

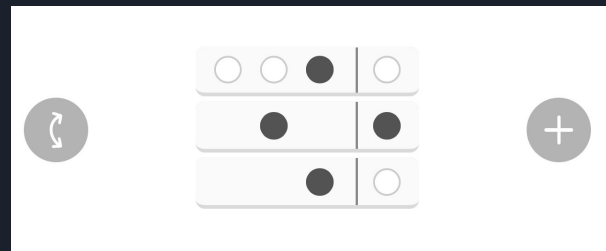
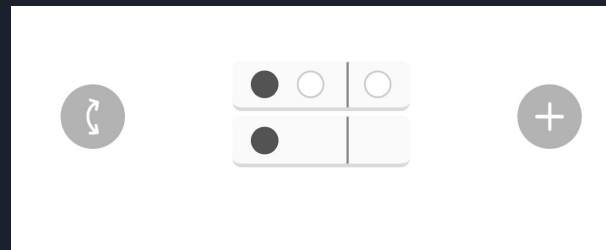
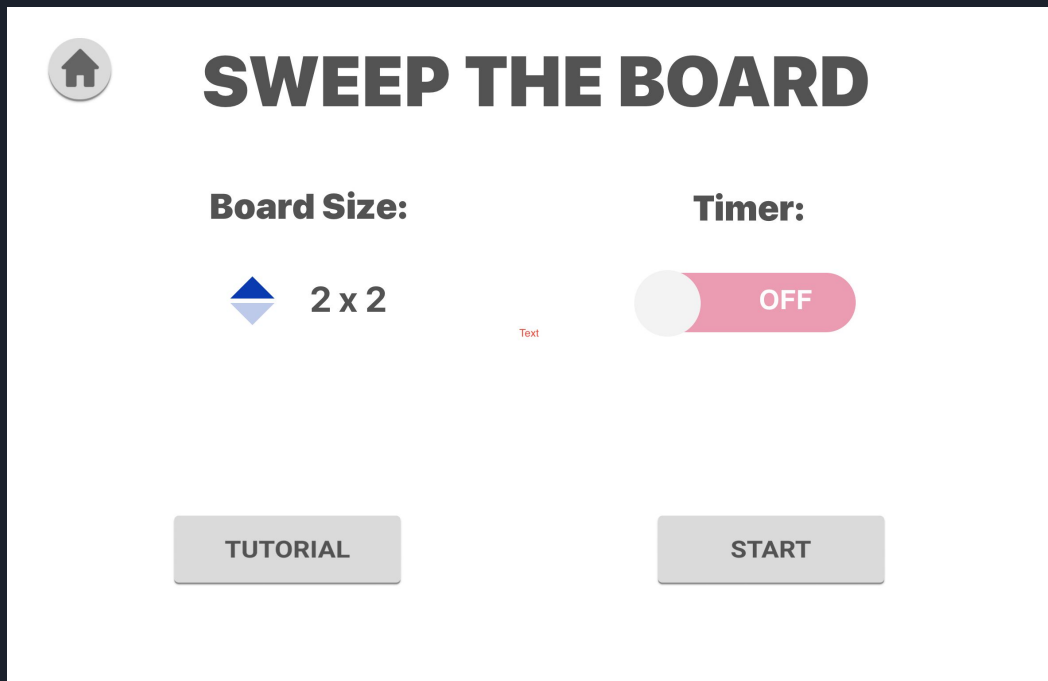
The background features a dark grey gradient with a faint, circular image of a circuit board. In the top-left corner, there are two overlapping geometric shapes: a blue parallelogram and a light green trapezoid. In the top-right corner, there is a grey, 3D-rendered pattern of interlocking rectangular blocks, resembling a circuit board or a mathematical grid.

Sweep the Board

a math game

by Caroline, Emory, Forrest, Jenna,
Tim

Our Inspiration





Understanding the Problems


01 Boring interface

02 Randomized sizes

03 Too easy (no time constraint, all are solvable, n pivots)



Project Objective



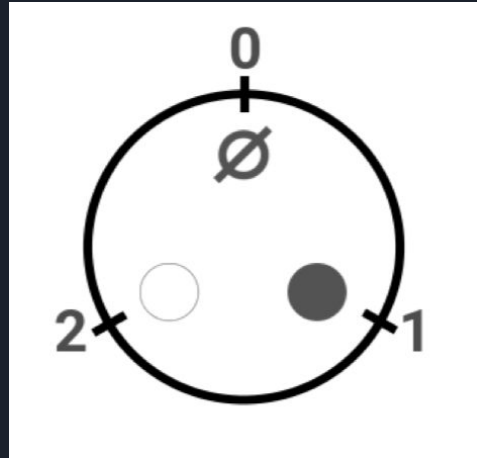
Create a similar game that is based in mathematical concepts but still engaging and fun.

How It Works

0 = blank

1 = black

2 = white



Level 1

Added Game Specs

Congratulations! You solved the puzzle!
Level: 1 Time: 11 s Steps: 4 Score: 20



More Intuitive Adding

New Buttons

impossible

swap

add



new game

Level 2

Changes by Round

- Size
- Theme
 - Characters
 - Color of Board
 - Music

Level: 2 Time: 35 s Steps: 5 Score: 70

			2 cancel
			1 cancel
			select cancel

impossible

swap













add

new game

Level 3

Classic

Level: 3 Time: 16 s Steps: 2 Score: 200

				select	cancel
				select	cancel
				select	cancel
				select	cancel

impossible swap add new game

Cool features:








Time is added each level

Score updates based on performance

False impossible -10 seconds

Level 5

Level: 5 Time: 41 s Steps: 6 Score: 450

					<input type="button" value="select"/>	<input type="button" value="cancel"/>
					<input type="button" value="2"/>	<input type="button" value="cancel"/>
					<input type="button" value="1"/>	<input type="button" value="cancel"/>
					<input type="button" value="select"/>	<input type="button" value="cancel"/>
					<input type="button" value="select"/>	<input type="button" value="cancel"/>

Seasonably Relevant:

Halloween

Christmas

Other themes:

Apple

Sheep

The Classic

Level 11

Goes all the way to level 13

Each level increases difficulty (size)

Level: 11 Time: 5 s Steps: 0 Score: 5780



select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel
select	cancel

impossible

swap

add

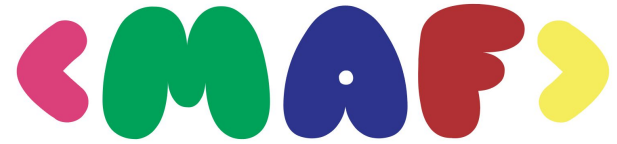
new game

It even fits 14x14 matrix

Can still see characters

Moving Forward

The Future of Our Game



games
a digital conglomerate

1. Market to more diverse hardware
2. Develop suite of math-based games
3. Improve user experience







**Base Code ->
Improved Code**



Code Changes

- `init()`
 - Add Initial values & resources - for new functions & aesthetics
- `start()`
 - Change game operations + music
- `init_grid()`
 - Change initial conditions, `rand_grid()`
- `is_goal`
 - Add random winning condition - check rows and columns
 - Add rules
- Buttons + other functions such as `game_over()`

```
# Should only have 1 or fewer leading entry (black per row
```

```
if black > 1:  
    return False
```

```
# Cannot have a row with only white entries and no black entries
```

```
if black == 0 and white >= 1:  
    return False
```

```
# The first leading entry (black) should always go before the first nonleading entry
```

```
if first_white_entry_place > 0:  
    if first_black_entry_place > first_white_entry_place:  
        return False
```

```
# If there are a leading entry in one column, there should be no other white entries
```

```
if black == 1 and white >= 1:  
    return False
```

```
if count <= self.board_size:  
    goal = True  
else:  
    goal = False
```

```
return (goal)
```



Future Steps for Coding

- Add undo function & other functions
- Refine checking rules
- Improve aesthetics
- Improve playability
- Add opening page & game_over replay button
- Add score board



Results

- Gets to level **6** with points **4430** using non-competitive approach
- With right strategy, can probably push to level **10**. Further level needs great experience & lots of **luck**



Demo Time

