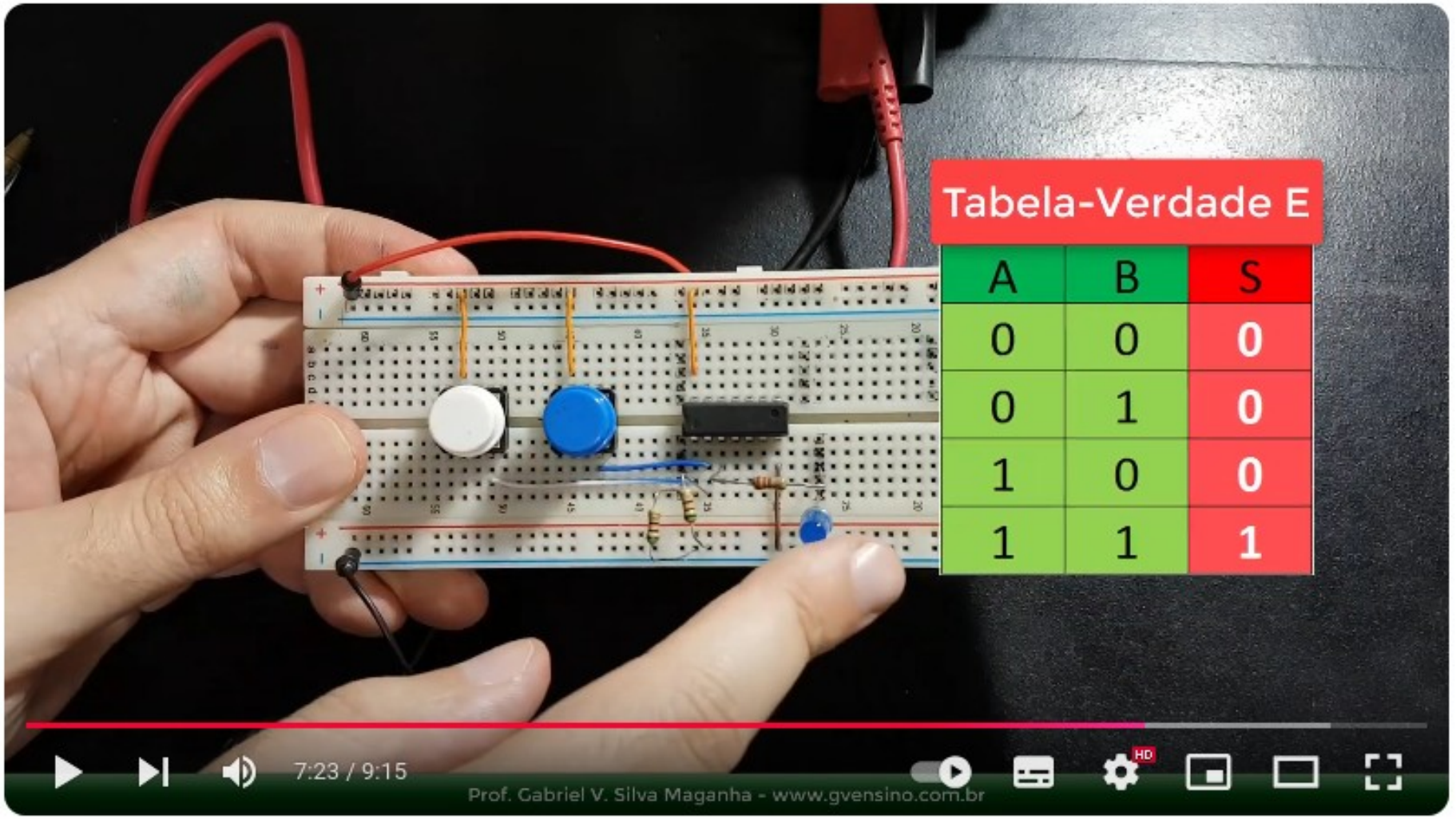

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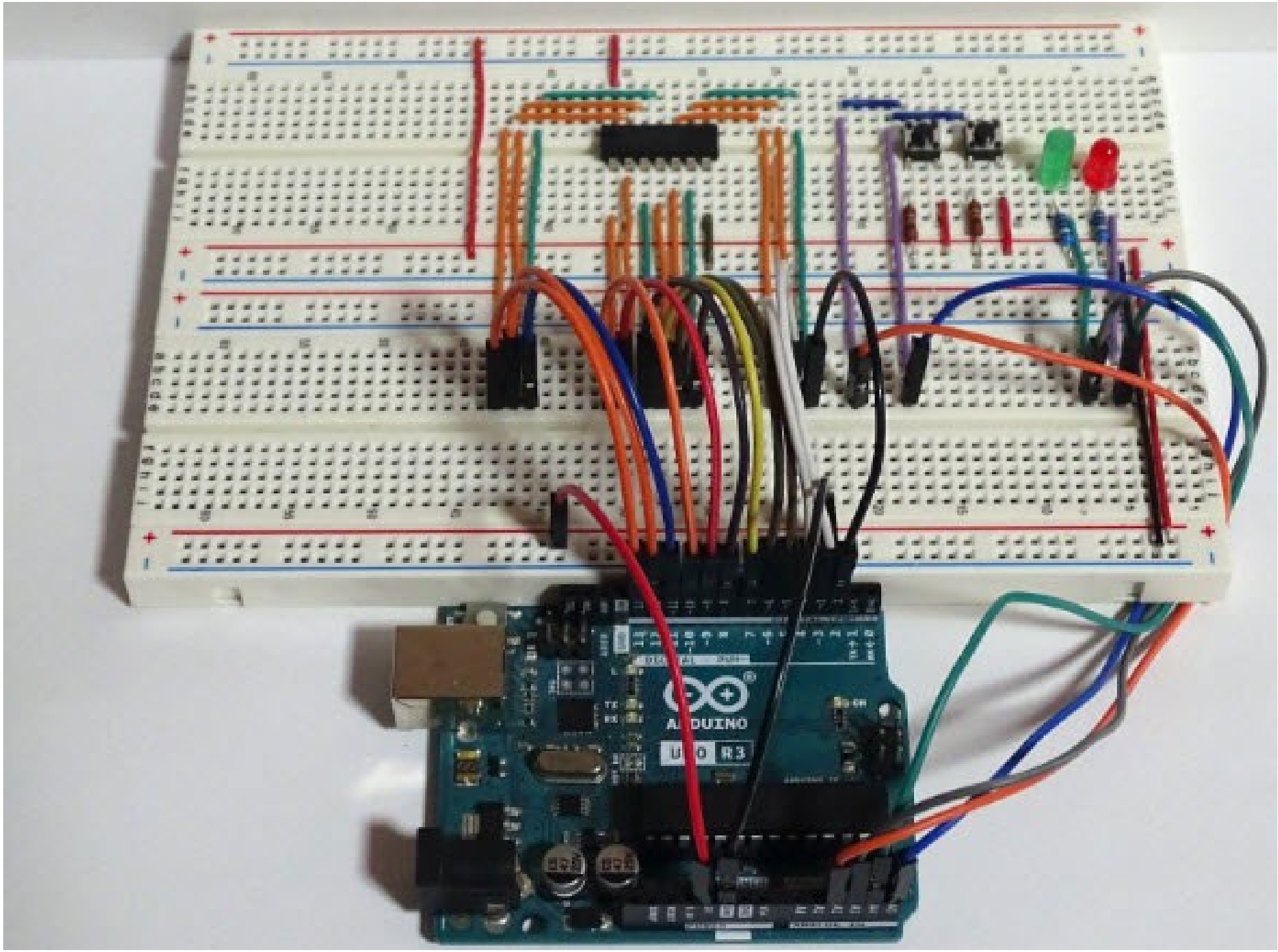
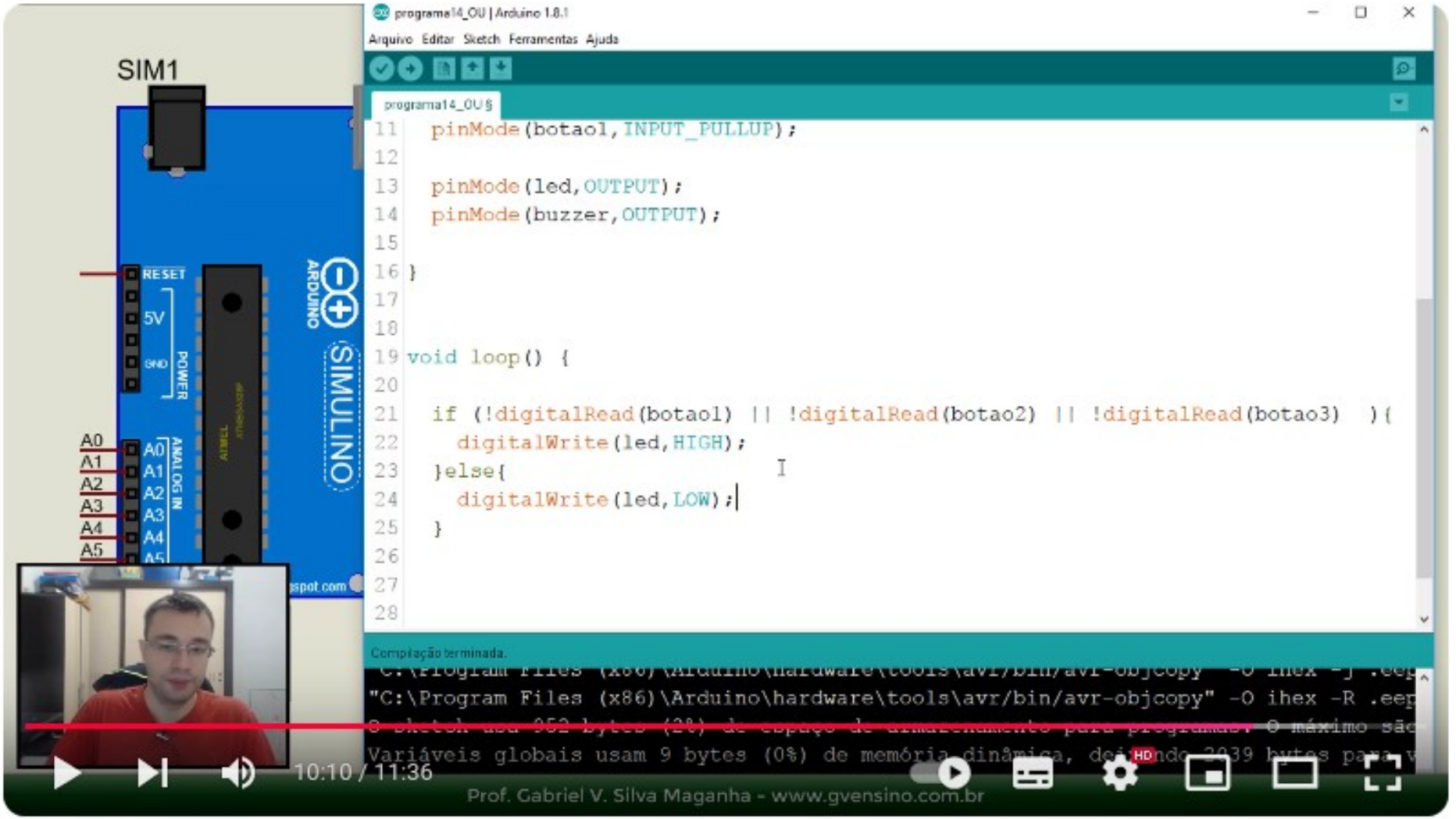

ARDUINO
UNO R3



ARDUÍNO #28: Lógica OU no Arduíno

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C/C++

	Operador	Tipo
Operador unário		
	++, --	Incremento/Decremento
Operador binário	+, -, *, /, %	Aritméticos
	<, <=, >, >=, ==, !=	Relacionais
	&&, ||, !	Lógicos
	&, |, <<, >>, ~, ^	Bitwise
	=, +=, -=, *=, /=, %=	Atribuição
Operador ternário	?:	Condicional

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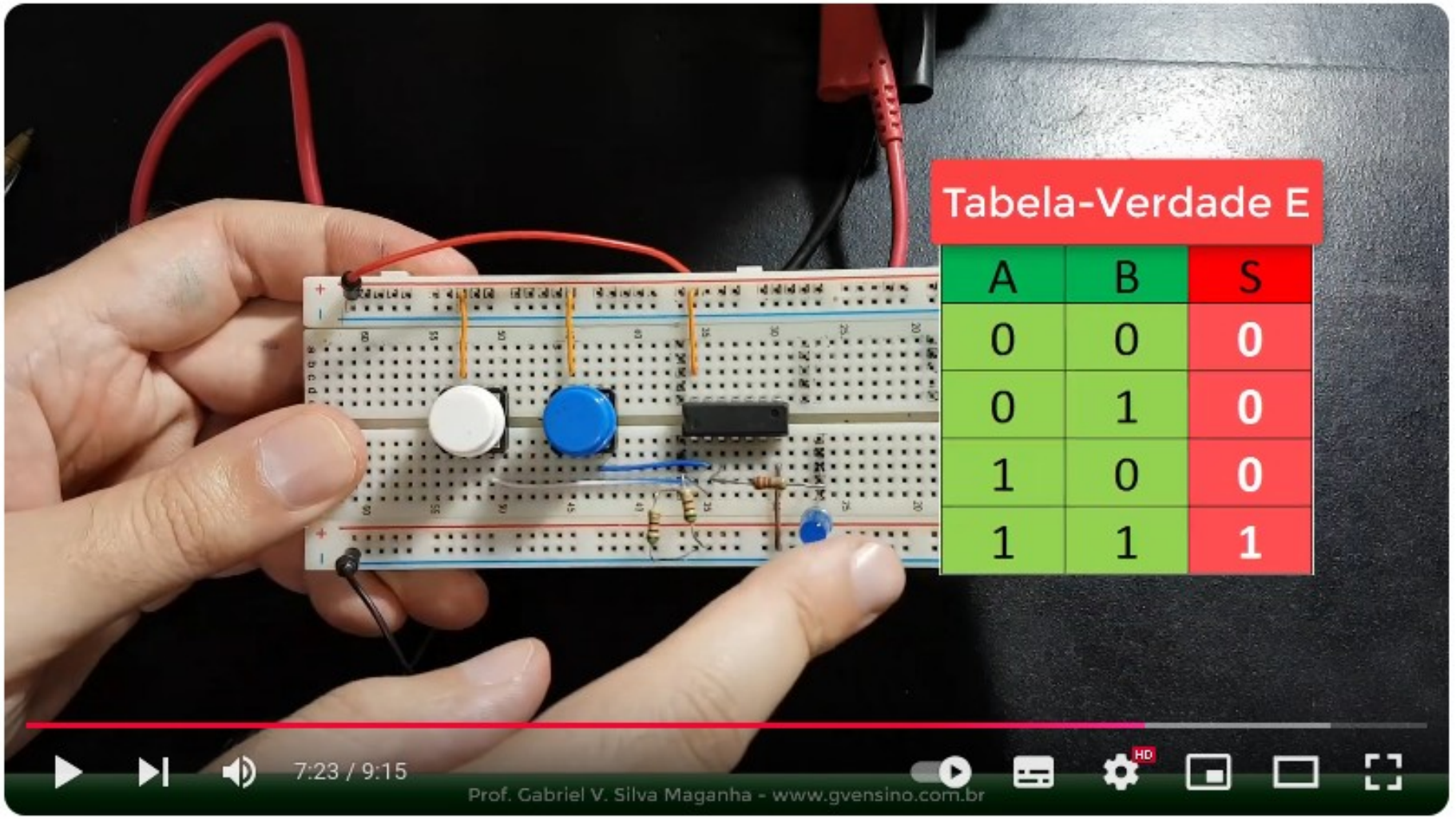

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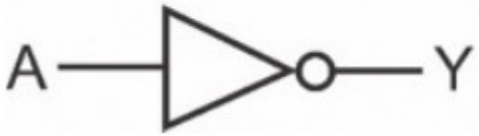
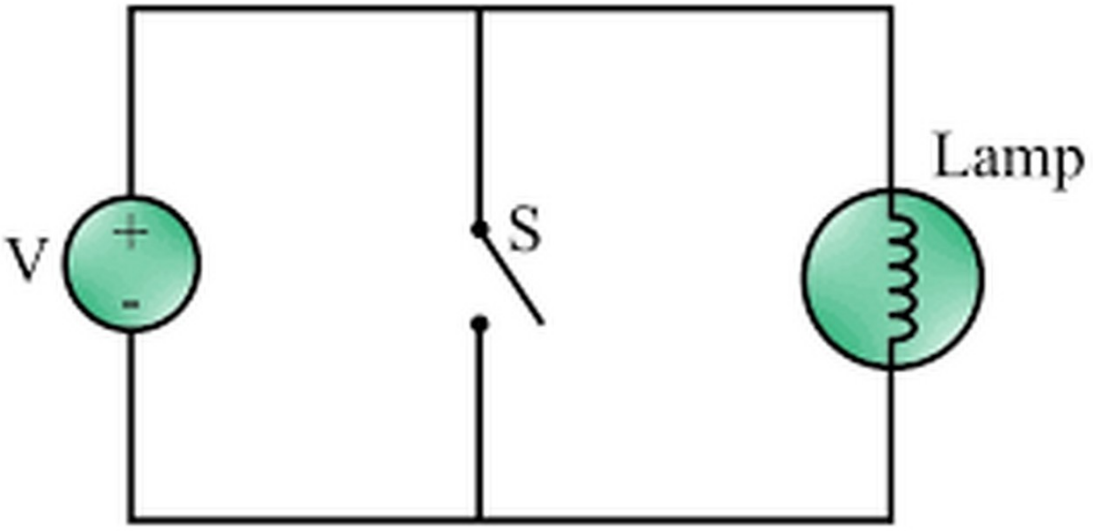
Inversor (negação)

Símbolo



Expressão da Função

$S=\overline{A}$

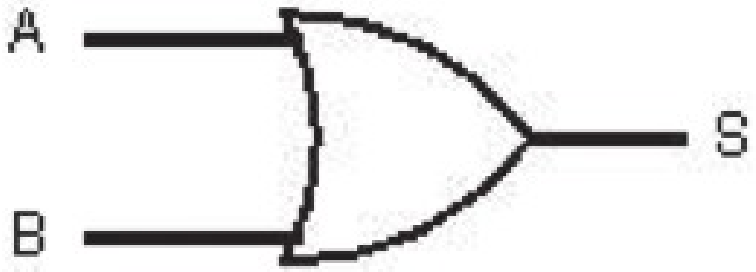


- Tabela-verdade NOT

A		S
0		1
1		0

Porta OR

Símbolo



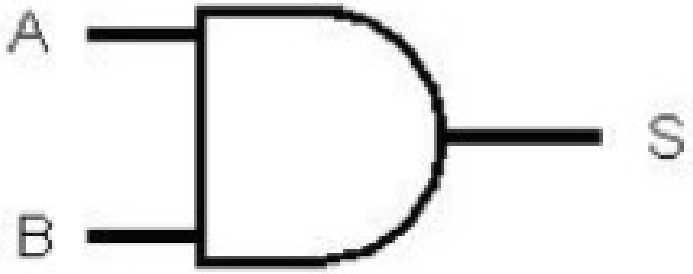
Expressão da Função

$S = A + B$

A		S
A	B	S
0	0	0
0	1	1
1	0	1
1	1	1

Porta AND

Símbolo



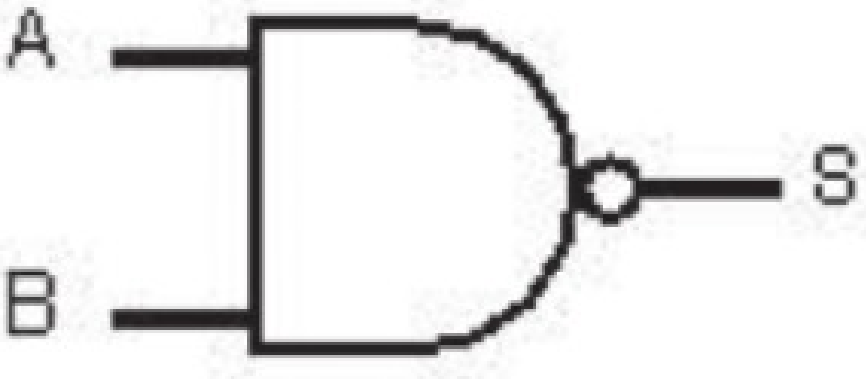
Expressão da Função

S = A ^ B

A		B	S
0		0	0
0		1	0
1		0	0
1		1	1

Porta NAND

Símbolo



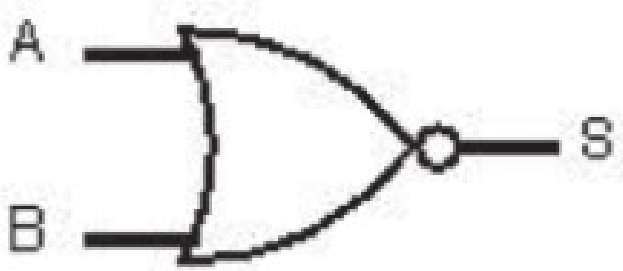
Expressão da Função

$$S = \overline{A \times B}$$

A	B	S
0	0	1
0	1	1
1	0	1
1	1	0

Port NOR

Símbolo



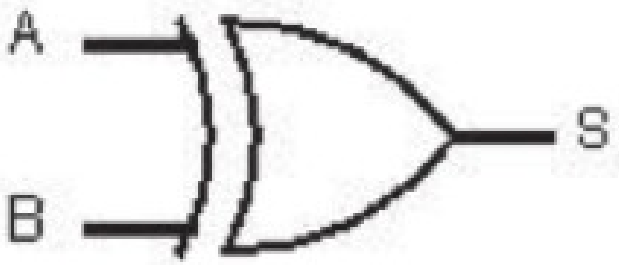
Expressão da Função

$$S = \overline{A + B}$$

A	B	S
0	0	1
0	1	0
1	0	0
1	1	0

Porta XOR

Símbolo



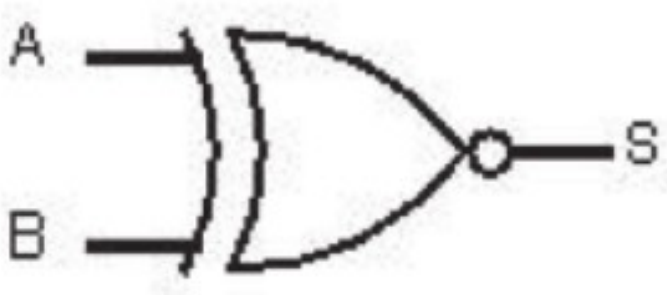
Expressão da Função

$S = A \oplus B$

A	B	S
0	0	0
0	1	1
1	0	1
1	1	0

Porta XNOR

Símbolo



Expressão da Função

$$S = \overline{A \oplus B}$$

A	B	S
0	0	1
0	1	0
1	0	0
1	1	1

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