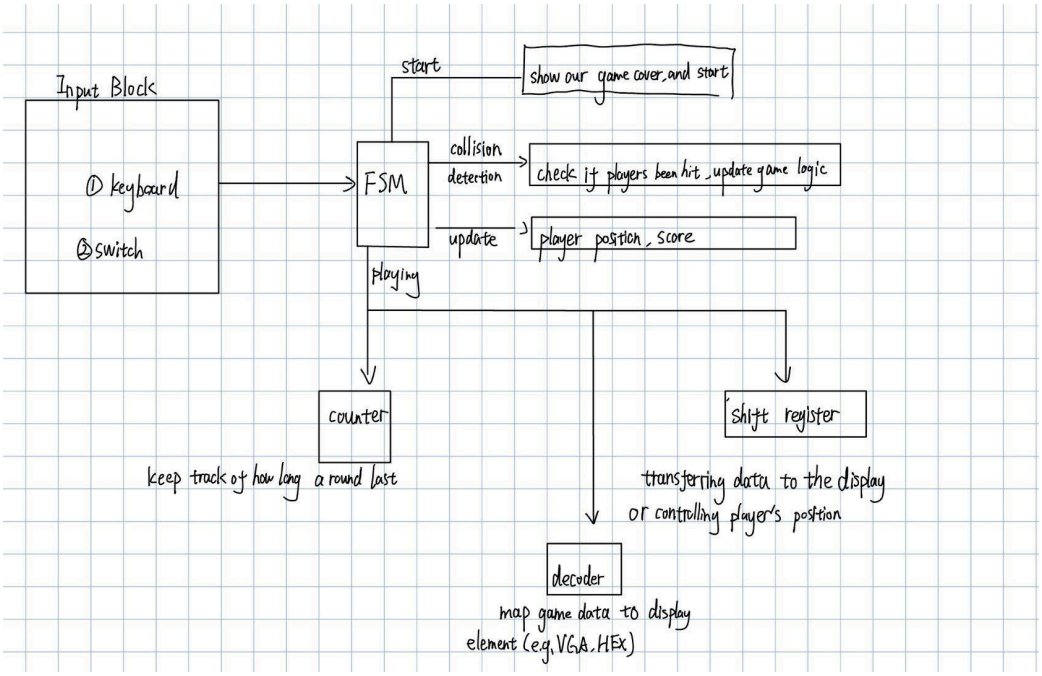
The BOSS of BALLS: A ECE241 Project

## Summary

This project features a two-player dodgeball game where players, controlled via keyboard, switches and the FPGA Board, can move vertically and shoot projectiles to hit their opponent. The game is displayed on a VGA board and DE1-SoC board, with logic and sprite movement managed through FSM, counter, decoders, and shift registers.

## Block Diagram




## Project Schedule

| Date | Objectives | Milestones |
|---|---|---|
| Nov 8~10 | ● Define game requirements and design specifics (player movement, projectile firing, scoring). | |

| | | |
|---|---|---|
| | • Research and review VGA display and HEX display integration. | |
| Nov 11~14<br>Milestone 1 | • Set up hardware (VGA and HEX display) and integrate basic input controls (keyboard and switches).<br>• Develop the FSM for basic game states (start, play, reset).<br>• Implement player movement and projectile firing. | • Player controls are working.<br>• Player movement and projectile firing are displayed on VGA. |
| Nov 18~24<br>Milestone 2 | • Implement collision detection for projectiles hitting players.<br>• Set up scoring logic and display scores on HEX display.<br>• Fine-tune FSM to manage game states based on scoring and collisions. | • Working collision detection and scoring.<br>• Scores display correctly on HEX displays. |
| Nov 25~28<br>Presentation | • Conduct comprehensive testing of all components (controls, game logic, display).<br>• Debug any issues with sprite movement, collision detection, and display.<br>• Finalise the project for presentation, ensuring smooth gameplay and reliable performance. | • Showcase the complete game with functioning controls, scoring, and display. |

## Division of Work

| Date | YiMin Chu | Zhongyi (Miles) Wang |
|---|---|---|
| Nov 8~10 | • Define game requirements and design specifics (player movement, projectile firing, scoring). | • Research and review VGA display and HEX display integration. |
| Nov 11~17<br>Milestone 1 | • Set up hardware (VGA and HEX display) and integrate basic input controls (keyboard and switches).<br>• Develop the FSM for basic game states (start, play, reset). | • Implement player movement and projectile firing.<br>• Develop the FSM for basic game states (start, play, reset). |
| Nov 18~24<br>Milestone 2 | • Implement collision detection for projectiles hitting players.<br>• Fine-tune FSM to manage game states based on scoring and collisions. | • Set up scoring logic and display scores on HEX display.<br>• Fine-tune FSM to manage game states based on scoring and collisions. |
| Nov 25~31<br>Presentation | • Conduct comprehensive testing of all components (controls, game logic, display). | • Debug any issues with sprite movement, collision detection, and display. |

| | | |
|---|---|---|
| | • Debug any issues with sprite movement, collision detection, and display. | • Finalise the project for presentation, ensuring smooth gameplay and reliable performance. |