

Design Analysis

- ▶ Documentation
 - ▶ Write clear, description of how the circuit works
 - ▶ If you cannot make the description clear, you don't know how it works
- ▶ Analysis
 - ▶ I_{ol} , I_{oh} , V_{out} min/max, power dissipation
 - ▶ Must work with variations of $V_{ce(sat)}$, Beta especially
 - ▶ Play a realistic "what if" game
 - ▶ For our class, we will stick to typical values to simplify your life

Design Analysis

- ▶ Worst Case Circuit Analysis (WCCA)
 - ▶ Light coverage, more advanced topic
 - ▶ No matter what...it still works, first one, 10,000th one
 - ▶ Low Vdd, low transconductance
 - ▶ Over temperature range -40c to +125c, low or high humidity
 - ▶ Combinations of temperature, voltage, process, part variation
 - ▶ Ionizing radiation, SEU in FPGAs
 - ▶ Lighting strike or EMP event
 - ▶ Military systems, Health care, Aircraft, Spacecraft
 - ▶ WCCA uses all worst case values of components
 - ▶ SPICE can be useful here, smoke components at zero cost