

Laboratory Activity #1: Working with Digital Signals

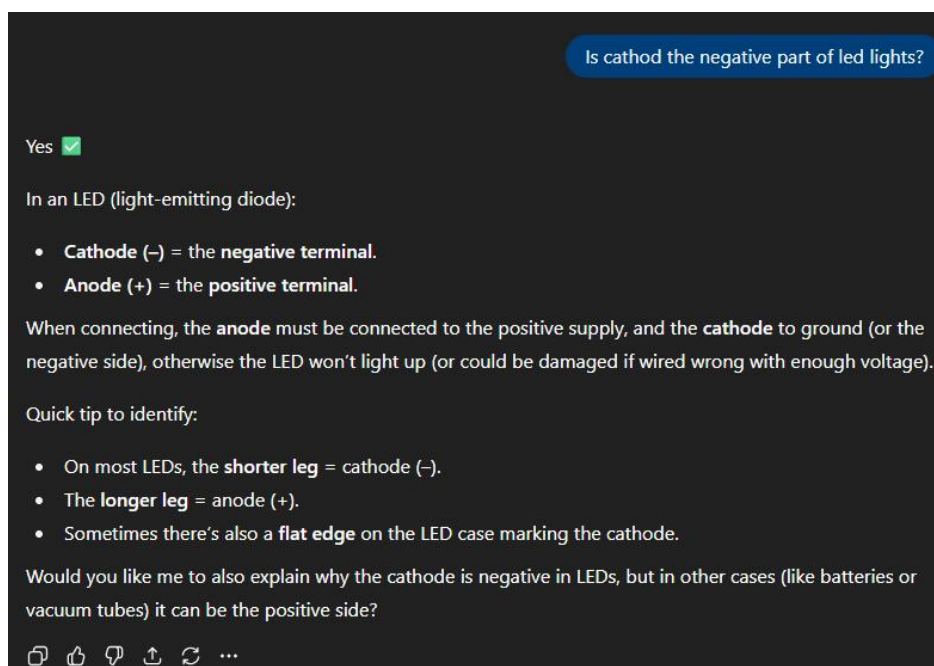
| Member | Grade |
|---------------------------|--------|
| Bonganay, Lhojen Faith C. | Leader |
| Villamor, Lesterjhon | 100 |
| Delacerna, Gabrielle | 99 |

Generative AI Sources:

In this particular activity, our use for generative AI was not really that apparent, as we mostly looked to the aid of our old lectures (specifically, our lectures in [DCIT 26A](#) that included the use of LEDs) as well as the learning materials you've provided on our gclass. However, we did ask ChatGPT some questions about certain Arduino topics that we have previously discussed, but have slightly forgotten. Here are the prompts we've subjected to the generative AI we've used:

AI Tool/Applications Used -> ChatGPT**Language Model -> GPT-5**

Full Conversation: <https://chatgpt.com/share/68cc7200-6c14-800f-8cb3-60ff5b827c77>



Assuming I'll connect the leds to an arduino, is anode the one to be connected to the pins?

Good question 🤔

When using Arduino with LEDs, you have two common wiring styles:

1. Current Sourcing (Arduino pin provides + voltage)

- Arduino pin → Resistor → Anode (+) of LED
- Cathode (-) → GND

Here, the pin outputs HIGH = LED ON, LOW = LED OFF.

👉 This is the *most common* way beginners wire LEDs.

2. Current Sinking (Arduino pin pulls to GND)

- Arduino pin → Cathode (-) of LED
- Anode (+) → Resistor → +5V (or 3.3V depending on board)

Here, the pin outputs LOW = LED ON, HIGH = LED OFF.

👉 This is less common, but sometimes used (e.g., in LED matrices).

⚠️ **Important:** Always put a resistor (220 Ω to 1 k Ω is typical) in series with the LED, otherwise you can burn it out or damage your Arduino pin.

are resistors supposed to be connected to the negative outlets? Or is it needed in the positive outlets of the led?

Great question 👍

A resistor for an LED can be placed on either side — positive (anode) or negative (cathode) — as long as it is in series with the LED.

♦ Example 1: Resistor on the positive side

java

📄 Copy code

Arduino Pin (+) → Resistor → Anode of LED → Cathode → GND

♦ Example 2: Resistor on the negative side

java

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Arduino Pin (+) → Anode of LED → Cathode → Resistor → GND

Both work **exactly the same**, because in a series circuit, the current is the same everywhere.

👉 What matters is that the resistor limits the current flowing through the LED. Without it, the LED will try to draw too much current and can burn out (and possibly damage your Arduino pin).

Would you like me to also explain *why* it doesn't matter which side the resistor is on, using current flow logic?

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