Game of Life: Demo Checklist

This document describes how we will test and grade the live demo of **Game of Life** project.

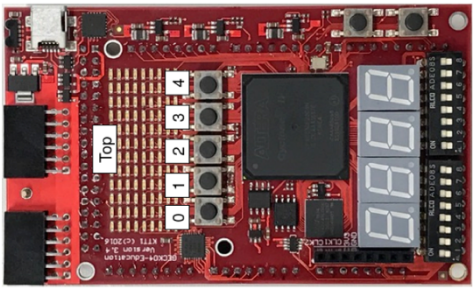
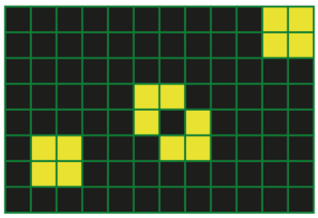


Figure 1. Gecko4Education board

1 Board Power Up

Program the board with the **last submitted project file**.

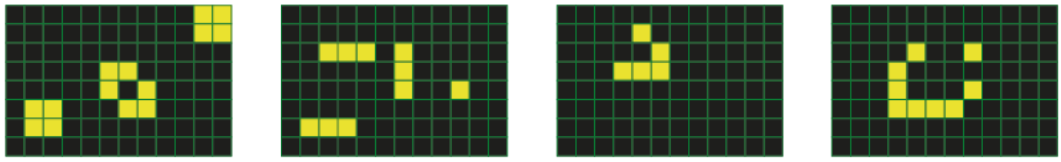
After programming the board, the game should be initialized as follows:



1. [1 point] LEDs: the pattern on the right should be displayed.
2. [1 point] 7-segment displays show *X*001, where *X* stands for an undefined value.

2 INIT State

1. [1 point] Buttons 2, 3, and 4: Pressing these buttons should increment, in steps of one, the value shown on the 7-segment display. Button 4 (Fig. 1) increments the rightmost digit, button 3 increments the second digit from the right, and button 2 increments the third digit from the right. The digits should be displayed in hexadecimal format: 0-1-2-3-4-5-6-7-8-9-A-b-C-d-E-F.
2. [2 points] Button 0: Pushing button 0 should result in the display showing the next predefined seed, in the following sequence (from left to right):



Seed 0 Seed 1 Seed 2 Seed 3

After going through all predefined seeds, the game should transition to the **random** state.

3 RAND State

1. [2 points] Button 0: Continuing to press button 0 should generate a new random state every time the button is pressed.
2. [1 point] Buttons 2, 3, and 4: Pressing these buttons should have the same effect as described in **INIT** state.
3. [2 points] Button 1: Pressing this button starts the game. ***Hint***: high number of steps should be configured before starting the game, so that there is enough time to complete all the tests.

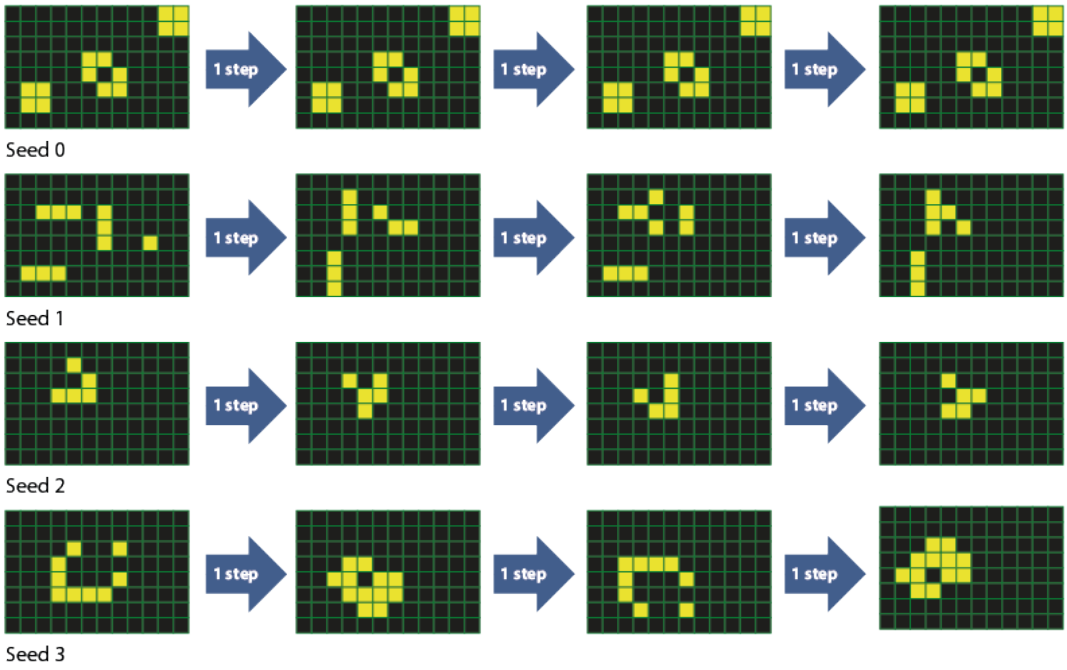
Once the game started, it should transition to **RUN** state.

4 RUN State

1. [2 points] Button 0: start/pause button. When paused, the LEDs should not update and the 7-seg should not decrement. Start the game and continue testing.
2. [2 points] Button 1: increases the speed of the game. Verify that the speed increases.
3. [2 points] Button 2: Decreases the speed of the game. Verify that the game slows down but never stops before the number of steps drops to zero.
4. [2 points] Button 4: Wait for the game to reach a configuration where nothing changes anymore. Then, press button 4. This should replace the current game state with a new random one.
5. [2 points] Button 3: Reset button. Pressing it should bring you back to the initial state explained in **Board power up**.

5 GoL Algorithm

Finally, we will test that the Game of Life algorithm is correctly implemented by choosing one of the predefined seeds and running the game for a number of steps. Only if all the displayed game steps are correct, and in correct sequence, will this test be considered as **successfully passed**.



6 Grading

- Maximum score is 20 points.
- The score is computed as follows:

$$Score = \begin{cases} \sum points\,, & if\ GoL\ algorithm\ test\ passes \\ \frac{1}{2}\sum points\,, & if\ GoL\ algorithm\ test\ does\ not\ pass \end{cases}$$

Here, the *sum of points* takes into account all the tests in Sections 1, 2, 3, and 4. GoL algorithm tests are described in Section 5.