

# Spaceship Battle Game

Mathew Plaza, David Smith, and Tao Wang  
ECE 4710

# Game Rules

- 2 players each control a ship
- Each player moves horizontally and fires towards the other
- The goal is to hit the other player and dodge their shots

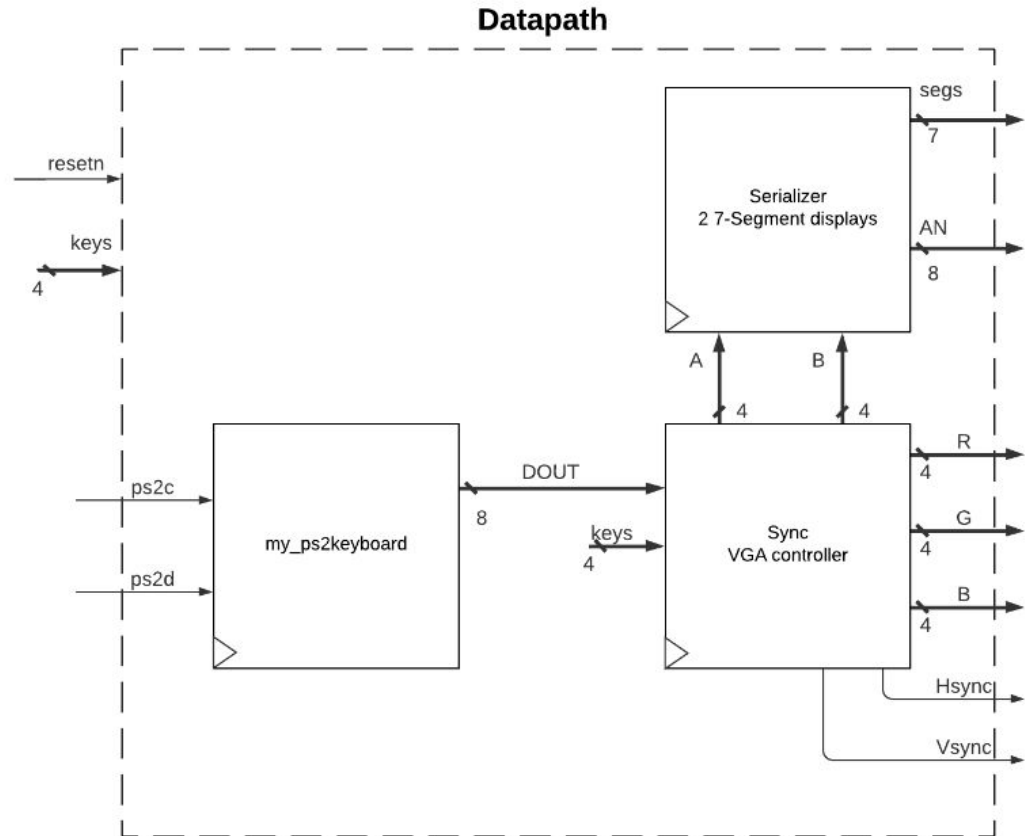
# Hardware Interfaces

- Nexys A7 board: Contains the game hardware VHDL implementation
- VGA Display : VGA interface to display game
- Keyboard: PS/2 keyboard interface for Spaceship movement
- LEDs: Display scores on 7-segment display

# Datapath Diagram

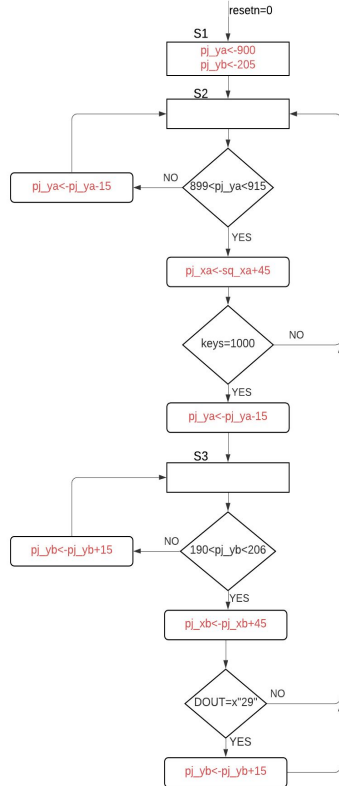
Composed of 3 blocks

1. my\_ps2keyboard: passes inputs from keyboard to the game
2. Sync: contains game FSMs and VGA interface
3. Serializer: Outputs score to 7 segment LED display

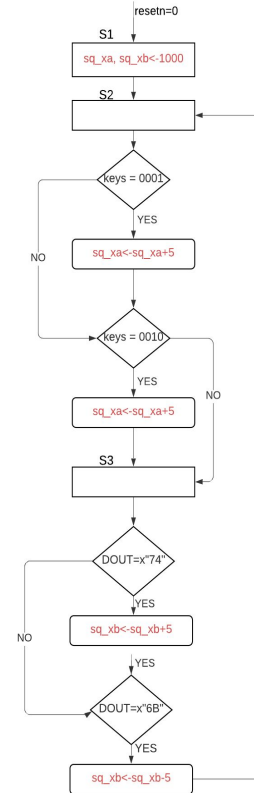


# FSM Block Diagram

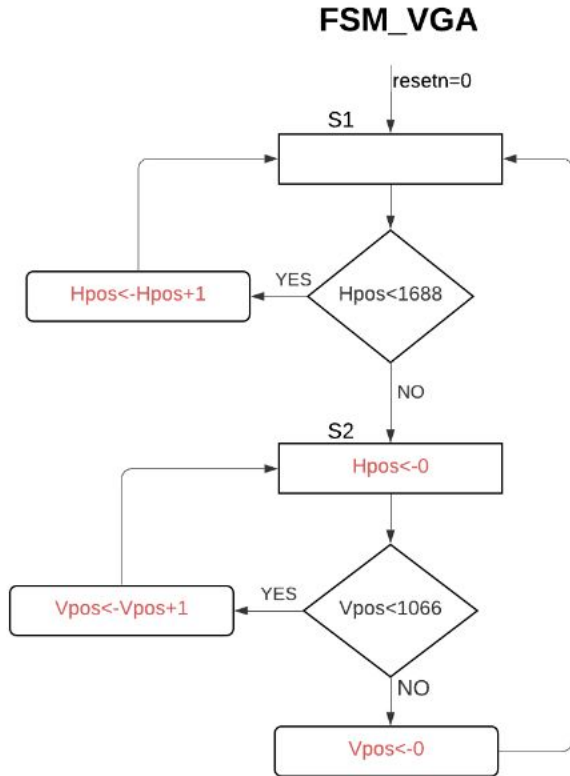
FSM\_projectile



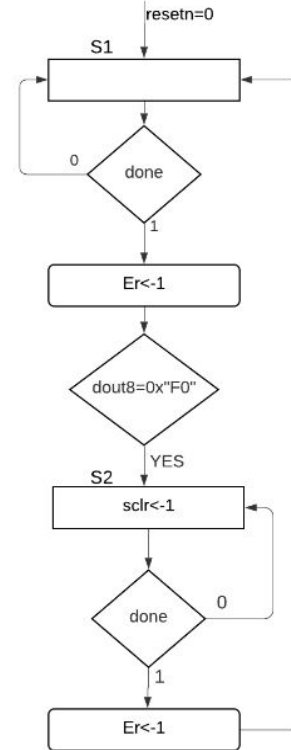
FSM\_move



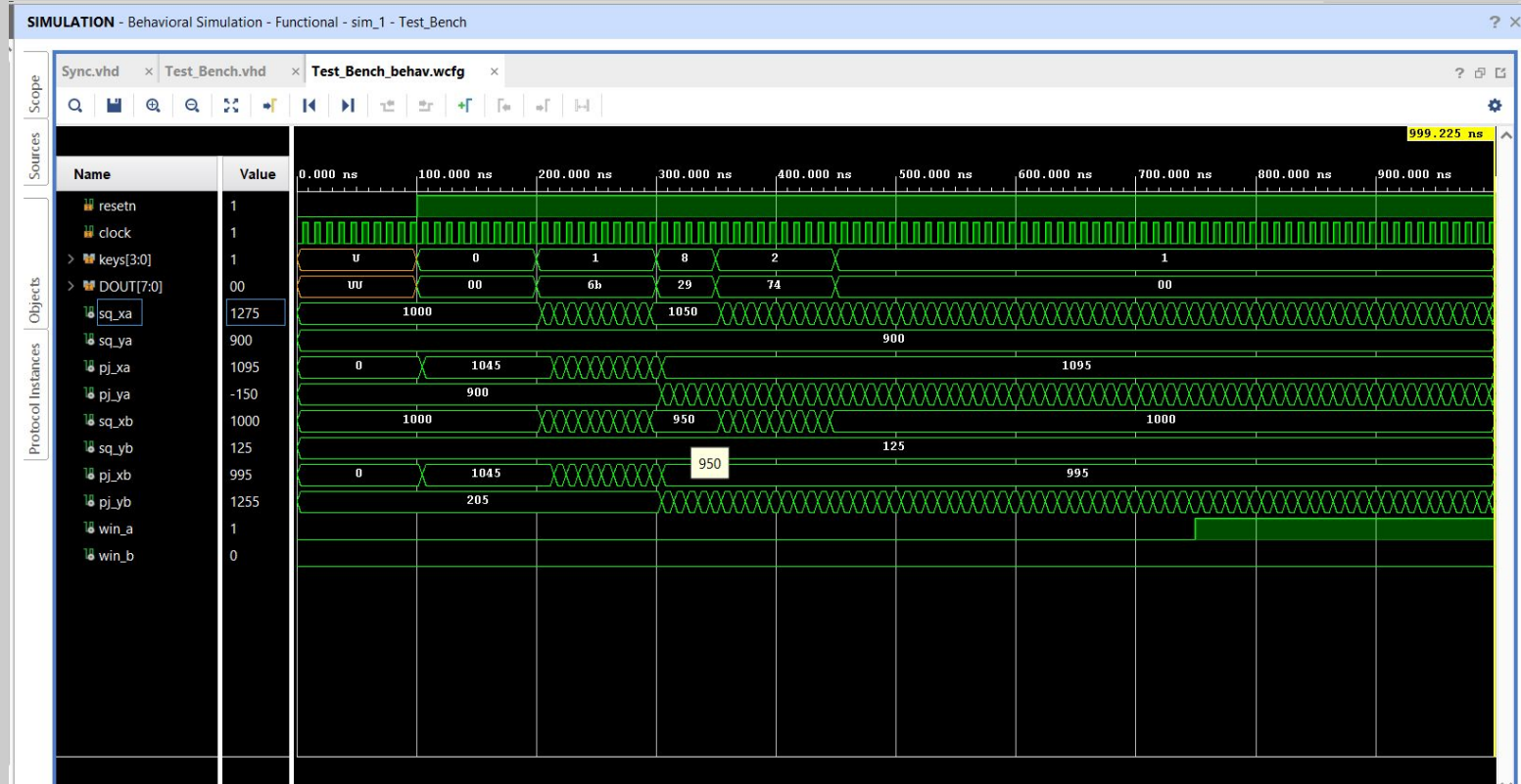
# FSM Block Diagram



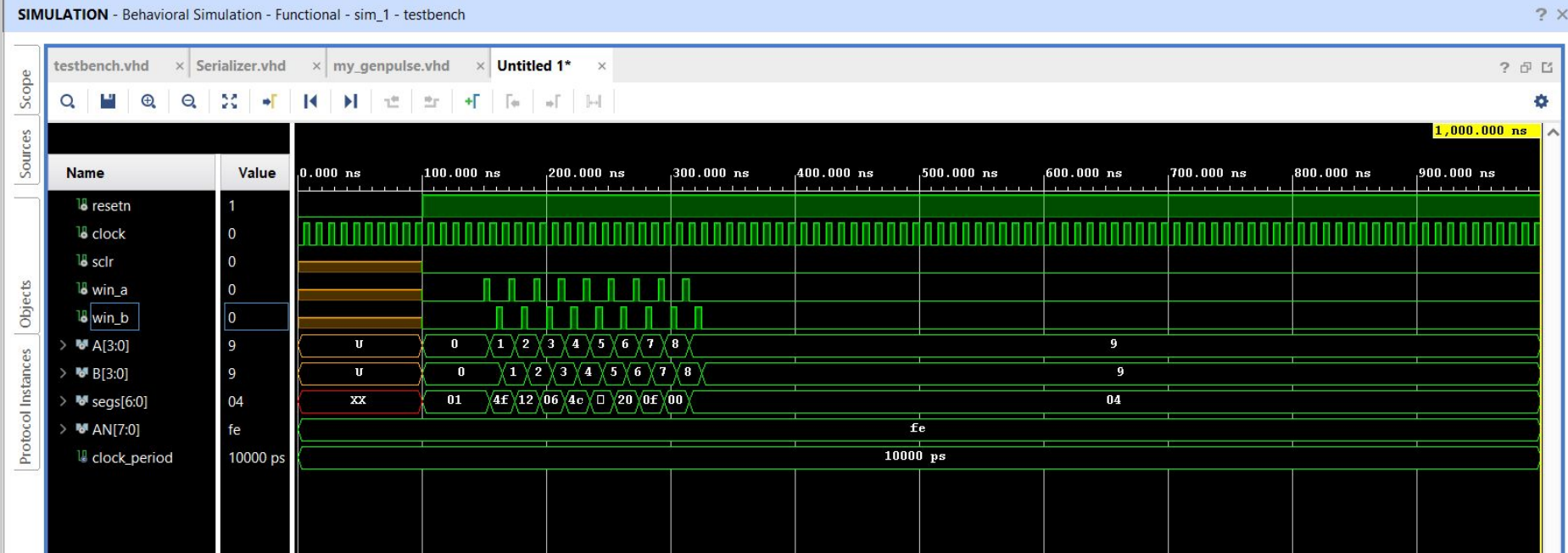
**FSM\_myps2keyboard**



# Movement Timing Simulation



# Score Timing Simulation





# Demonstration

# Potential Future Improvements

- Single player mode
- Add sound effects
- Display start screen
- Implement a second controller
- Use more advanced art

Questions?