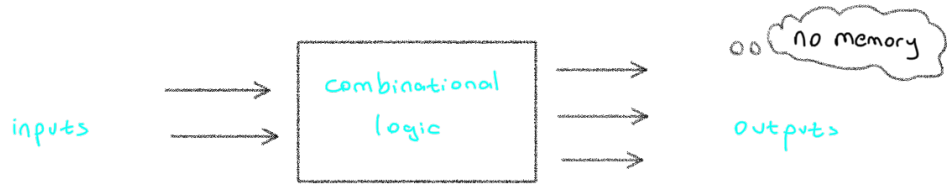
4 - combinational circuits - logic design



technology parameters

fan-in: for logic gates, max number of inputs to a specific gate

fan-out: max number of "standard" logic gate inputs that can be connected to a logic gate output → "drive" capability of an output

noise margin: how much noise can be induced onto a logic signal and still be correctly recognized as a high or low level

propagation delay: measured from input change to output change (glitch = hata, aksaklık)

power dissipation: the quantity of electrical power that is dissipated by the device as heat → when it is static: independent of signal rate of change
dynamic: increases linearly with changing signals

☆ high voltage → 1 } positive logic → 0 } negative logic
low voltage → 0 → 1

combinational circuit design methodology

1. identify system inputs and outputs
2. define interface variables and representation
3. construct truth table
4. generate minimal set of logic expressions (using K-maps, etc.)
5. implement and verify design