Bowei Zhao

a) Does your design work? What works and what doesn't?

My design works per the specification for the most part except that it did not implement the ability to increment/decrement the brightness counter by holding. Every other part of the specification has been implemented.

The following are what the physical buttons and seven-segment displays coorelate to:

KEY0: Up Brightness Button

KEY1: Down Brightness Button

KEY2: Toggle (Run/Freeze the Timer)

HEX5: Hundred Seconds place Timer

HEX4: Ten Seconds place Timer

HEX3: One Seconds place Timer

HEX2: $1/10^{th}$ Seconds place Timer

HEX1: Brightness Count Upper Digit

HEX0: Brightness Count Lower Digit

b) Extra resources, libraries

The project utilizes past modules from Digital Design 1 most of which were written by me with some portions given by the professor of the class. One module called "keypressed.v" was used that was created by Professor Thweatt for button debouncing and that was used as well.

The other modules and files that were used are self-contained in the archive and so do not require special needs to compile and run as they have been added correctly in the Linux file system.

c) Short description of design decisions

The design choices I utilized were to modularize the project into different state machines. The first state machine was used to handle the counter solely and display the digits on the seven-segment display. This handled the freeze and run states as well for when the TOGGLE button was pressed. The next state machine was used for the brightness counter and performed the actions of incrementing/decrementing the count of the brightness when the UP or DOWN buttons were pressed.