Tetris

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Overview

We aim to create the game of Tetris using the Arduino microcontroller board. Our goal is to take input from the player via physical buttons that will be wired to the Arduino. To output the game, we plan to make a 10x20 grid of LED's that will simulate the grid of a Tetris board. Due to the binary nature of LED lights and constraints of the low-resolution board, we will implement the game according to the Tetris Classic rules, similar to the version found on the Nintendo Entertainment System. Currently, we have no plans for additional features beyond simple gameplay, but depending on time constraints, we may implement additional features such as scoring, the 'next piece' indicator, a level counter, or additional gameplay updates to increase the similarity to modern Tetris.

Components

Hardware

- Arduino Uno
- 200 LEDs
- Wires
- Resistors
- Breadboard
- Buttons
- Multiplexer

Software

- Implement LED controls using multiplexing
- Read input from buttons with low latency
- Develop code for the game of Tetris

Prototype Plan

We plan to use a vertical and evolutionary prototyping plan. We chose this plan type because of the relatively modular nature of each component, such that each component will evolve to become a part of the real system. In particular, the implementation for the LED display, input from buttons, and creation of the Tetris game can all be developed separately.

Anticipated Challenges

The greatest challenge we anticipate is the creation of the physical LED matrix and controlling it via software via multiplexing hardware.