

ECE 2140 – Design of Logic Systems I

Experiment 8 – Seven Segment Decoder

Equipment and Parts required:

- ⤴ 1 DIP Switch
- ⤴ 1 DC Power Supply
- ⤴ 1 Digital Voltmeter

Common Cathode
⤴ 1 BCD-to-7-Seg. Decoder (7448)
⤴ 1 7-segment Display (HDSP-5503)

** Notice that if you look in your parts kits, you will see the NTE3079 common cathode display. However, the datasheet for that part is not as descriptive as the one that is posted under “Links”, so please use the posted one. The operation for both parts is the same anyway.

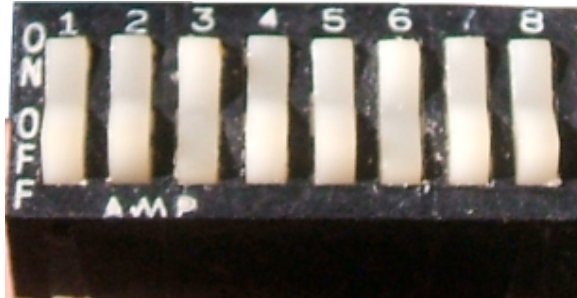
- 1. Find datasheets and specifications**
- 2. Fill out the truth table**

Find out how a 7-segment decoder operates from the data sheet, and fill out the following truth table:

Input		Output						
Decimal	Binary	a	b	c	d	e	f	g
	0000							
	0001							
	0010							
	0011							
	0100							
	0101							
	0110							
	0111							
	1000							
	1001							

3. Connect a DIP Switch to the input ports of the BCD-to-Seven-Segment Decoder

Connect four contacts of a DIP switch (note that there are 8 contacts) to the input side of 7-segment decoder, and the other side of the contacts to the ground. Refer to this diagram to determine how to operate the DIP switch:



4. Connect the 7-segment display to the output ports of the BCD-to-Seven-Segment Decoder

Connect the corresponding output ports to the 7-segment display.

5. Connect power supply

Adjust the power supply at 5 Volts and set the current limit to maximum. Then connect the power supply to Vcc and Gnd bus.

6. Test your circuit

Change the configuration of the DIP switch, and test if the circuit displays all 10 different digits.

Make sure to show your GTA your working lab to receive credit.