EECE 320 – Digital Systems Design
Problem session 10
Solution

I - Design a combinational circuit using the minimum size ROM. The circuit accepts a 3-bit input number and generates an output equals to the square of the number.
Draw the truth table of this circuit and show that the minimum size ROM needed to solve this problem is an 8x4 ROM. (Show the decoder and OR gates and the fuses that should be kept in this ROM).

II – Design a 4x8 SRAM similar to the one shown in the slides of ch9 but with Bidirectional data lines. similar to ex. in slides.

Problem 1 Solution

A	B	C	O_5	O_4	O_3	O_2	O_1	O_0
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	1
0	1	0	0	0	0	1	0	0
0	1	1	0	0	1	0	0	1
1	0	0	0	1	0	0	0	0
1	0	1	0	1	1	0	0	1
1	1	0	1	0	0	1	0	0
1	1	1	1	1	0	0	0	1

we remark that $\boxed{O_0 = C}$
and $O_1 = 0$ always