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PY 681

Project Proposal

Battery Tester

Abstract

Nowadays we utilize dozens of replaceable batteries in our households. TV remotes, toys, flashlights all use some kind of standard battery. Thus, it is crucial to understand the charge remaining in the battery. This project will provide an easy to use interface for consumers to test voltage of a battery. When the terminals of the battery are connected the device will light up one of the LEDs – green, yellow, or red, depending on the remaining charge. The user will be able to switch between different types of batteries (AA / AAA / D – 1.5 V, E – 9 V, and if time permits – custom voltage for unusual batteries such as in phones or hearing aids).
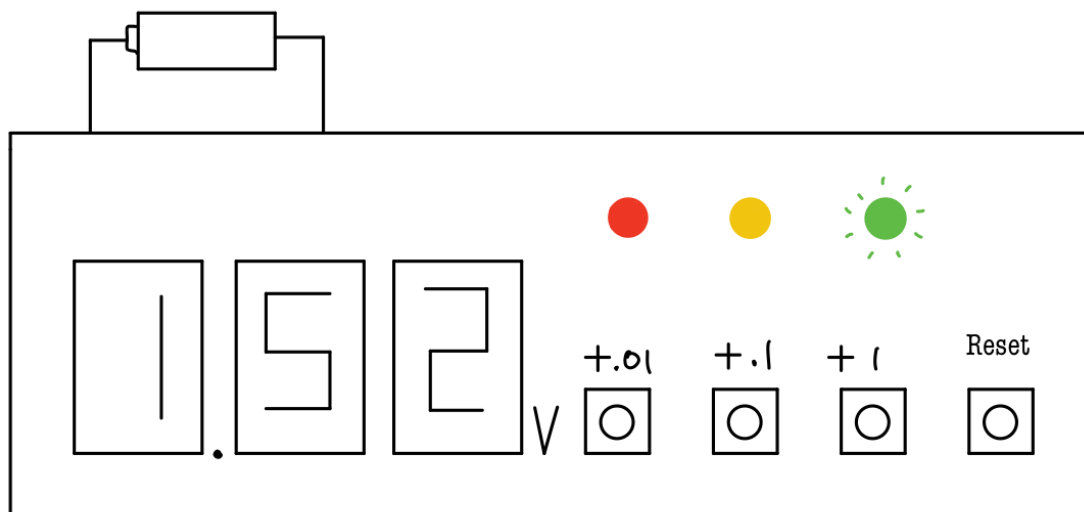
Figure 1. Concept design

Concepts:

1) Setting up Arduino to measure voltage of the connected battery.

2) Depending on the user input adjust the Arduino to compare the measured value with a nominal value.

3) Output signal to one of the LEDs depending on the result of the comparison.

Stage 2: Include a voltage divider to be able to measure voltages above 5V.

Stage 3 (if time permits):

1) Provide the user an ability to set custom voltage for the battery to test.

2) Use the display module to display the custom voltage. Use buttons to increase or decrease desired voltage.

Parts required (all available):

- 1 breadboard

- 1 Arduino microcontroller

- 1 red, 1 yellow, 1 green LED

- Multiple wires

- Several resistors

- Several buttons

- Optional: 3 seven-segment display LEDs.