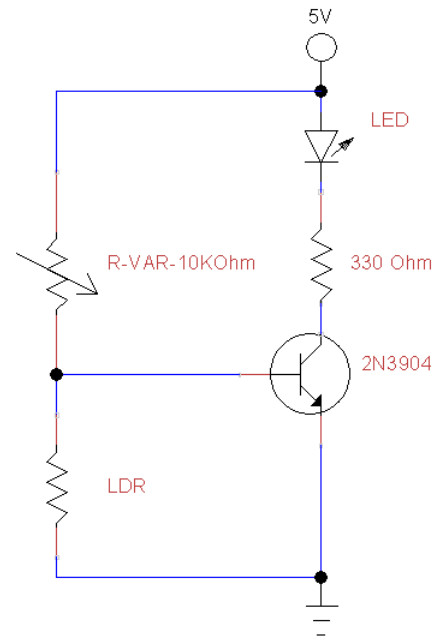# Glow in the dark circuit

What is it?

It is a circuit which lights up an LED once a sensor is in the shade or in darkness.

How does it work?

The component labeled "LDR" is a light dependent resistor. When it is exposed to the light it allows current to flow through it and thus diverting the current into the ground. However once the LDR is in the shade its resistances becomes great and the current flows through the transistor lighting up the LED

How to make it?

Components:
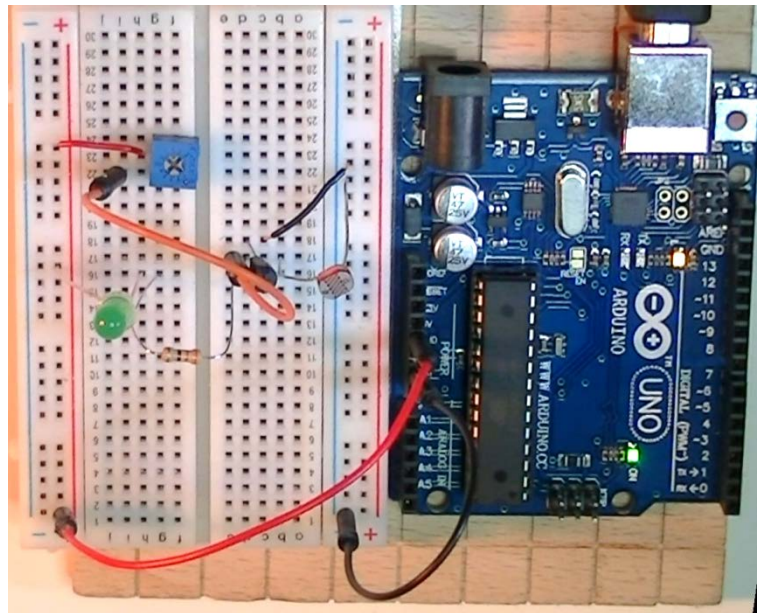Arduino power supply, LDR, 10K Variable Resistor, Transistor N3904, LED, wire

Step 1: connect the +5V Ardunio pin into the red breadboard rail and the GND Arduino pin into the blue breadboard rail.

Step 2: Place the transistor close to the middle of the breadboard, connect the emitter to the blue rail, and the collector to the red rail through an LED

Step 3: Connect the variable resistor top pin to the red rail and one of the side pins to the base of the transistor. (The LED might come on at this stage, if it does pull out the power pin on the Arduino)

Step 4: Connect one pin of the LDR into the blue rail and the other pin into the base of the transistor. (plug power back in if it was out)

Step 5: Adjust the variable resistor so that the LED is on in normal light and off in the shade.

Tips

- The N3904 transistor has a maximum current of 50mA, Arduino provides up to 50mA. This means that when the transistor is running at full power it will heat up. So be careful!

- If the LED never goes off, this means that your circuit needs more resistance in the line of the variable resistor.

Extensions and Questions

- Try expanding your circuit to include at least 2 LED's and a buzzer. Are the LED and the buzzer working properly, if not why not?

- Try changing the circuit so that it becomes a light detector, turning on a buzzer when a light shines on the LDR.