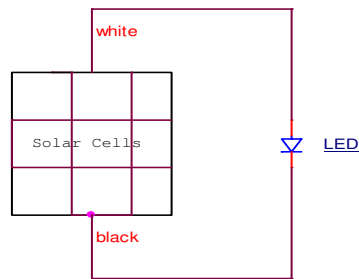


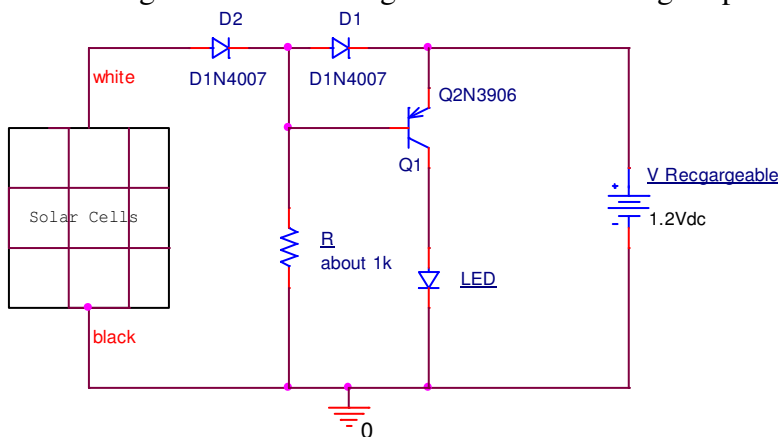
Solar Cell Night Light Week 7 Experiment Spring 2018

Available are seven solar cells with assembling leads from outdoor night lights. The night lights charge AAA rechargeable batteries during the presence of light and then using a transistor switch turn on their LEDs when only dim light is present. The circuit in the assembled night light is more complicated but the simple one supplied in class should work (see the circuit of part 5 below).

1. Observe the operation by shining light on the assembled system and measure any generated voltage. Then place your hand over the solar cell and repeat.
2. Observe the printed circuit board that is housed with the solar cell to see what it comprises. Check the web for information on how it works and what might be in the attached printed circuit board.
3. Use a separate solar cell on a breadboard and vary the amount of light. Measure voltage out of the solar cells.
4. Connect an LED across the solar cell on a breadboard and see how much light is needed to light the LED. If the sun is shining you may wish to take it out to the sunlight.



5. Design and construct the transistor switch circuit, below, for charging a battery with one or two solar cells. The design should be such that with light the battery should charge while without light the LED should light up.



6. Set up Spice to check your design. For that search the web for models for the battery, the solar cell, and the LED.