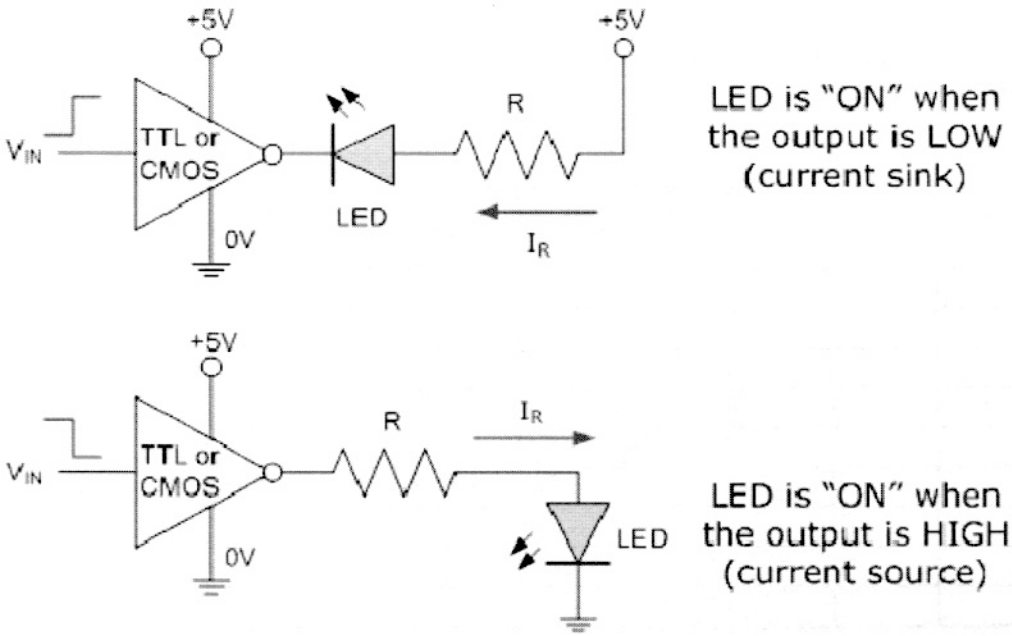
H112A DIGITAL ELECTRONICS

LEDS AND 7-SEGMENT DISPLAYS PRACTICAL EXERCISE

1. Driving an LED using an inverter



The 74LS04 can "sink" a maximum current of 8mA when the output is logic 0. (top circuit)

The voltage drop across the LED (V_F) when it is conducting is approximately 2V. Use this value of V_F to find the current in the circuit if R= 470Ω .

I =

Construct the circuit and test:

LOGIC INPUT	LED "ON" OR "OFF"

Explain the operation of the circuit:

2. 7-segment display

The white socket on the 7-segment display box corresponds to the decimal point (DP) and the remaining sockets correspond to segments a to g. A logic 1 input turns the corresponding segment "ON".

Complete the table below and then test the display by connecting the inputs to logic switches on the logic trainer.

Digit	dp	a	b	c	d	e	f	g	hex
0									
1									
2									
3									
4									
5									
6									
7									
8									
9									

Comments:

1. What are the limitations of 7-segment displays?

2. What are the advantages of LCD displays in battery operated equipment such as calculators and watches?

3. What other display technologies are in common use besides LEDs and LCDs?