

# CS M152A Final Project Proposal

UCLA Samueli School of Engineering CS M152A Spring '24  
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Group 6

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## 1 Project Title

Flappy Bird

## 2 Overview

Flappy Bird is a very popular simple game where you play as a bird that can flap to avoid pipes that move slowly from the right side of the screen. If the bird touches any of the pipes, you lose. Your goal is to make it through as many pipes as possible before you lose, and to beat your high score. The pipes have an opening at a random height to make the game more difficult. In our FPGA remake of Flappy Bird, the same rules apply.

## 3 Design Specifics

Our design will require two inputs: a jump button and a reset button. When the jump button is pressed, the character will flap upwards briefly before falling back down due to gravity. This allows the player to move between the pipes as they move, as the player character's x position is locked. When a pipe is touched, the game will stop. The reset button can then be pressed to start the game again from the beginning. As the player passes through each pipe without losing, the score (using the FPGA seven-segment display) will increase by 1. On a new run of the game, the score is reset to 0.

## 4 Grading Rubric

Movement Functionality (20%) - When a player presses the jump button, the flappy bird moves up a bit, then is affected by gravity and falls down.

Obstacle Functionality (20%) - Obstacles are created and move from the right side of the screen to the left. Obstacles jump back to the right side of the screen once they move too far to the left.

Scoring Functionality (20%) - When a player successfully jumps over an obstacle, their score is incremented by one.

Game Over Functionality (20%) - When a player is hit by an obstacle or falls off the screen, the game pauses and the controller stops.

Score Display (15%) - The score will be displayed on the seven-segment display as the game progresses, and will be reset to 0 when a new game is started.

Reset Functionality (5%) - Reset button will allow players to start another game and reset the score.