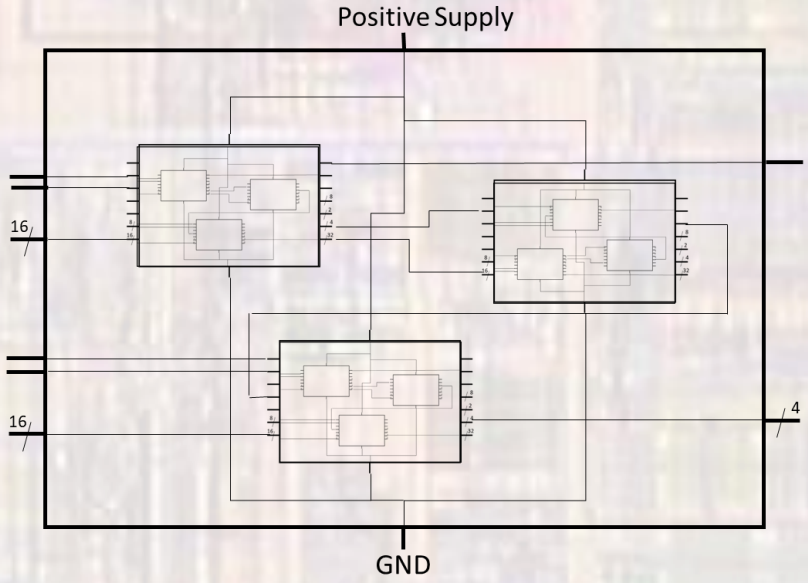
Ones and Zeros

Last updated 10/3/24

These slides introduce basic digital concepts

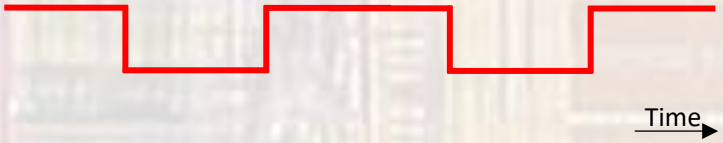
Ones and Zeros

- Digital Systems
  - Medium – wires
  - Carrier – voltage
  - Format – Continuous Time
    – Discrete Values



- Realistic Signal

- Ideal (abstracted) Signal



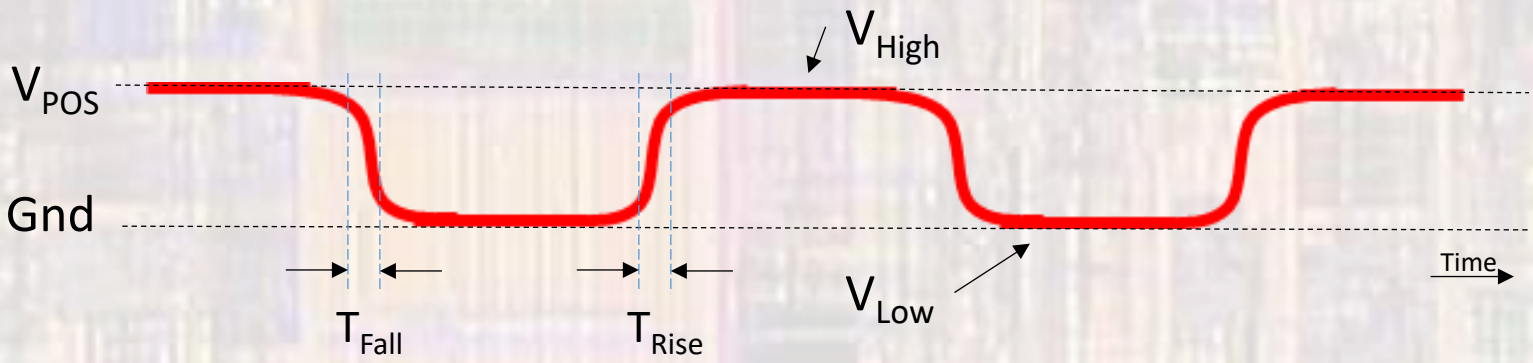
Ones and Zeros

V_{high} is system dependent
might be: 3.3V
2.5V
1.8V
1.2V

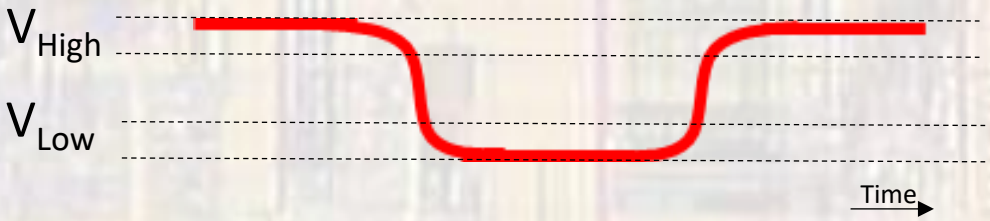
V_{low} will be 0V

See Voltage Supplies slides for details

- Digital Signal – Realistic
  - V_{POS} – positive supply voltage
  - Gnd – ground

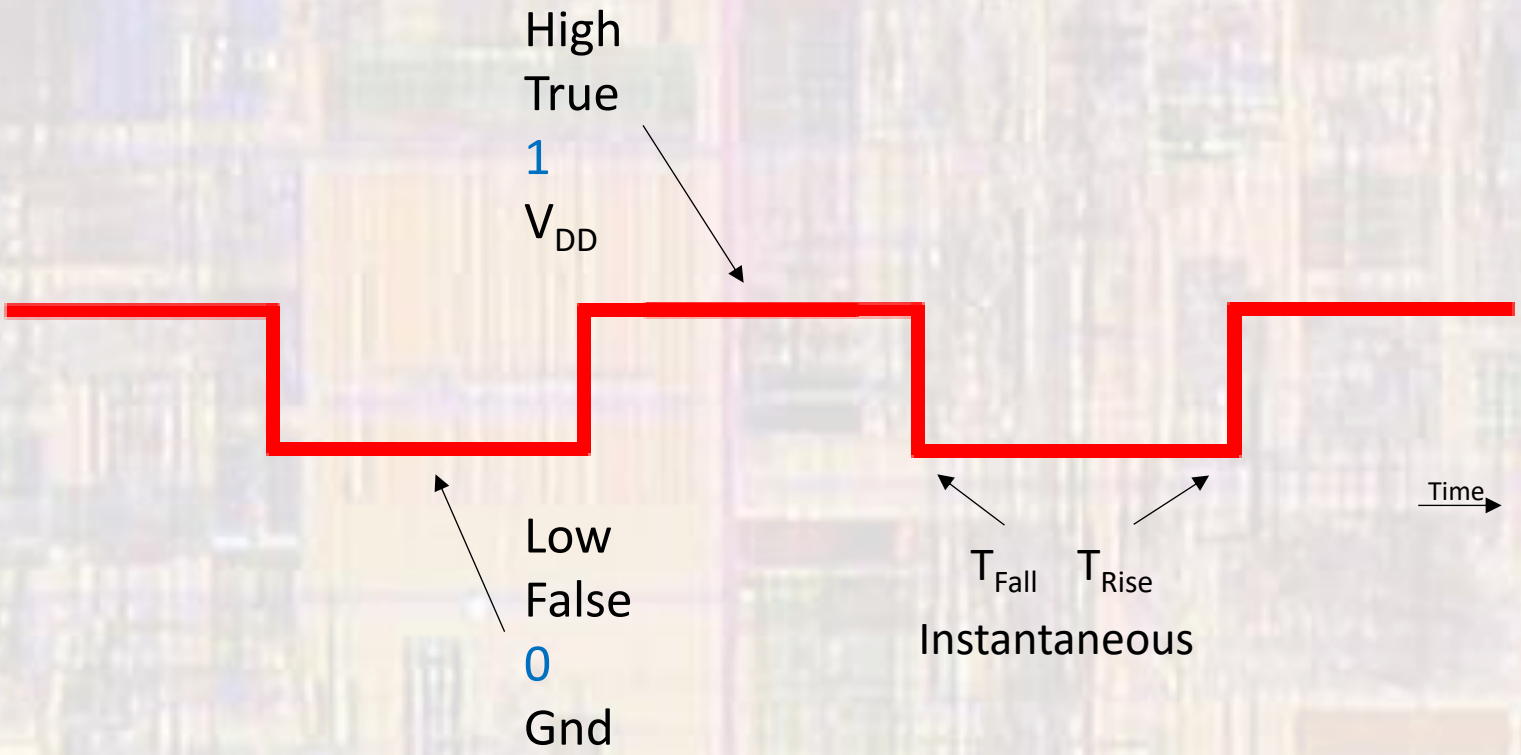


- V_{High} and V_{low} will have some imprecision



Ones and Zeros

- Digital Signal – Abstracted



Ones and Zeros

- Digital Signal – Additional Terminology
  - Set – force a digital signal High (1)
  - Reset – force a digital signal Low (0)
  - Active High – the signals action occurs when High (1)
    - The vend signal is active high for the candy machine
  - Active Low – the signals action occurs when Low (0)
    - The led_on signal is active low for the seven-segment display