Lab 3B — Lab Report

We set out to program the snake game on the 8x8 LED grid without using additional hardware.

**Features**

*Snake Game*

We produced the snake game on an 8x8 grid controlled through a Python interface using the PySerial package with a Curses console GUI for simulation and key-logging. The snake is initialized with length 2, growing by 1 for each food particle that is consumed. Food particles are randomly produced over the surface of the board. As the snake grows in length, the internal time delay decreases, increasing game difficulty. Logic is implemented to make edges wrap around, decreasing game difficulty.

*Exit Message*

When the snake collides with itself, a message with text and score are printed over the surface of the board, where each letter of the message and score string are displayed as a character over the 8x8 grid, and scrolls across the board for continuity in reading the message. The characters are displayed either through hard-coded 8x8 binary arrays or through extracting binary values from a large font image with 8x8 tiles for each character using the PIL package.

*Arduino Interface*

The PySerial package writes strings appended w/ output to the Serial monitor of our Arduino. The Arduino is loaded with code that reads the next available string from the Serial monitor and reads the first 64 characters of the string. The first 64 characters are reshaped into a grid of size 8 x 8, and expected to be values 0 or 1 to determine the status of each LED. This interface is shared for all functionality displayed on the board, including Snake game as well as the exit message.

**Reflection**