DATE: February 23, 2007
TO: CENG 244 Students
FROM: Elaine Linde
SUBJECT: Laboratory #6 – Keypad Encoder/Decoder

Preliminary Work:
(1) Understand the logic circuit shown below that uses a keypad, a 74LS147 encoder and 4 NOT gates to implement the BCD code. The additional logic circuitry uses the zero key to enable or disable (“blank”) the display. All outputs from the keypad will be logic 1 when the corresponding key is NOT pressed. Only when a particular key is actually pressed will the output for that key become logic 0. The function table for the encoder is in the datasheet found at http://gauss.sdsmt.edu/shop/.

(2) Understand the logic circuit above that uses a 74LS48 decoder and a MAN74A 7-segment LED-display (found at http://gauss.sdsmt.edu/shop/datasheets/misc/led/man74.pdf) to display BCD code on the LED-display.

(3) Note that NC on the data sheets means Not Connected.

Experimental Work:
(1) Verify proper functionality of your circuit from Part 1 of the Preliminary. Connect the BCD code to 4 LED’s.
(2) Connect part 2 to part 1 of the Preliminary and verify proper functionality of your circuit.

Conclusion:
(1) Document and discuss your findings. In particular explain how key “zero” controls the way the digit zero gets displayed.