



EE/CS 172/130 Digital Logic & Design (DLD)

PROJECT PROGRESS REPORT

Project Title

Flappy Bird Game

Team Members

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Home Section

T-3

Project Description:

Our project is to develop a game, “Flappy Bird.” It's a single-player game and consists of a single input. The player must jump through the gap between two randomly sized hurdles, as shown in Figure 1. Every pass awards points, and the goal is to score as many points as possible and try to beat your personal best.

Player instruction:

Start the game. Now start with a jump and start the game. Prepare yourself for the first set of pipes to appear. Now every jump represents a wing flap. The faster you jump, the higher you go. And when you are not jumping, you move gradually downwards towards the ground. You have to jump so that your position stays in the middle of the pipes, and you pass through the gap between them. If you hit a pipe or the ground, the game ends. Find your rhythm for higher and lower pipes. It is important to determine when you need to go higher or drop, or else you will hit a pipe. Try not to go high. You can still bump into a pipe.

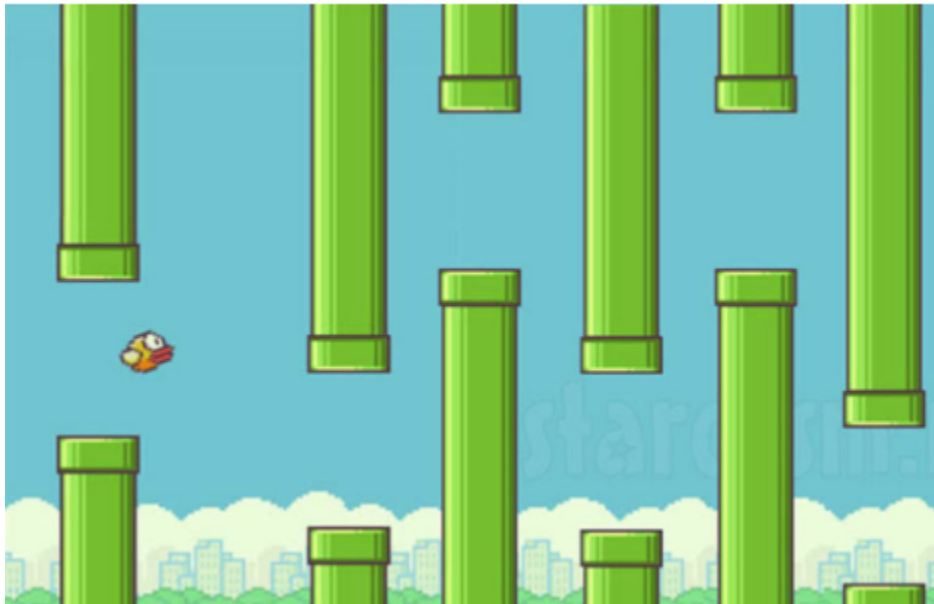


Figure 1 (A Sample game snippet)

Input implementation:

We will be using basys board's middle key (U18) for jump functionality, as it is the only input in our game. We may also use some other keys to reset the score or restart the game, but we haven't planned it for now.

Soft prototype:

Using our previous lab practices, we created a primary screen similar to the game. Our VGA output is shown in Figure 2.



Figure 2 (VGA output)

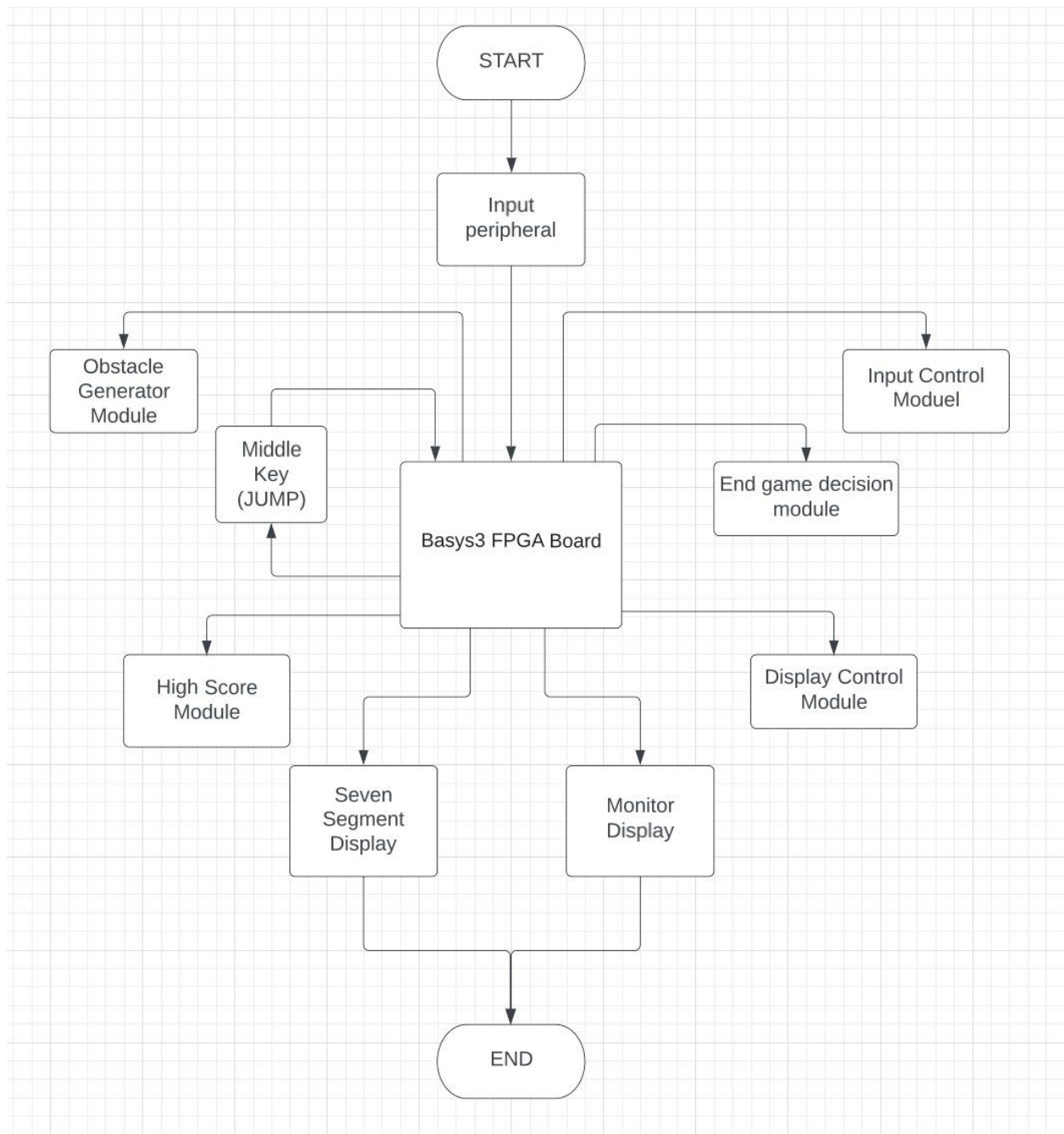
Concept and ideas:

First, we'll deduct the y-axis for the bird so that it keeps dropping as per the rules of the game, except when it receives a signal or tap to jump cause at that moment, we will add to the y-axis the same amount we were deducting before. The bird will stay at the same x-axis, but the poles will keep moving closer by subtracting their x-axis, and you will have to pass the bird as per the rules. The game will end when the coordinates of the pipe and the bird are exact or the coordinates are in the range of the pipe's coordinates. Also, the game will end when the y-axis of the bird goes to zero.

Other than that, we came across two plans for the game. We might just keep creating one pole at a time of random height (such as in Figure 2) so that you have to cross it just by dropping as low as you have to and not touching the ground or going high as up as you need to, this will decrease the difficulty of the game. Or we will continue with the same rules creating two random height poles leaving a gap between them and letting the player pass through the opening.

Now Monitor will display the game screen the way it is in figure 2, but we'll use seven segment display from the basys board to show the score of every hurdle crossed. We might display it over the screen once we finish a good working game.

System block diagram:



References

1. https://en.wikipedia.org/wiki/Flappy_Bird
2. <https://flappybird.io/>
3. <https://psmag.com/economics/flappy-bird-candy-crush-still-making-much-money-75048>

