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
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 -40\(^\circ\)C to +125\(^\circ\)C, 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