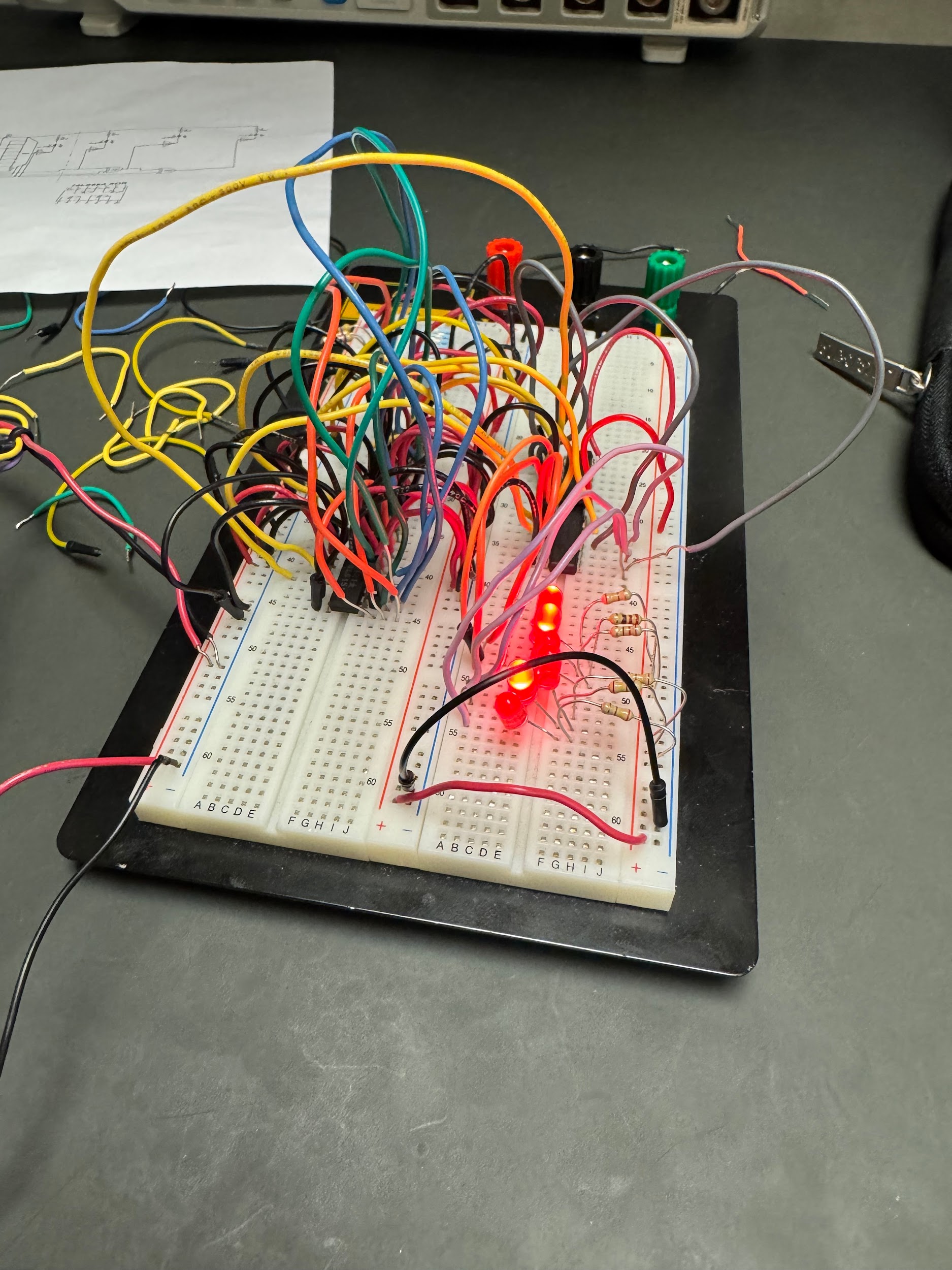
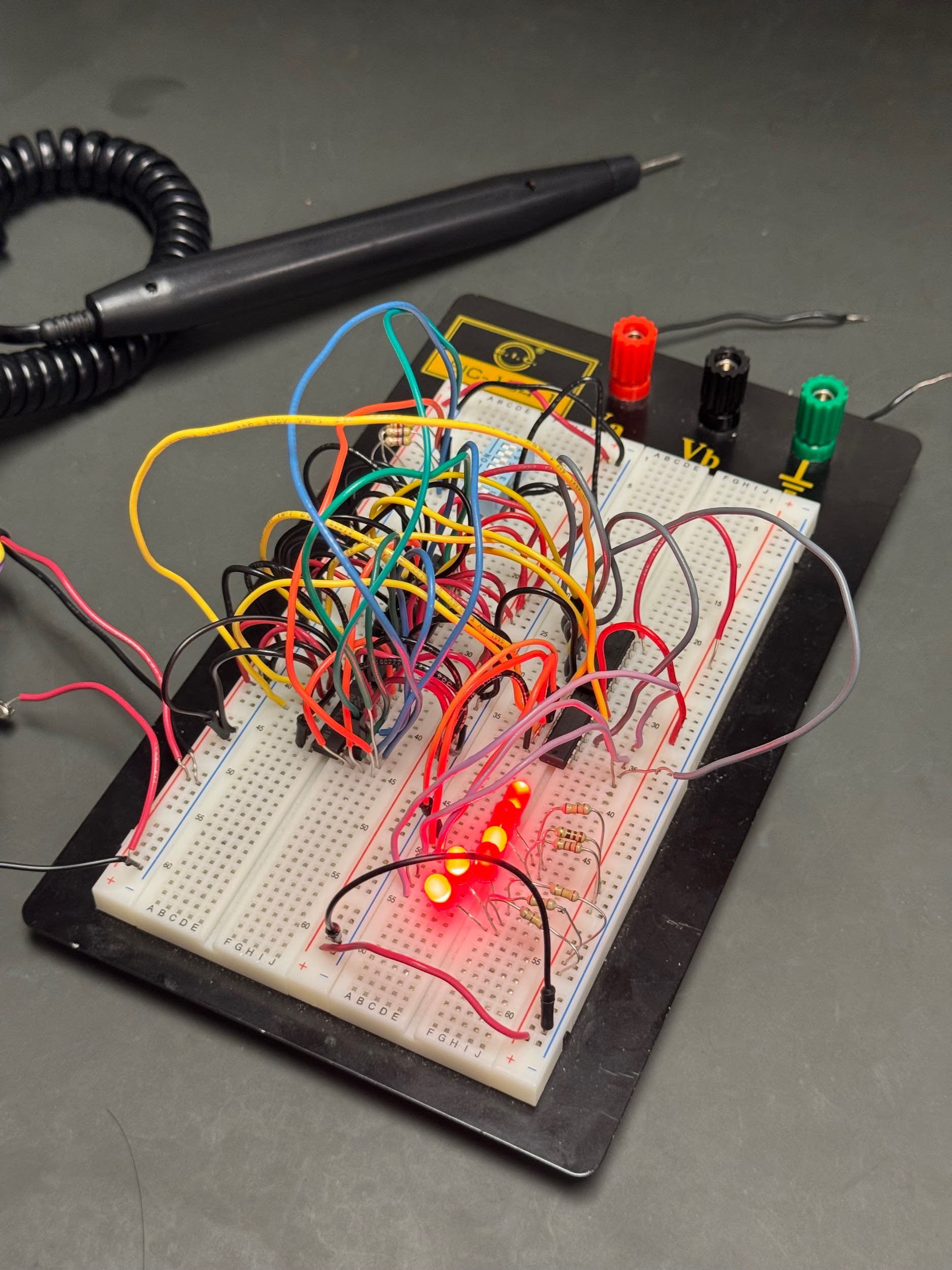
**2. Experiments**

1. Synthesizing the 3-bit Gray Encoder  The top three LEDs are the encoder; LED gray codes from top to bottom would be G0, G1, G2. So G0, G1, and G2 would be 1, 1, 0 respectively in this case.
2. Synthesizing the 3-bit Gray Decoder  The bottom three LEDs are the decoder; LED binary outputs from top to bottom would be B0, B1, and B2. So B0, B1, and B2 would be 0, 1, 1 respectively in this case

**3. Lab 3 Report**

1. Gray codes are just another way to count bits. Its advantage over traditional binary code is that only one bit needs to change for each successive value. For example, 1 in both binary and gray code is 01, but 2 is 10 in binary while its 11 in gray code. The binary code had to change both bits while the gray code only had to change one. This helps prevents errors from happening when transitioning between two states, which is more ideal in digital communications. This is used in railway signal systems and analog-to-digital converters to minimize the risk of error

| Vincent Chen | Circuit Building   * Built the circuit * Circuit debugging * Acquired needed materials   Organizing Lab Doc  Cleaning Up |
| --- | --- |
| Chance Reyes | Circuit Building   * Separated wires by color * Color coded everything * Circuit debugging   Explanation of Gray Codes  Cleaning Up |