

-ELEC 2220 Homework #2
(Due Wednesday, May 26)

- A. Four light-emitting diodes (LEDs) are designated as LED0, LED1, LED2, and LED3. These LEDs are illuminated by applying a voltage to them corresponding to "logic 1", and darkened by applying a voltage to them corresponding to logic 0. A computer generates a 4-bit number $A = a_3a_2a_1a_0$. Design and sketch a digital logic circuit that will illuminate LED0 when $A=0100$, LED1 when $A=0101$, LED2 when $A=0110$, and LED3 when $A=0111$. For all other values of A , the LEDs should be dark. You may use logic gates and/or decoders for your circuit. Clearly label all LEDs and signal lines.
- B. Do the following "number format conversion" problems, as a review of number systems from ELEC 2200.
- Convert the following binary numbers into decimal and hexadecimal.
 - 1101010.011
 - 11101.1011
 - Convert the following hexadecimal numbers into binary and decimal.
 - 4AF.2E
 - B32D.11
 - Convert the following decimal numbers into binary and hexadecimal.
 - 235.25
 - 1077.375
 - Convert the following decimal numbers into 8-bit signed binary (2's complement number system).
 - 89
 - +110
 - 120
 - Convert the following decimal numbers into 16-bit signed binary (2's complement number system).
 - +456
 - 21205
 - Convert the following signed binary numbers (2's complement number system) into decimal.
 - 10110101
 - 01010101
 - Write the list of ASCII codes (hexadecimal) representing the following character string (including the "quotes").
"This is a test?"
 - Convert the following decimal numbers into packed and unpacked BCD form.
 - 1000
 - 456