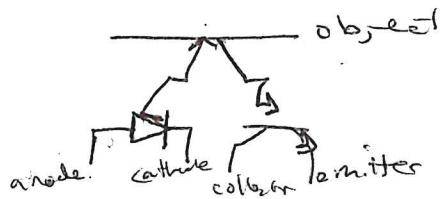
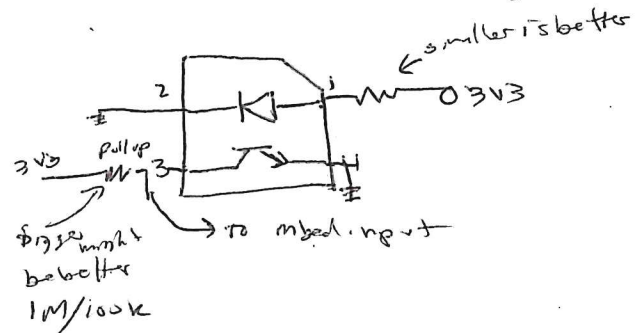


Opto sensors

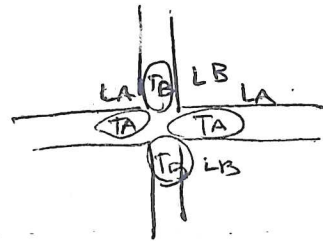
- o Paired LED and photo transistor
- ↳ reflective or transmissive
- ↳ reflective used in m3 course
- QRE 1113



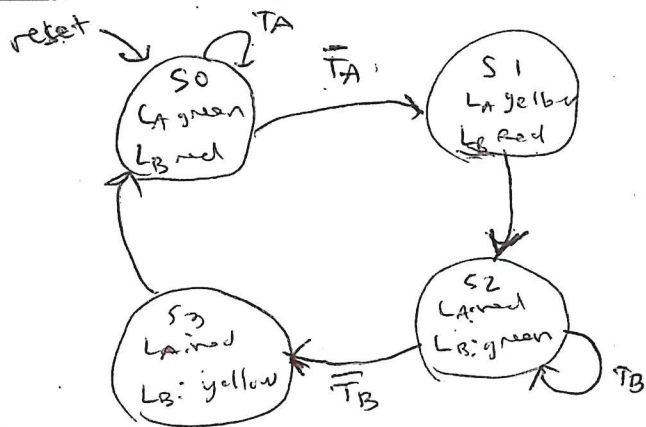
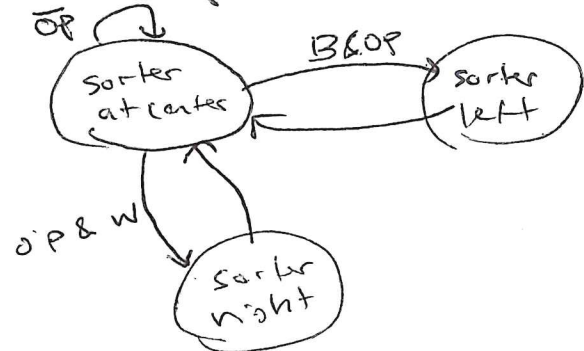
- o output of collector depends on reflected light: can use as a digital switch or to detect color based on reflecting



- o connect the circuit and measure the voltage at pin 3 for white/black objects.
- ↳ change resistors to adjust sensitivity
- ↳ could use a trim pot/pot to adjust

state diagramsexample

use a state transition diagram to describe operation

Another example

object present: OP  
Black: B white: W

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LESSON Analog Inputs 2

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### Relays

- Electrically operated switch
  - ↳ same terminology as switches
    - SPST, SPDT, etc
  - ↳ also has conditions NC, NO (normally closed or normally open)
  - ↳ send a logic signal to activate electromagnetic contact
- commonly used when larger currents or AC currents need to be switched. (or high power)

" allows one logic signal to turn on multiple outputs;