U5LX - Coding

Conway’s Game of Life

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AP CSP

DO NOW:

Discuss with your partner the CGOL rules. Re-write it as pseudocode; in a format to help you directly translate it into code.

AIM: How do we code an algorithm with sequential code statements using selection?

SWBAT: Write a step-by-step algorithm using nested conditional statements

GAME RULES

- Any live cell with 2 or 3 live neighbors survives.
- Any dead cell with 3 live neighbors becomes a live cell.
- All other live cells die in the next generation.
- Similarly, all other dead cells stay dead.

HOW TO PLAY THE GAME

- Live cells are black. Dead cells are white. You can mark with an X if that’s preferable.
- Starting with any one cell, count the number of live cells surrounding the current cell.
- There are 8 cells surrounding any specific cell. If the current cell is on the border of your grid, you can consider that cells outside your grid as dead.
- Use the previous gen (generation) to determine the next gen. For example, to determine the pattern for gen 1, use gen 0.

ACTIVITY: Open and Save the starter code (link in gClassroom)

Code Conway's Game of Life algorithm, specifically the two custom blocks in the "cell" sprite

countNeighbors

generateNextGenCell

Helper blocks *already* coded for you.

Is current cell dead or alive

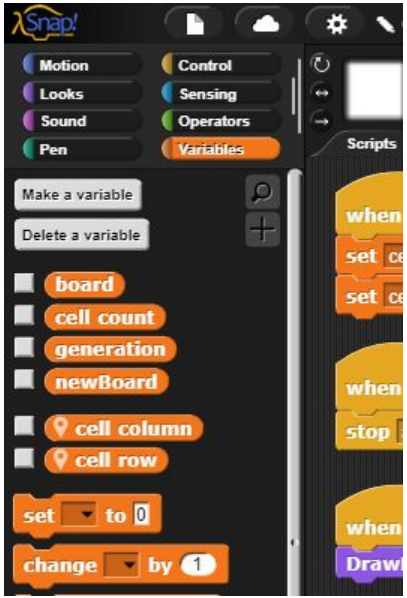
check if cell is within the boundary of the grid

Set the cell to dead / alive for the next gen

ACTIVITY:

You have access to the current cell's row and column. Click on the variables category and you will see it on the left hand column.

Make sure you have selected the sprite "cell"



ACTIVITY: Challenge (optional)

Currently the way to check if referencing a cell out of bounds is to check the index numbers.

Another solution to avoid referencing a cell out of bounds is to make a board 2 cells bigger on all sides. However, to the user, you only want to display cells that only the user can see or modify. So a user should still think clickicking on (0,0) is the top left cell but the program may know it as (2,2). Modify the code to use this solution instead.

HOMEWORK

- Finish the lab at home if additional time is needed.