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Project 3 Report

**Description**: The project was about encoders and decoders. The first main idea was to have an encoder with 8-bit inputs and 3 outputs. Note that only 1 bit input value would equal “1” and everything else would be “0”, so then the output would equal a binary value of the number from input. For example, if the input was, “01000000,” the output would be “110.” The second main idea was to have a decoder, which would have 3-bit inputs and 8 outputs. The decode had the same idea as the encoder, but had the input values switched to outputs and the output values switched to inputs. The last main idea was to have a function called “EncDec,” which would have 8-bit inputs and 8-bit outputs. So, if the input equaled a value of “00100000” the output would also be “00100000.”

**What I Have Done:** In this project, I basically copied down word to word the Verilog code and test bench code from the pdf provided from beachboard. Towards the end, I created a 8-bit input and 8-bit output, with only 1 bit passed through each input and output. This Is significant because it allows for easier understanding of each bit passing through since you just count to which bit is active, equaling the value of the input. I then demonstrated this on my NEXYS 3 board, which showed the simulation of the code in action. As I set 1 switch out of 8 active, the led in front of that switch would turn on, since the switches were the inputs and the LEDs the outputs. If I ever set more than 1 switch active at a time, the LED would immediately go to the LED 0, to let the user know to only pass 1 bit at a time.