Project Part 3 (Update)

Cohort Name: Five of a Kind

Cohort Description: We decided to go with five of a kind because the five-of-a-kind is the trump set in a game of poker played with wildcards. It is very rare but absolutely devastating - even beating out the infamous royal flush. This is metaphorical for our team being the ultimate set of individuals from the class.

Cohort Members:

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Source Repository: GitHub

https://github.com/HamzahDweik/DigitalLogicProject

Digital Communication: Discord & Microsoft Teams

Digital Technology: Edrawmax, IntelliJ, vscode

Project Idea: Flappy Bird

Project Description:

Our project will be a verilog written form of the 2013's popular 'Flappy Bird' mobile game. This is an arcade-style game in which the player controls a bird named Faby, who is constantly flying to the right. The player's task is to navigate Faby through the incoming pipe hurdles that have gaps placed at random heights which he must pass through. For every successful hurdle navigation, the player is awarded one point. Faby will automatically descend under the influence of gravity unless prompted into ascension by the player's tap of the touchscreen. A collision of Faby with either a pipe or the ground marks the end of the game, at which point the final score is displayed. The objective of the game is to score as many points as possible. A player's high score will be recorded so that it can serve as a goal for future attempts.

The implementation of this game will rely on a verilog programmed ALU that will calculate Faby's position due to gravity and speed. As Faby moves through each pipe, the score is tracked and updated as long as Faby's status remains "alive". The game will have three possible states, pre-game, in-game, and end-game. In the pre-game, the bird will be flying without any obstacles until the game starts. Once the start button is pressed, the game will transition into the in-game state where Faby's speed will slowly begin to ramp up, increasing the difficulty on the player. When this speed eventually reaches 0, the ALU will recognize that the game has ended and transition the game to its endgame state, displaying the player's final score and high score. The player will then have the option to play again.

The inspiration for this project choice originated from our desire to use an ALU for complex calculations in a way that would also appeal to our fellow students. What better way to do so than to reanimate a popular game that has since ceased to exist. Our implementation leaves much to be desired in terms of details at this current time but we hope to fill it in as we continue to unravel the art of digital logic and computer design. As we navigate the internal hurdles of the creation of an application using simulated hardware, we facilitate Faby's own navigation through his hurdles.