ELC 5396 02 Class Report 3

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Summary

The purpose of the project was to implement led drivers that blink four LEDs at specific rates given in ms. The design for this system uses the provided vanilla fpro system hardware and modifies the software implimentation of the vanilla system to make four LEDs blink at 800ms, 400ms, 200ms, and 100ms respectively. The code for this project can be found in GitHub at https://github.com/elizabethkooiman/Kooiman_SoC.

This design started by importing the HDL code provided with the vanilla system developed by Dr. Chu from the textbook. He sets up the bridge, mmio system, and intantiates various basic modules including switches, LEDs and more. The required .sv and .svh files were imported to the Vivado project along with the required constraints file also provided by Dr. Chu. The Vivado IP for a Microblaze MCS CPU was input into the project. The bitstream was generated, and once this was done it was used to generate an XSA file to describe the hardware implemented. Then, moving to the Vitis IDE, a platform project was created based off the previously generated XSA file. This project was built, and then an application project was built on top of the system as a empty cpp application. Dr. Chu also provided basic implimentation files in cpp and header files to set up the basic system. These files were added to the application project as sources. Then, the main system vanilla test file was modified to implement the blinking LEDs as required by the problem.

Results

The LEDs successfully turned on and blinked at the specified intervals as expected. This can be seen in the video attached in the GitHub repository.