Homework 3: Light the Candles
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1 Background

For this assignment, a game was created to be played on the development board. The goal of the game is for the player to light all the candles, represented by the 8 LEDs on the board just above the switches, while they are being pseudo-randomly turned off.

The game starts off with the player pressing the RESET button (a.k.a. BTN_SOUTH) just below the rotatory knob.

The player is placed initially at a position 0.

The player may light the candles by jumping on them. This is done using the BTN_NORTH button on the board just above the rotary knob. A player may jump at the current position by setting the switches to zero and pressing BTN_NORTH. Any desired horizontal movement in the jump to another position is provide by the four switches which indicate a value from 7 to -8, in binary two's compliment.

Once a candle is lit, the player may jump again jump on the same location (using 0) or to another location using the delta provide by the switches.

However, the candles that were lit will continually go out at random and must be relit. To be specific, a candle may at random go out at the same time the player jumps. Secondly, note that there is no direct indicator to where the player is; so it is up to the player to keep track.

2 Implementation

Three discrete modules were used to implement the game: `igniter`, `extinguisher` and `candle_controller`. These submodules were connected and debounced using a top level module that may be visualized with the schematic configured as a block diagram in Figure 1.

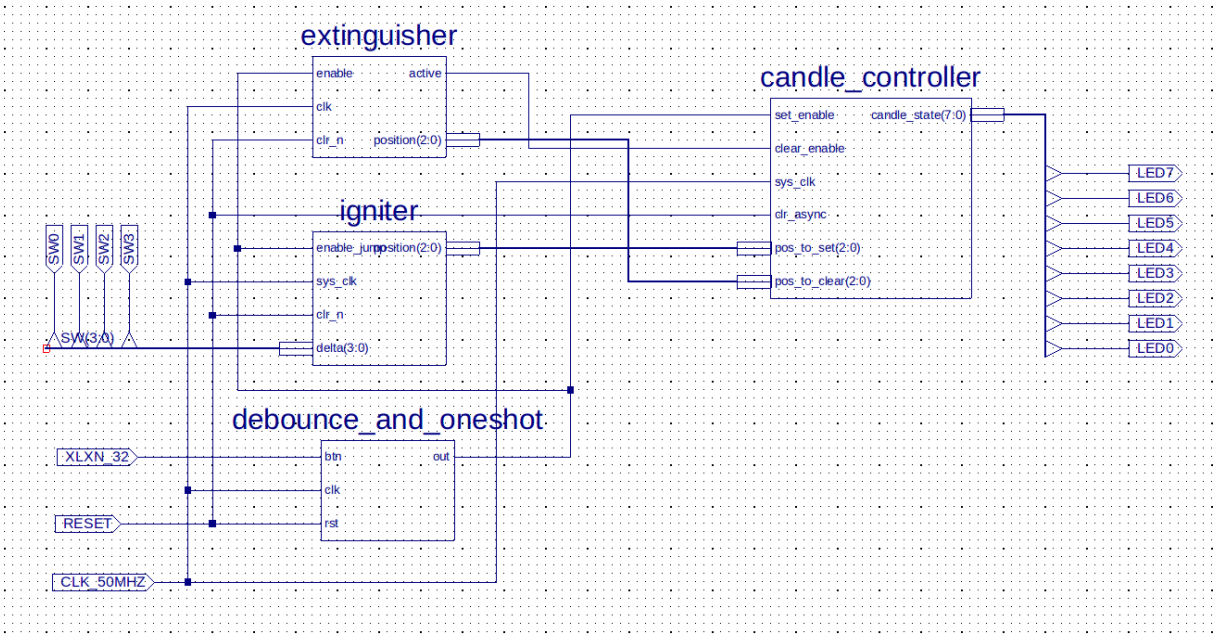

Figure 1: Schematic of the Implementation of the Game