Lab 7

Title: Storing and Moving Text
Date: 7/10/2018

Procedure:
The project this time around consisted of a block ram, a lookup table, and a state machine for inputting and outputting text. Text was placed into the machine from the switches of the basys board on the press of a button. Each memory slot was to be the proper size to contain one letter, and memory had to be accessed both as read and write, with the two functions being separate.

Results:
The program created stored an index to insert text into memory, as well as an index for reading it. The index for reading would increment with a clock cycle, cycling from zero to the current write address. The write address was incremented each time a letter was input, so that memory could be read only from areas that had been written to. A reset button placed the write address back at zero, and reset the values stored in memory to null values.

The interface for the program consisted of switches to select a letter to input, a button to reset memory, a button to input the current letter into memory, and a button to preview the current letter on the display. Once a letter had been input into memory, it would scroll across the 7 segment display after the previous letters that had been entered until the reset button was pressed.

Summary/Conclusion:
This project was relatively straightforward with one caveat. A button sampler had to be implemented to prevent data from being entered improperly by the buttons. Further, instead of a state machine as detailed in the lab report, it was more effective to implement different stages of data entry with different signals from the button, as in just pressed does one thing, while having been pressed or just released does another. It was interesting to experiment with giving one button three different functionalities.