Preliminary Design Report (PDR)

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Project: ThermoLight Alert System.

Description: This project involves building a circuit using a photoresistor (light-sensitive resistor) and a thermistor (temperature-sensitive resistor) to control three LEDs that indicate the brightness and temperature status of an environment.

1. LED 1 (Red - Photoresistor): Turns on when the photoresistor detects **darkness** (indicating a problem) and off when there is sufficient light (indicating normal conditions).

2. LED 2 (White - Thermistor): Turns on when the thermistor detects a cold temperature (indicating a problem) and off when the temperature is normal. For testing, placing a finger on the thermistor simulates normal temperature; the absence of touch represents the cold (problem) condition.

3. LED 3 (Blue - Final Indicator): This LED uses an AND logic condition from the outputs of the photoresistor and thermistor pathways. It turns on **only** when the photoresistor detects **insufficient light** and the thermistor senses **cold temperature**, indicating that both sensors are in an unacceptable condition.

Block Diagram
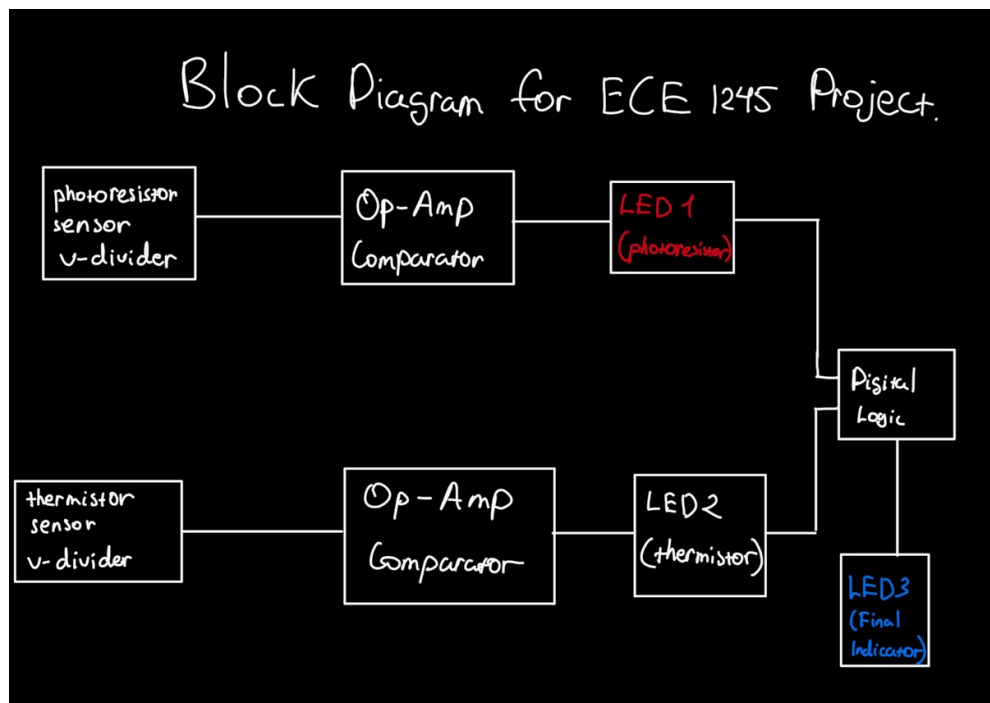
I will build a circuit that signals the light and temperature status, where the on LEDs indicate a problem. LED 1 turns on when it's dark, off when it's bright. LED 2 turns on when it's cold, off when the temperature is normal. LED 3 turns on only when both darkness and cold are detected. The circuit will be built using components from the ECE 1245 toolkit, including resistors, a potentiometer, op-amps, LEDs, and a power supply.