

To create a breathing LED effect using an Arduino Uno, you'll need an LED, a resistor (typically 220Ω), and the Arduino board. The LED's brightness is controlled by Pulse Width Modulation (PWM), gradually fading in and out to mimic breathing. Here's how it works:

1. **Connect the LED:** Attach the positive leg (anode) of the LED to a PWM-enabled pin (like pin 9) and the negative leg (cathode) to ground through the resistor.
2. **Write the code:** Use the `analogWrite()` function to control the LED brightness. The brightness value is varied from 0 (off) to 255 (full brightness), with a smooth transition to create the breathing effect.
3. **Upload the code:** The LED will slowly fade in and out, mimicking the "inhale" and "exhale" effect.