Stackers with a Z

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What it does: Using two buttons, 4 switches, and a 16x8 LED board, this project is a game with a modifiable difficulty. The goal of the game is to light any of the top LEDs. To do this, the player must push the button at the correct time to stack the LEDs on top of each other. Any LEDs not stacked are lost. The second button is used to restart the game, updating changed settings. The first three switches change the speed at which the LEDs cross the board, and should be read as binary from 0 to 7. The higher the number, the faster the LED’s move. The fourth switch, if left on, prevents the speed from increasing upon reaching the halfway point. The default position of the switches (the rightmost four) is OFF OFF ON ON.

Implementation: I was able to find a version of the Adafruit library for the 16x8 LED board on the mbed website. This library provided a convenient function to update the boards display through the use of inter-integrated circuit (I2C) communication. I coded in C++ and used inturrupts for the buttons, and read in digital inputs on the mbed to read the state of the switches.

What I learned: Solve the problem then code it. My original code for this was very ugly and only mostly working; cleaning it up and debugging took more time than it should have. I also learned about I2C communication, how the SCL is the clock and SDA the data being sent. (Originally I was confused as to why there was only 4 pins to control the 16x8 matrix). I discovered that an interrupt cannot interrupt another interrupt. This is partly why the reset button is not an interrupt.