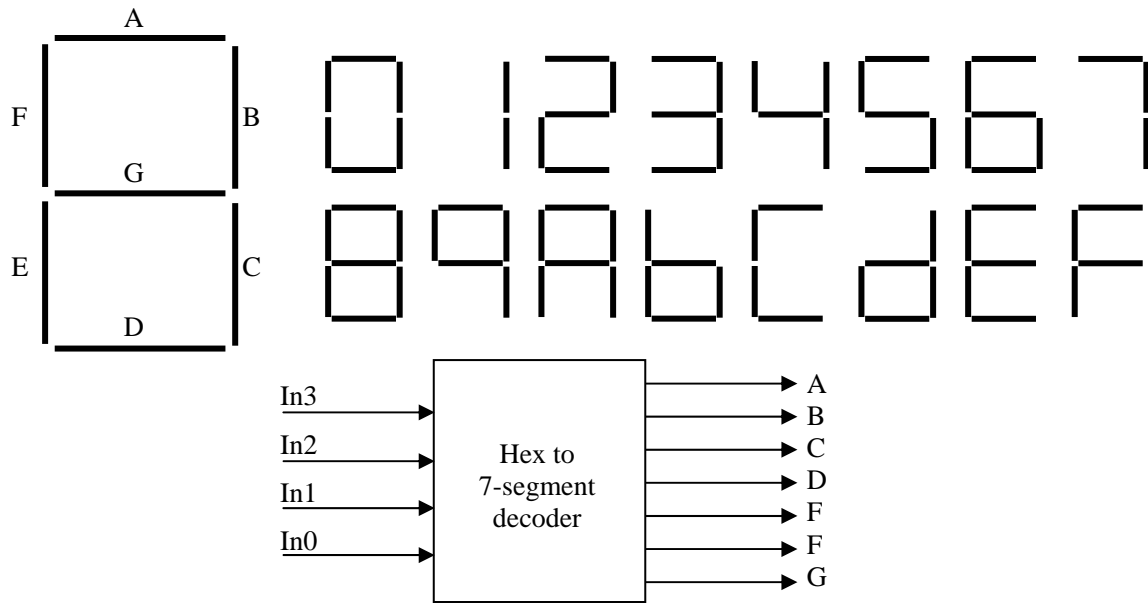


HEX TO 7-SEGMENT DECODER



In3	In2	In1	In0	A	B	C	D	E	F	G
0	0	0	0	1	1	1	1	1	1	0
0	0	0	1	0	1	1	0	0	0	0
0	0	1	0	1	1	0	1	1	0	1
0	0	1	1	1	1	1	1	0	0	1
0	1	0	0	0	1	1	0	0	1	1
0	1	0	1	1	0	1	1	0	1	1
0	1	1	0	1	0	1	1	1	1	1
0	1	1	1	1	1	1	0	0	0	0
1	0	0	0	1	1	1	1	1	1	1
1	0	0	1	1	1	1	0	0	1	1
1	0	1	0	1	1	1	0	1	1	1
1	0	1	1	0	0	1	1	1	1	1
1	1	0	0	1	0	0	1	1	1	0
1	1	0	1	0	1	1	1	1	0	1
1	1	1	0	1	0	0	1	1	1	1
1	1	1	1	1	0	0	0	1	1	1

The following minimized SOPs were obtained from K-maps:

$$A = In2'In0' + In3'In1 + In2 In1 + In3 In0' + In3'In2 In0 + In3 In2'In1'$$

$$B = In2'In0' + In2'In1' + In3'In1'In0' + In3 In1'In0 + In3'In1 In0$$

$$C = In3 In2' + In1'In0 + In2'In1' + In3'In0 + In3'In2$$

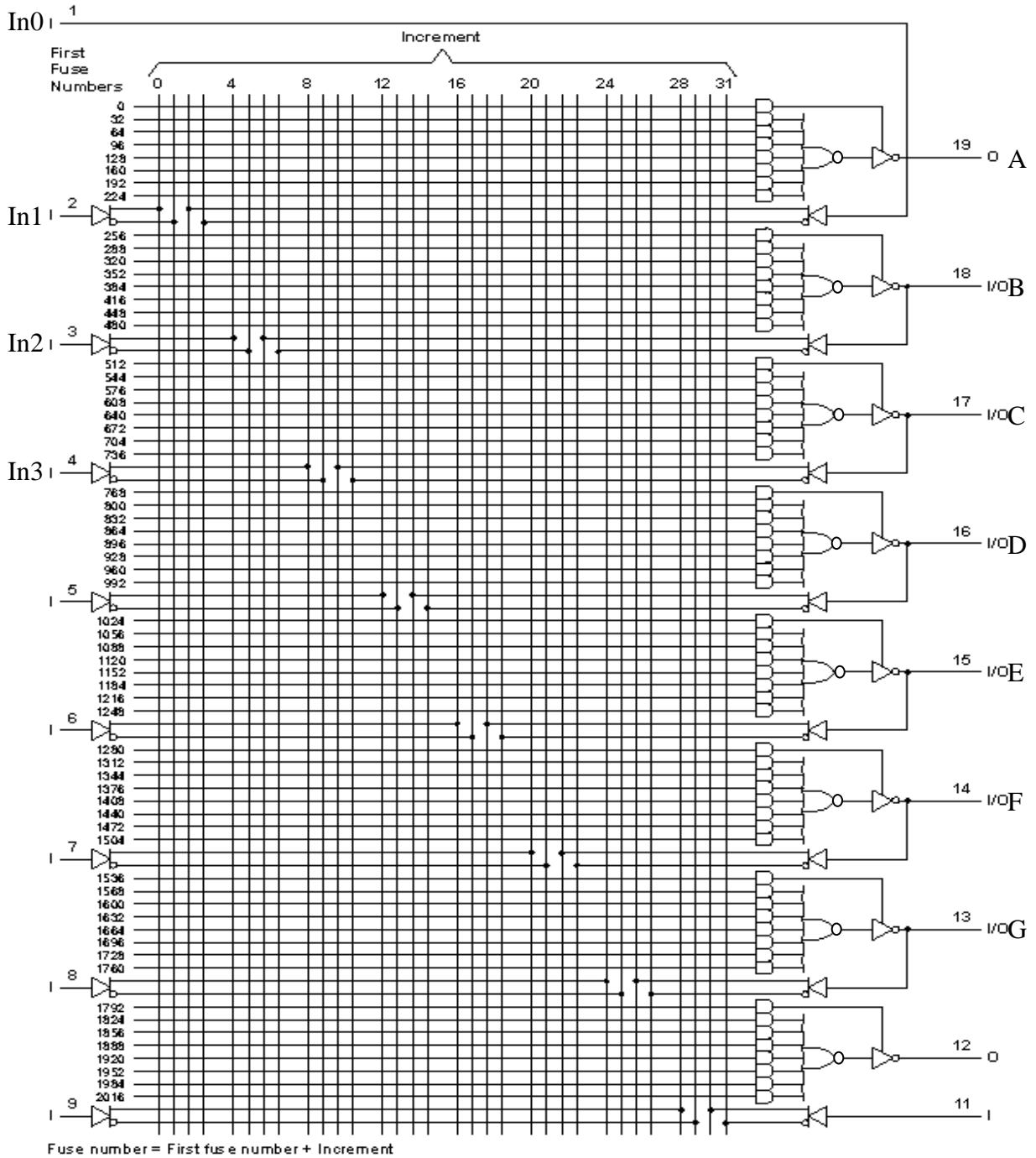
$$D = In3 In2 In0' + In2'In1'In0' + In2 In1'In0 + In2'In1 In0 + In3'In1 In0'$$

$$E = In2'In0' + In3 In2 + In1 In0' + In3 In1$$

$$F = In1'In0' + In3 In2' + In2 In0' + In3 In1 + In3'In2 In1'$$

$$G = In3 In2' + In1 In0' + In3 In0 + In3'In2 In1' + In2'In1$$

1) Implement the hex to 7 segment decoder in a 16L8 by indicating an X in the diagram below at the appropriate cross-points assuming the input/output connections shown:



2) Write a gate-level ASL netlist description of the SOP implementation of the hex to 7-segment decoder (with input ordering In3, In2, In1, In0 and output ordering A, B, C, D, E, F). Simulate your ASL description using AUSIM and verify your circuit against the truth table, debugging as needed until you obtain a working circuit.

Turn in your PLA (16L8) design and a hardcopy of you ASL file and simulation results (the .out file) for your design at the beginning of class on Thursday 9/16.