

EE271: User Manual for Flappy Bird

I. Definitions

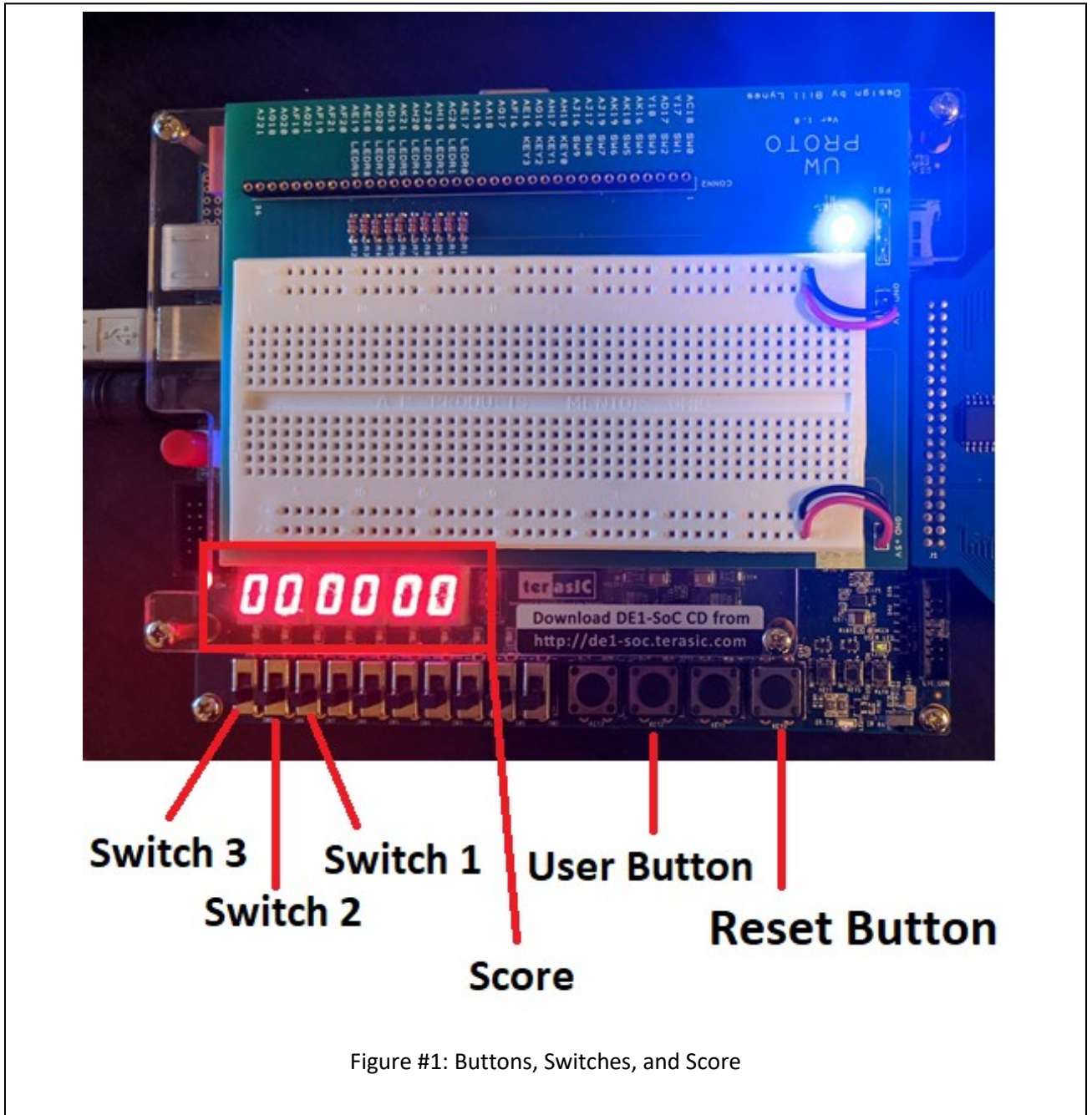


Figure #1 shows the external inputs of the system and the score. The functions of each element is described below:

- Reset Button: Press and release once to initiate the game. It is labeled KEY0 in the printed circuit board.
- User Button: Press and release once to make the bird fly (advance one position up). It is labeled in the printed circuit board as KEY2.
- Score: Shown in decimal format on the hexadecimal displays. The score starts at zero, and the maximum value is 999,999.
- Switches 1, 2, and 3: Used for entering cheat-codes into the game. The position shown in the image is referred to as the “down” position. By flipping the switch, one can put the switch into the “up” position. In the printed circuit board, switch 3 is labeled as SW9, switch 2 is labeled as SW8, and switch 1 is SW7. When the manual refers to a switch or cheat-code combination, the order will be Switch 3, Switch 2, and Switch 1. For example: the combination up, up, down means switch 3 is “up,” switch 2 is “up,” and switch 1 is “down”.

Figure #2 shows the two elements in the LED board that exist in the game.

- Pipe: These will appear on the right-side of the screen, and move to the left. If the bird collides with the pipes, the game is lost. If the bird goes through the hole, the score increases.
- Bird: This is the player. The goal is to go through the hole of the pipe. When the player presses the user button, the bird will “fly” and the red light will go one position up. The player can make only one movement per each movement made by the pipes. If the pipes move and the user did not press the user button, the bird will not fly and it will instead “fall,” so it will be one position below from where it was. The bird will always be in the left-most column of the LED board.
- Hole: The vertical spacing between pipes. The goal of the user player is for the bird to go through these holes, instead of colliding with the pipes.

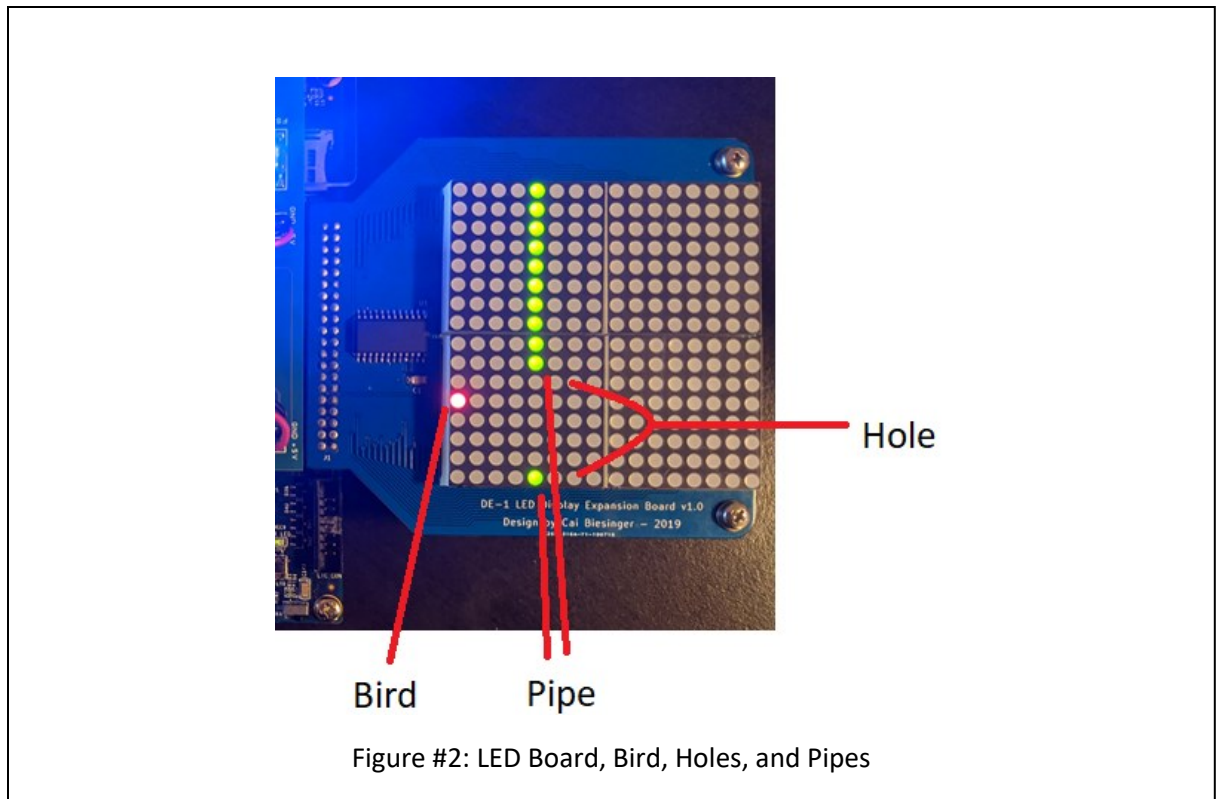


Figure #2: LED Board, Bird, Holes, and Pipes

II. Initiating the Game

The game is initiated by pressing and releasing once the reset button, labeled as KEY0 in the printed circuit board. The game will start immediately, and the bird will appear in the middle of the left-most column. At this point, the user can start manipulating the bird with the user button.

III. Playing the Game

Press the user button to make the bird fly one position up. If the user button is not pressed, the bird will fall one position. A press only counts for one “fly,” if the user desires to make another flying move, then the user must release the user button to press again. Holding the user button won’t keep the bird flying.

The size of the hole between pipes will shrink as the score of the player increases to increase difficulty, with a minimum spacing of 2.

The pipes will start with a big horizontal distance, and they will start appearing more frequently to increase difficulty as the score of the player increases with one exception.

The exception is when the holes take their minimum size, the horizontal distancing is adjusted to keep the game very hard but still possible to earn points without using cheat-codes. The location of the hole of each new pipe will be selected randomly by the system.

The speed at which the game is played will also start slow, and increase as score increases to increase difficulty, up to a maximum point.

The goal is to go through the holes between pipes. Going in between the pipes increases the score of the user by one. The game is lost when the bird collides with a pipe, falls out of the screen, or flies out of the screen. The final score will be displayed in the hexadecimal displays, the bird will disappear, and the pipes will stop moving once the game is lost.

When the user has lost, they can press and release the restart button to initiate a new game.

IV. Cheat Codes

There are two cheat codes implemented in this game.

- God-Mode: The combination Up, Down, Up activates god-mode. Within god-mode, the user cannot fly out of bounds and colliding with a pipe doesn't end the game. The user still gets points only by having the bird go through the holes. If the user has already lost, they can activate god-mode to continue the game: The bird will reappear in its previous location, the pipes will resume moving, and the score will update.
- Slow-Motion: The combination Down, Up, Down activates slow-motion. Within slow-motion, the game will move slower, making it easier for the user to play. The slow-motion speed is 2.5 slower than the maximum speed, and 1.25 times slower than the slowest speed (i.e.: 1.25 times slower in reference to the speed when the score is zero).