Basic Concept of digital electronics

Daffodil Institute of IT
Chattogram

DAFFODIL INSTITUTE OF IT, CHATTOGRAM

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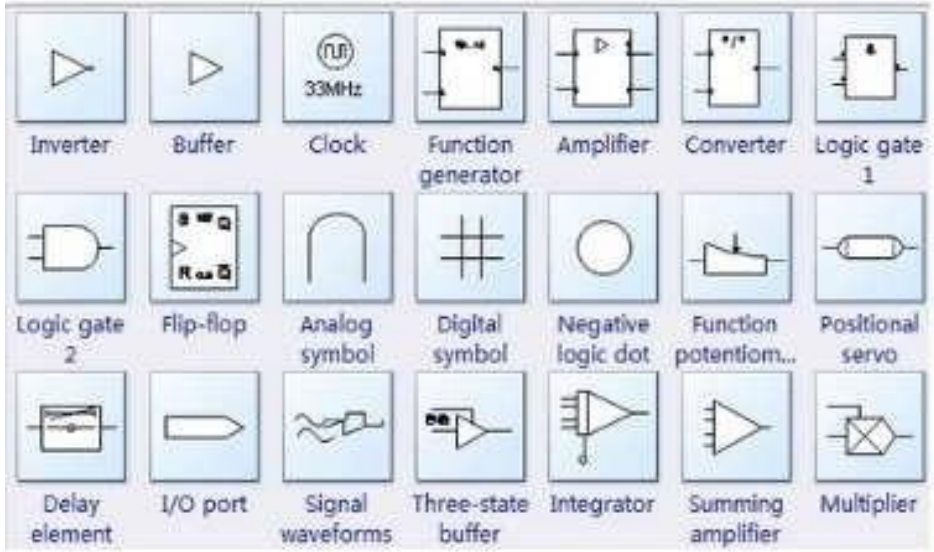
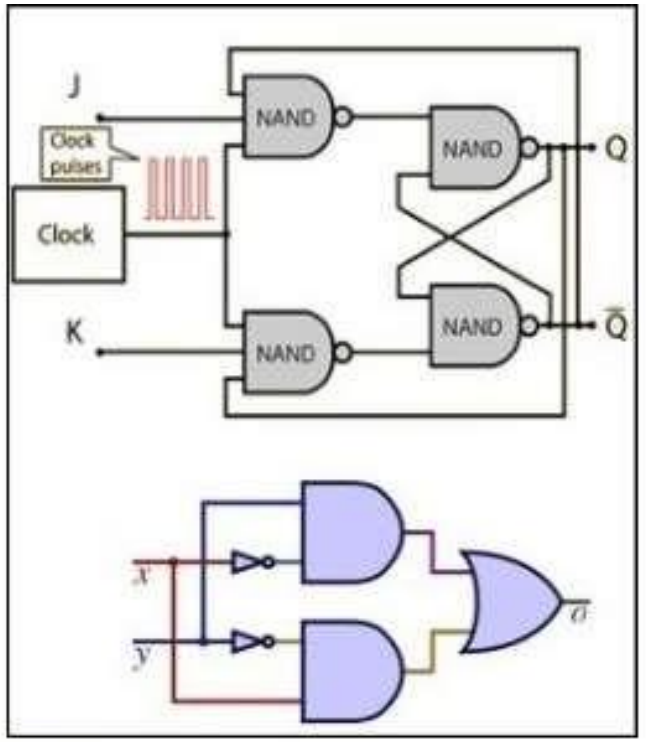
What are Digital Electronics?



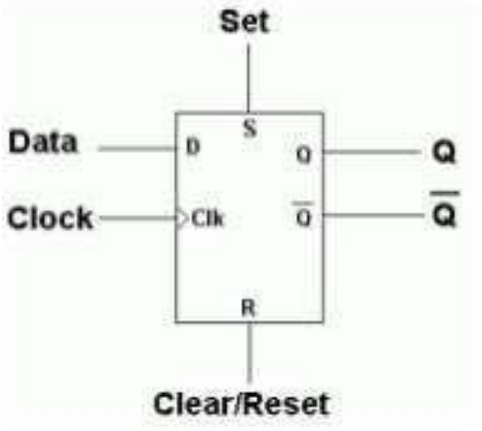


E4U Electrical 4 U

Latches & Flip Flops

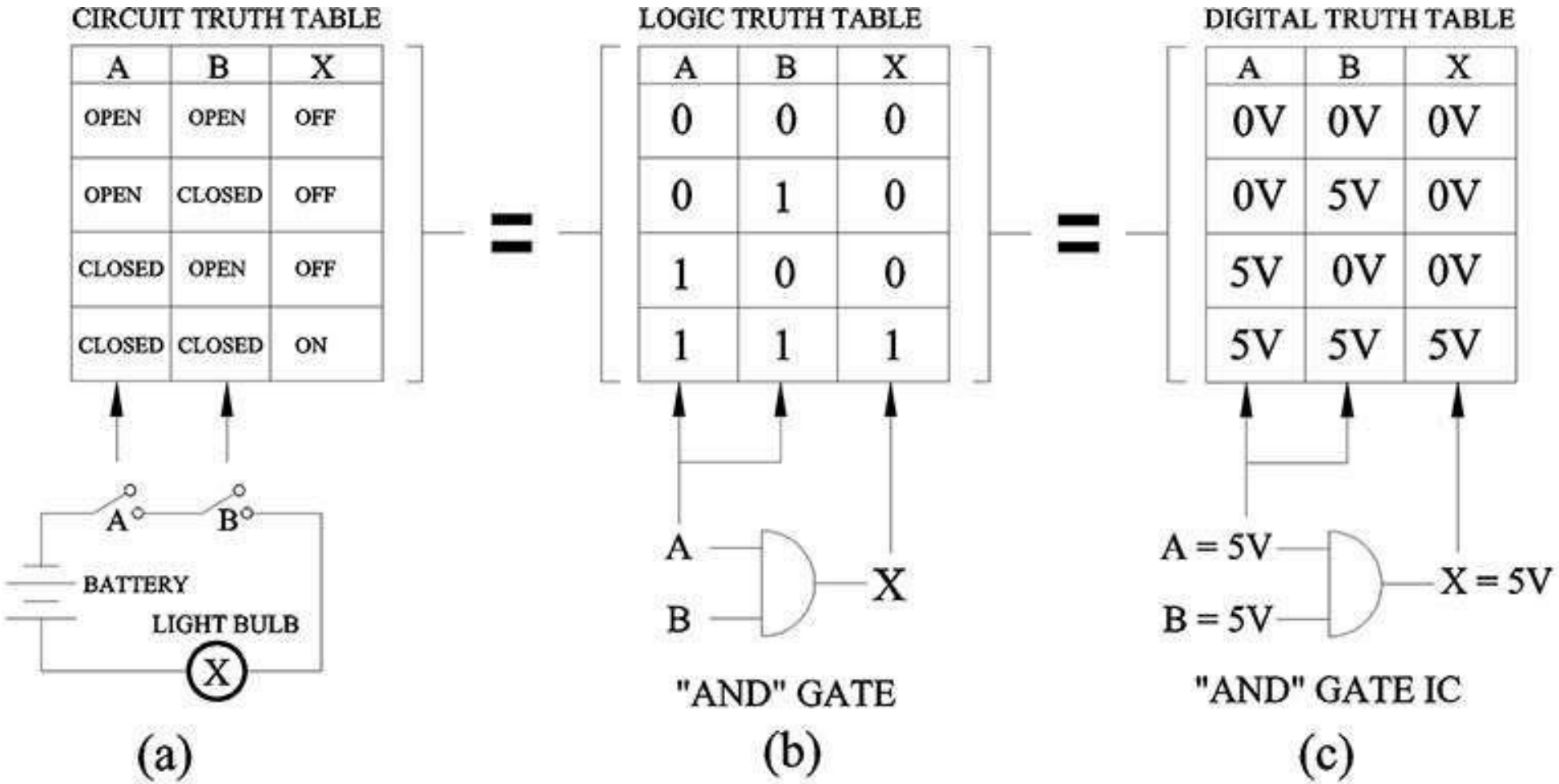
- Latches & Flip flops are built using basic gates and can store data.
- They can be level triggered or edge triggered.
- They are an intrinsic part of storage, counters etc.

The D flip flop



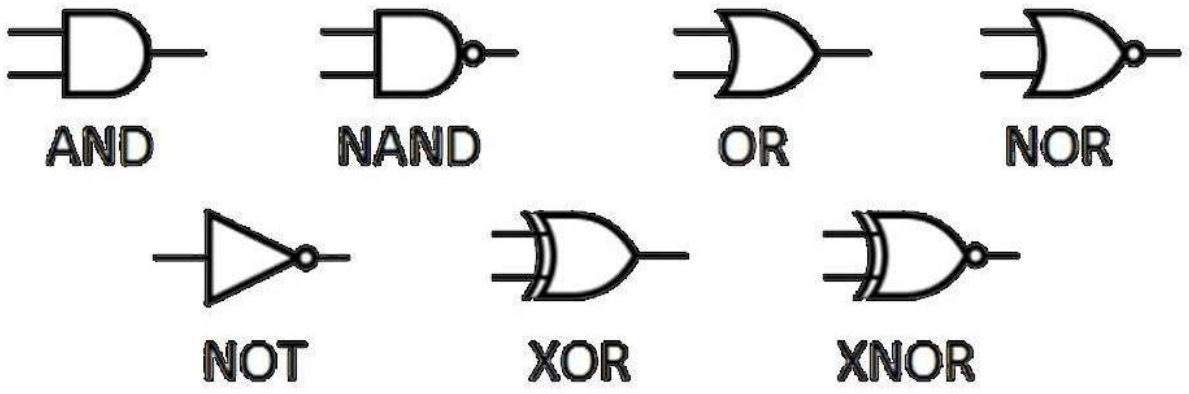
S	R	CLK	D	Q	$\bar{Q}$
0	1	X	X	1	0
1	0	X	X	0	1
0	0	X	X	Unstable	
1	1	↑	1	1	0
1	1	↑	0	0	1
1	1	↓	X	No change	
1	1	—	X	No change	

16


CIRCUIT TRUTH TABLE
A B X
OPEN OPEN OFF
OPEN CLOSED OFF
CLOSED OPEN OFF
CLOSED CLOSED ON
=
LOGIC TRUTH TABLE
A B X
0 0 0
0 1 0
1 0 0
1 1 1
=
DIGITAL TRUTH TABLE
A B X
0V 0V 0V
0V 5V 0V
5V 0V 0V
5V 5V 5V
A
B
BATTERY
LIGHT BULB
X
(a)
A
B
X
"AND" GATE
(b)
A = 5V
B = 5V
X = 5V
"AND" GATE IC
(c)

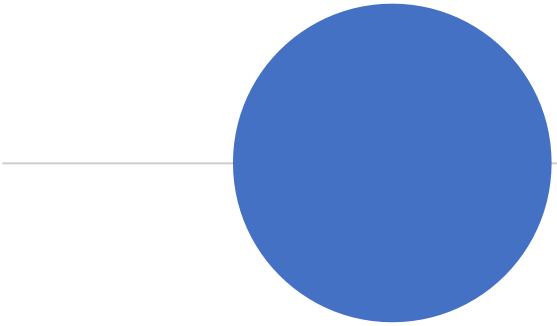
Basic Digital Logic Gates

INPUT		OUTPUT
A	B	
0	0	0
1	0	0
0	1	0
1	1	1



A AND B	$A \cdot B$
A OR B	$A + B$
NOT A	$\overline{A}$
A XOR B	$A \oplus B$

CIRCUITS-DIY.COM
SIMPLIFYING ELECTRONICS



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