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ECE 2300L LAB # 4

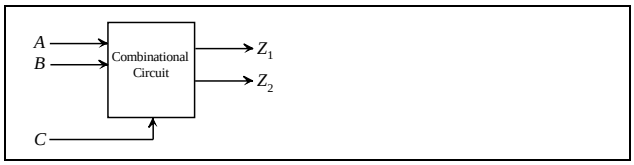
MATERIALS REQUIRED: Protoboard, DIP switches, Logic gates as needed, Decoder, resistors, and LEDs.

Prelab:

1. Design a circuit using a decoder or decoders and external gates to implement Z_1 and Z_2.

Design a combinational circuit using a decoder and logic gates to implement the function depicted below.

If $C = 0$, Z_1 follows B and $Z_2 = A + B$.



If $C = 1$, $Z_1 = A + B$ and $Z_2 = AB$. Assume that the decoder output is HIGH when enabled by E = 1.

LAB: Implement the above circuit using a decoder (74LS138). Demonstrate the lab using switches and LEDs.

POSTLAB:

Draw a logic diagram using a generic decoder and a minimum number of external logic gates to implement
The function, F (A,B,C,D) = SUM (0,1,2,5,9,12,14)
Use only two-input logic gates.