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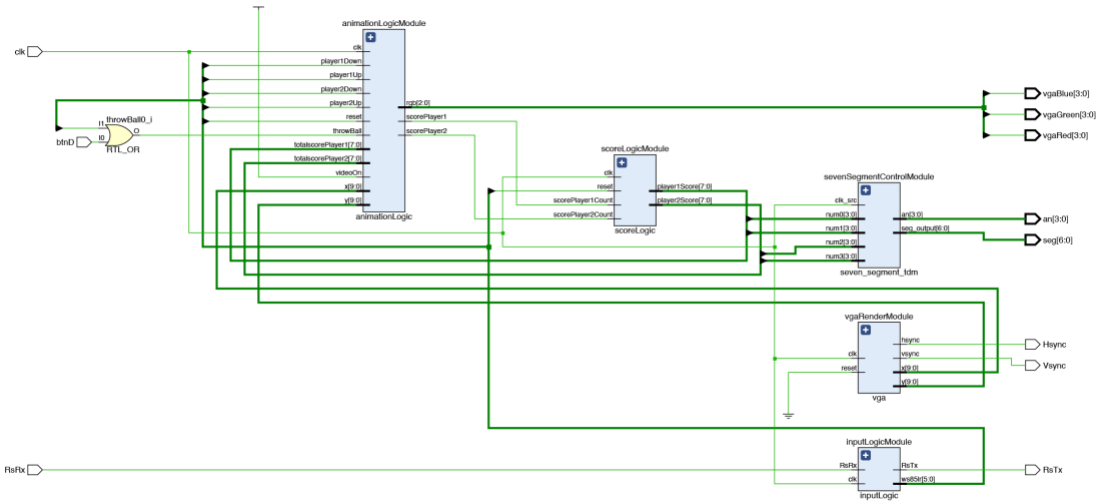
Pong Game



Module description

- animationLogicModule : This module is the heart of the calculation and processing of actions in the game, the main duties are as follows.
    - Process the movement of the paddles by importing the user's movement data. Then, adjust the coordinates of each side's paddle according to the specified speed.
    - Process the movement of the ball by separating it into x and y velocities. When an impact occurs in any direction, change the velocity in that direction to the opposite direction. Take the obtained velocity to calculate the next coordinates of the ball.
    - Process each side's winnings by considering the coordinates of the ball. If it goes past one side of the paddle, it means the other side scores a point. Bring the ball back to the center and wait for a new ball to be thrown.
    - Process the display (color) of each pixel on the screen based on the XY coordinates. If there is a ball at that location, display the color of the ball. If the position has a paddle, display the paddle color; otherwise, display the background color, etc.
- scoreLogicModule : This module imports data such that any player scoring will increase their respective score. The data is output as BCD (Binary Coded Decimal) with 2 digits for each player's score. If reset, both scores will be set to 0.
- sevenSegmentControlModule : This module will display the players' scores in BCD format on seven segments.
- vgaRenderModule : This module is for rendering via VGA, specifying rendering with HSync, VSync, X, and Y.
- inputLogicModule : This module plays a crucial role. Its function is to receive values from the UART and determine whether the W, S, 8, 5, L, R keys are pressed or not. Subsequently, it will transmit the signal back. Each button has the following meanings:
    - W: Player 1 (Left Paddle) Move up.
    - S: Player 1 (Left Paddle) Move down.
    - 8: Player 2 (Right Paddle) Move up.
    - 5: Player 2 (Right Paddle) Move down.
    - L: Throw ball in the next game.
    - R: Reset the game.