Device vs. System Labels

- When using hierarchy (i.e. building blocks) to design a circuit be sure to show both device and system labels
    - Device Labels: Signal names used inside the block
        - Placeholder names the designer/manufacturer of the block uses to indicate which input/output is which to the outside user (Names may vary; read the manual)
    - System labels: Signal names used outside the block
        - Actual signals from the circuit being built
        - Can have the same name as the device label if such a signal name exists at the outside level

Unsigned and Signed

- Normal (unsigned) binary can only represent positive numbers
    - All place values are positive
- To represent BOTH positive and negative numbers we must use the available binary codes differently, some for the positive values and others for the negative values
    - We call these signed representations
- 2 Primary Systems
    - Signed Magnitude
    - Two's Complement (most widely used for integer representation)
- In both signed magnitude and 2's complement, positive and negative numbers are separated using the MSB
    - MSB=1 means negative
    - MSB=0 means positive