# Atari Breakout: Candy Edition

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Overview

Atari Breakout is a game in which the goal is to break all the blocks shown by bouncing a ball against a movable platform (controlled by the player) without the ball exiting the screen below the paddle. The player will get three lives, each being eliminated upon the aforementioned condition. The game speeds depending on the color of the uppermost brick broken by the user, encouraging the player to try to strategically target specific tiles.
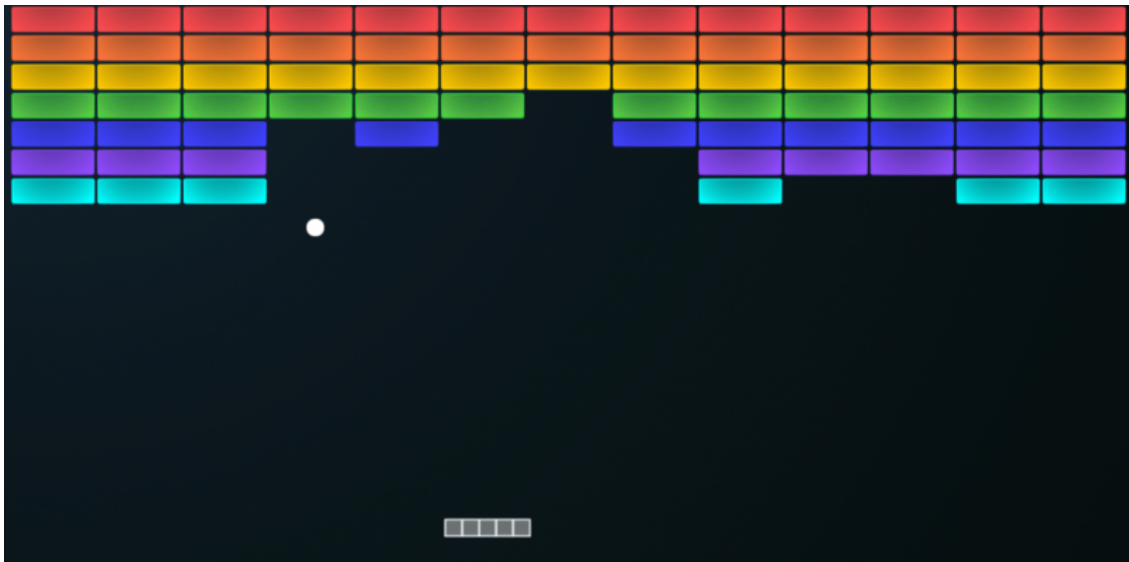
Design

The game will involve a keyboard that uses the *a* and *d* keys to control the paddle, as is common in the gaming industry 🕹. The tiles, paddle, and ball will be custom designed to fit the *candy edition* of the game. The entire implementation will require the DE1-SOC, a VGA compatible monitor, and a keyboard, as mentioned above, to be played. The key challenges we anticipate include calculating the expected velocity vector based on the angle and speed of the strike, as well as getting SystemVerilog to compile.

Milestones

1. Hardware Component Implementation: Mar 24, 2023
2. Simple Interface between Hardware and Software: Apr 7, 2023
3. Finalize Logic and Software Implementation & Refine Interfacing: Apr 21, 2023

References

1. *https://en.wikipedia.org/wiki/Breakout_(video_game)*
2. *http://www.cs.columbia.edu/~sedwards/classes/2022/4840-spring/proposals/Breakout.pdf*
3. *http://www.cs.columbia.edu/~sedwards/classes/2019/4840-spring/proposals/BrickBreaker.pdf*