ELEC 204 Project Proposal

Rock-Paper-Scissors

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Description of the targeted task

Rock-Paper-Scissors is a [hand game](http://www.wikizero.biz/index.php?q=aHR0cHM6Ly9lbi53aWtpcGVkaWEub3JnL3dpa2kvSGFuZF9nYW1l) usually played between two people, in which each player simultaneously forms one of three shapes with an outstretched hand. These shapes are "rock" (a closed fist), "paper" (a flat hand), and "scissors" (a fist with the index finger and middle finger extended, forming a V). A [simultaneous](http://www.wikizero.biz/index.php?q=aHR0cHM6Ly9lbi53aWtpcGVkaWEub3JnL3dpa2kvU2ltdWx0YW5lb3VzX2dhbWU), [zero-sum game](http://www.wikizero.biz/index.php?q=aHR0cHM6Ly9lbi53aWtpcGVkaWEub3JnL3dpa2kvWmVyby1zdW1fZ2FtZQ), it has only two possible outcomes: a draw, or a win for one player and a loss for the other. In this version of Rock-Paper-Scissors, one of the players is the FPGA board itself.

Components needed for the task

In this implementation, we need three switches (for rock, paper and scissors), and two buttons (to confirm the switch decision and to reset the game). The objective is to reach 3 points.

Approach for the task

After the user selects which move they will make, the user needs to press the confirmation button. When pressed, this button compares the user input with the FPGA board's random input. The users’ score will increment or decrement depending on the move that the FPGA board will make. This FPGA boards’ random number is an integer, defined between zero and two, increments itself every clock cycle. When it reaches two, its cycles back to zero. To win the round, we compare the random number with the users' selected input. Whoever reaches the 3 points first will win the game.