



Faculty of Engineering and Technology  
Department of Electrical and Computer Engineering

ENCS 2110

**EXP 6 Post-Lab:** Sequential Logic Circuits using Breadboard and IC's

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**Section:** 10

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- ✓ What is the appropriate display type (common anode/common cathode) that must be used with 7447 display decoders? Explain your answer.

*The 7447 BCD to 7-segment decoder/driver is designed to sink current, not source it. That means it pulls the output pins low (0) to turn on a segment.*

*So, the correct display type is:*

*Common Anode, In a common anode display, all anodes (+) are tied together and connected to Vcc (typically +5V).*

*Each segment is lit by pulling its cathode (-) low, which is exactly what the 7447 does.*

*If you used a common cathode display, the 7447 wouldn't work properly because it can't source current to turn on segments.*

Assuming that the turn-on voltage for the LEDs is 1.7v, what is the proper value of the resistors to be connected between the 7447 decoder and the seven-segment display, to limit the current in the LED segments to 10mA?

$$V_{LED} = 1.7V$$

$$R = \frac{5V - V_{LED}}{I} = \frac{5 - 1.7}{0.01} = 330\Omega$$

- ✓ Assume that the resistors provided in the lab are 220Ω. What would the current flowing into the LEDs be?

$$R = 220\Omega$$

$$I = \frac{5V - V_{LED}}{R} = \frac{5 - 1.7}{220} = 0.015A$$