

CPE 100 Digital Logic Design

JANUARY 25, 2021

Lecture 2

1,000 → Symbols

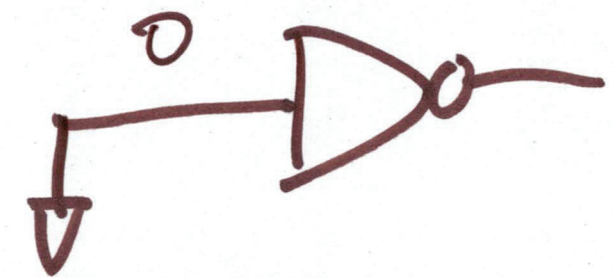
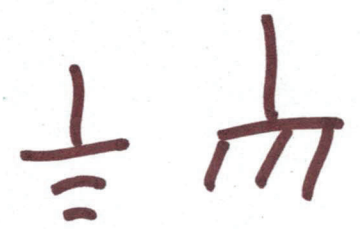
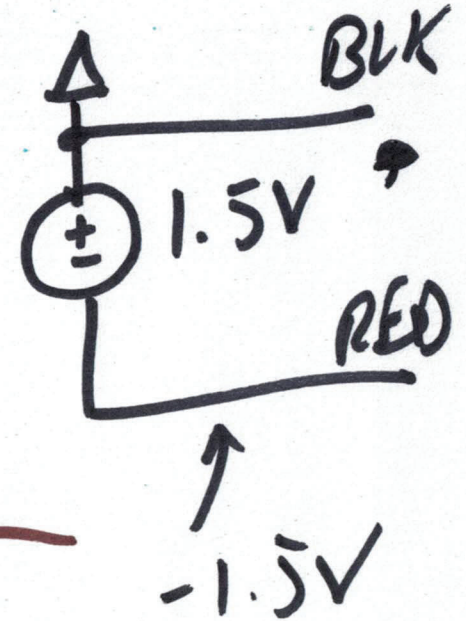
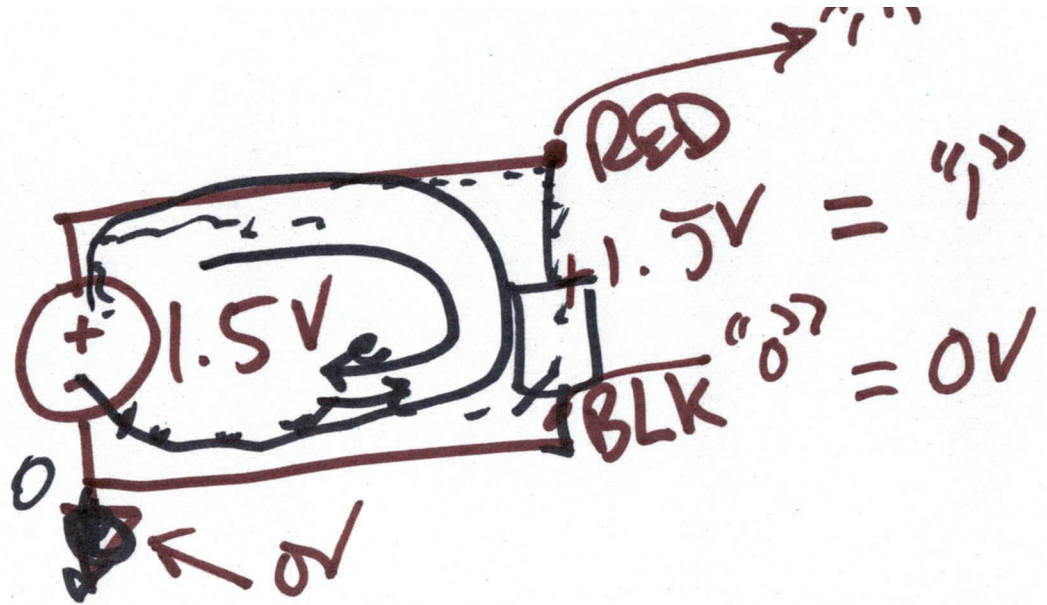
$$10^3 - 1$$

Decimal → 10

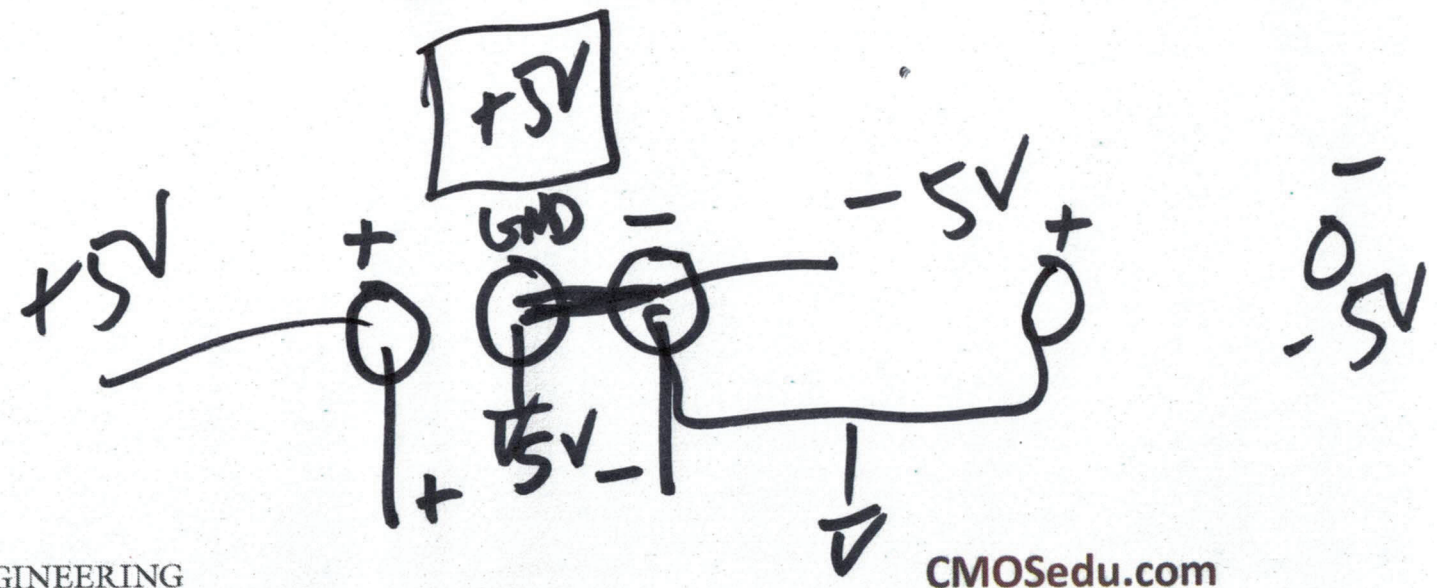
0 0 0
↓ ↓ ↓
9 9 9
 $10^2 \times 10^1 \times 10^0$

10 Symbols

$$10^1 - 1$$



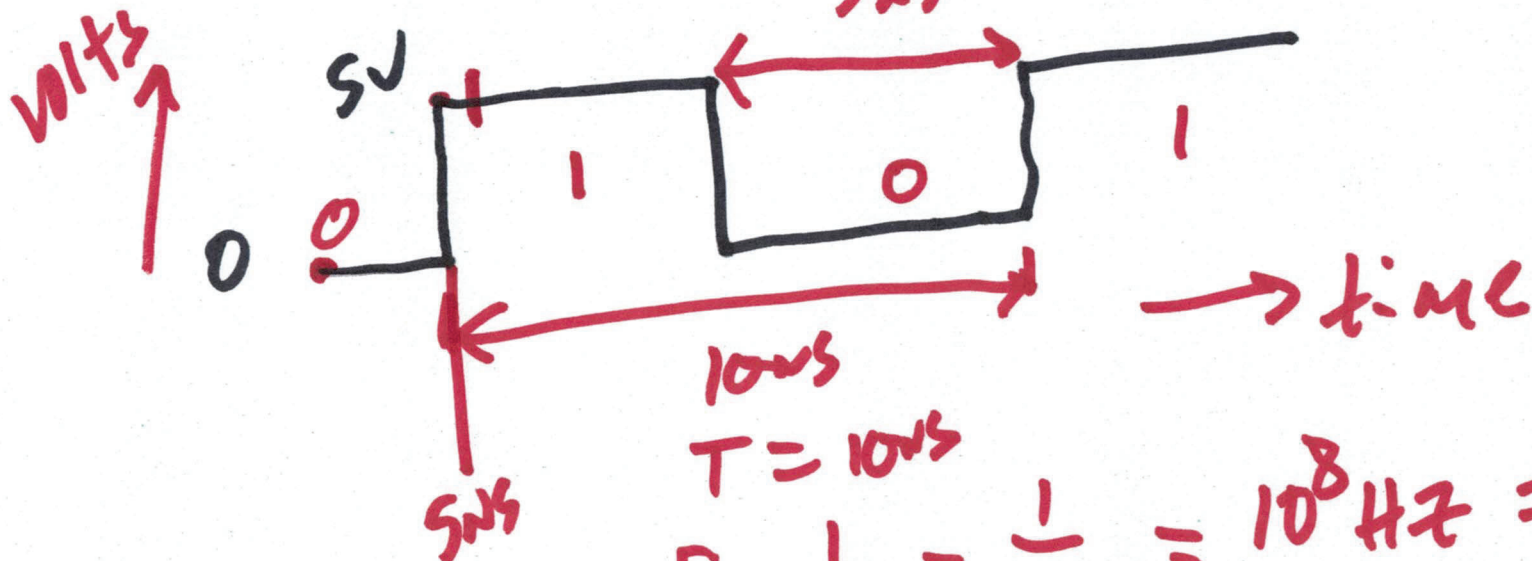
ground



millisecond $\rightarrow 10^{-3} \text{ s} = 0.001 \text{ s}$

microsecond $\rightarrow 10^{-6} \text{ s} = 1 \mu\text{s} = 0.000001$

nanosecond $\rightarrow 10^{-9} \text{ s} = 1 \text{ ns} =$



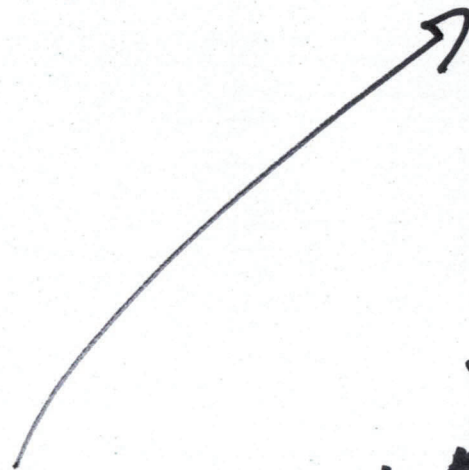
$$T = 10 \text{ ns}$$
$$f = \frac{1}{T} = \frac{1}{10 \text{ ns}} = 10^8 \text{ Hz} = 100 \text{ MHz}$$
$$100 \times 10^6 \text{ Hz}$$

00 → 0

01 → 1

10 → 2

11 → 3



A
1010

5
10

~~1010~~
5

0101

5

$$A5_{16} = 165_{10}$$

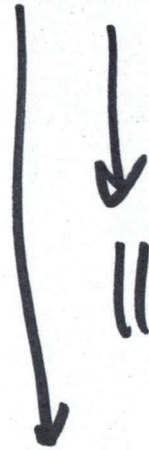
↓

$$5 \times 16^0 = 5$$

↓

$$10 \times 16^1 = 160$$

$$3B_{16} = 59$$



$$11 \times 16^0 = 11$$

$$3 \times 16^1 = 48$$

FFFF

$$15 \cdot 16^3$$

$$15 \cdot 16^0$$

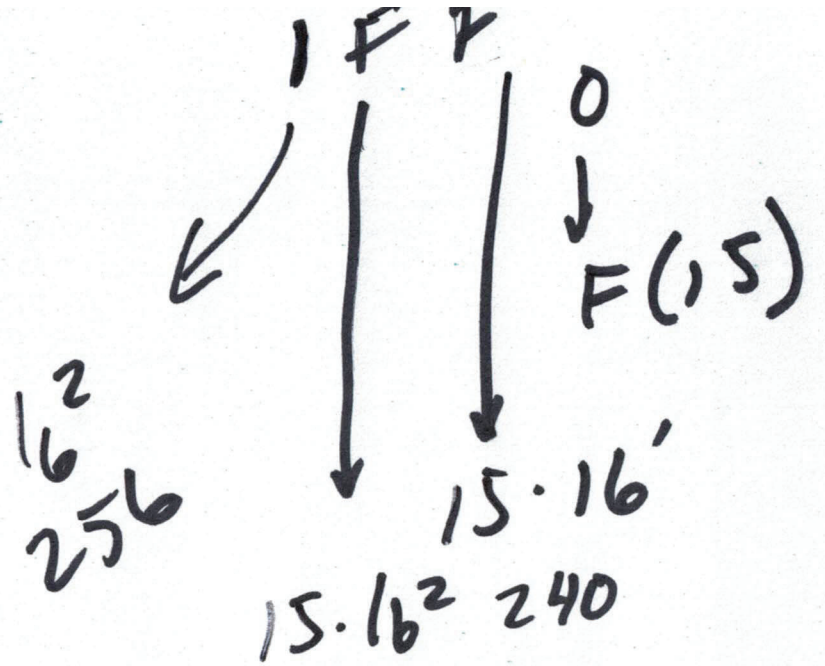
$$15 \cdot 16^1$$

$$15 \cdot 16^2$$

5/

$2^8 \times 351$
 \downarrow
 Hex
 2^{14}
 256

 95



FF
 1111 1111
 $255 \rightarrow 0$