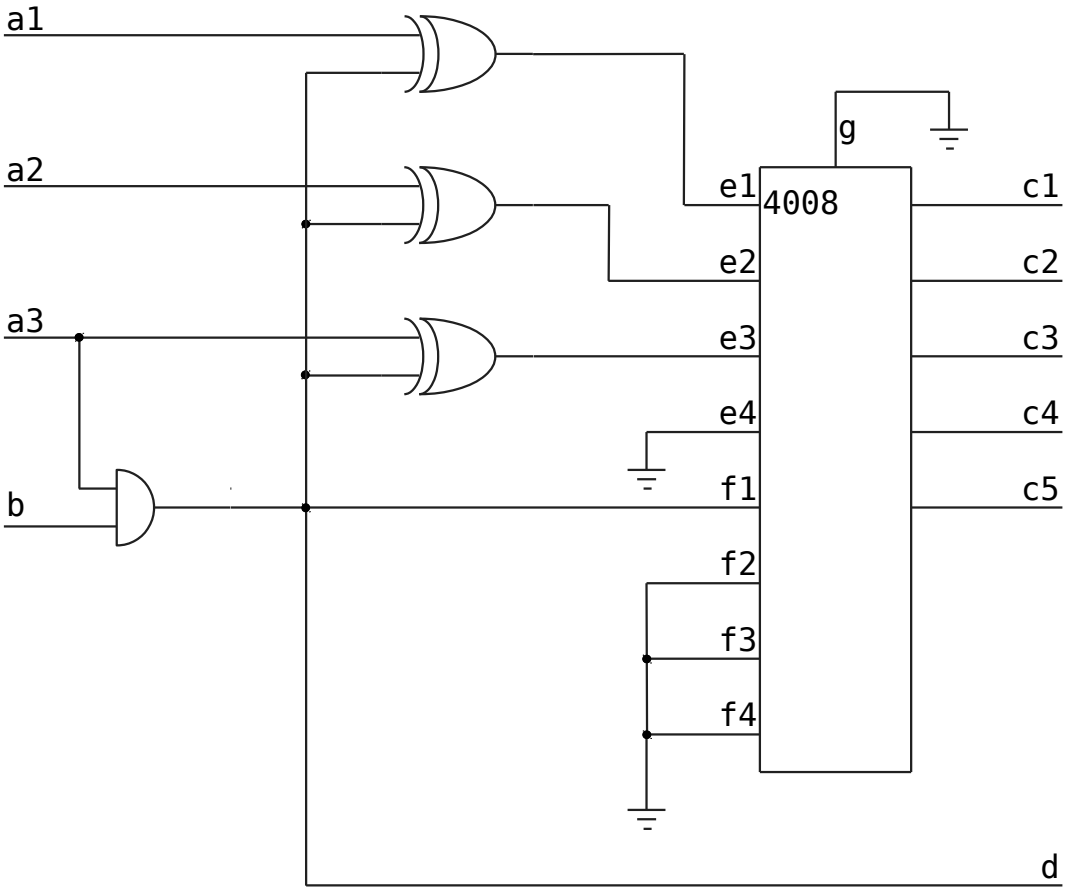
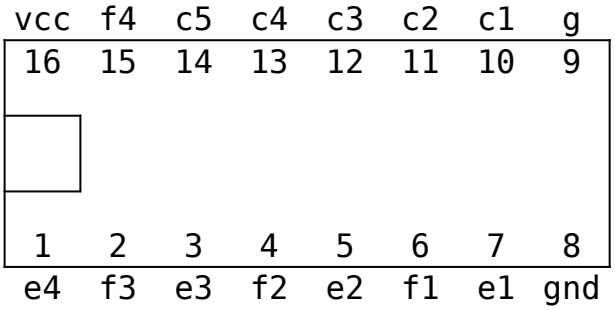
Digital circuits session number 5 2024

Consider the circuit which has been represented as below



As in regard to the integrated circuit named 4008, the pin diagram is shown below



Make a system by making the said circuit and by conneting the inputs and outputs as per the instructions which shall be given in the laboratory.

Let the inputs named a1, a2 and a3 be used to input a binary pattern into the system. Let a1 be the most right bit of the said pattern.

Use the said system to do the following

- consider all the binary patterns which might get applied at the inputs named a1, a2 and a3. Apply each of the said patterns and check the status of the outputs of the system. Write your observations into two tables as the ones shown below.

Table number one is for the case when the input named b is at logic zero.

a3	a2	a1	state of the LED	content shown on seven segment display

Table number two is for the case when the input named b is at logic one.

a3	a2	a1	state of the LED	content shown on seven segment display

Questions

- what does this system seems to be doing?
- what is the role of the input named b?
- under which conditions the AND gate, in this system, produces logical one at its output?
- what is the role of the LED in this system?
- when storing a binary pattern might it be needed to store the type of the representation associated with the said binary pattern?