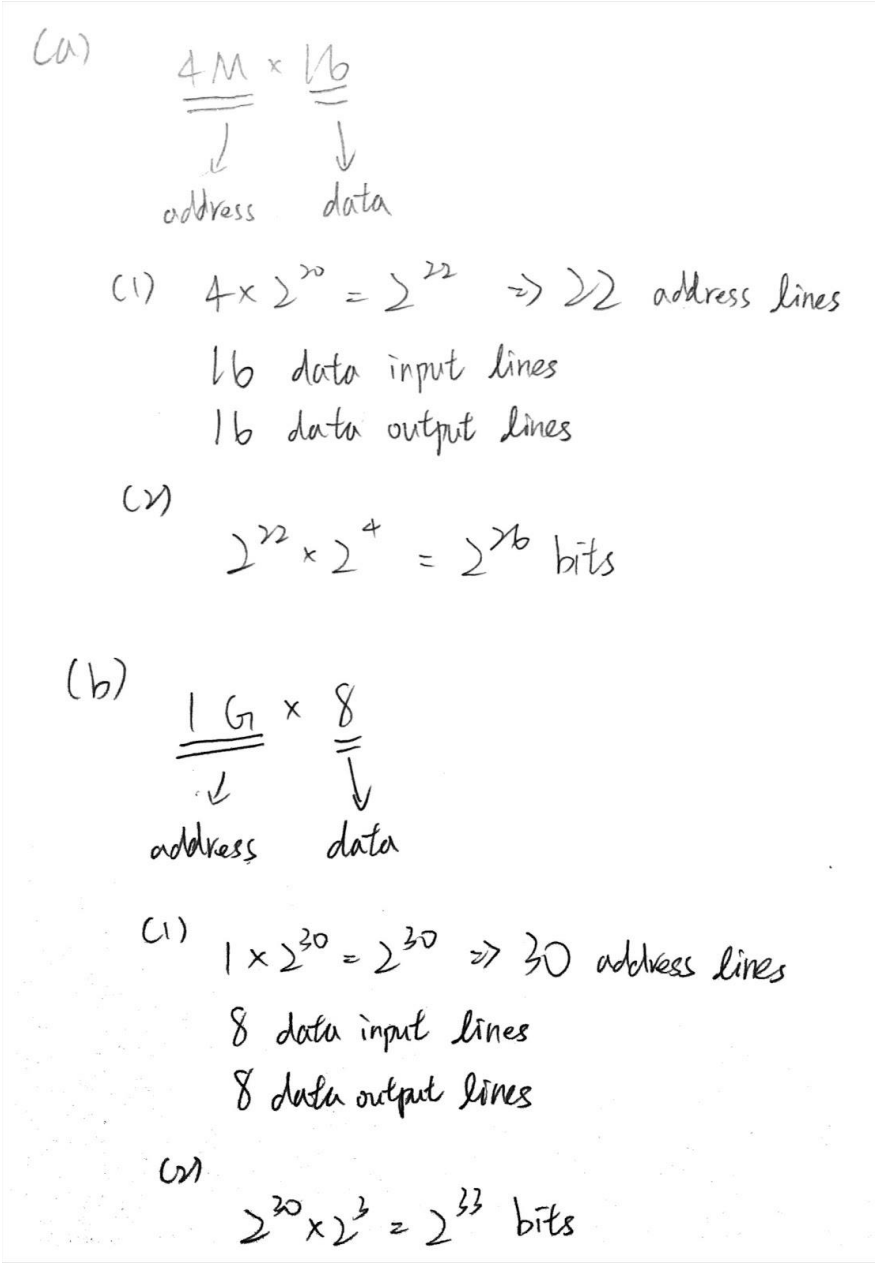
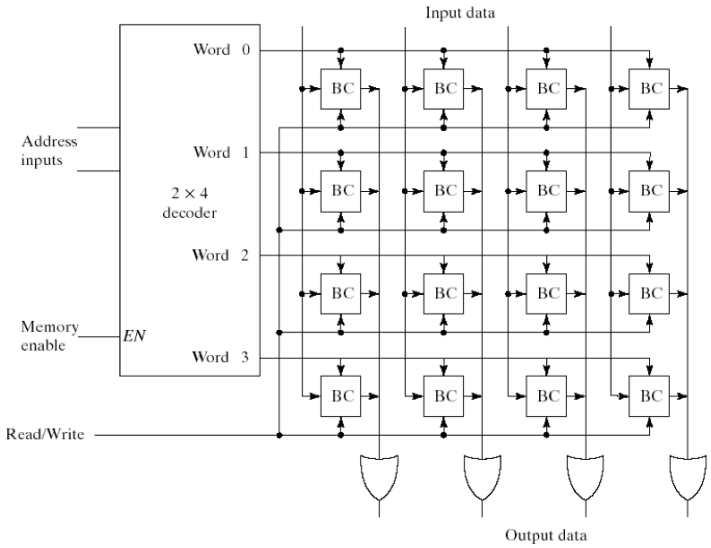
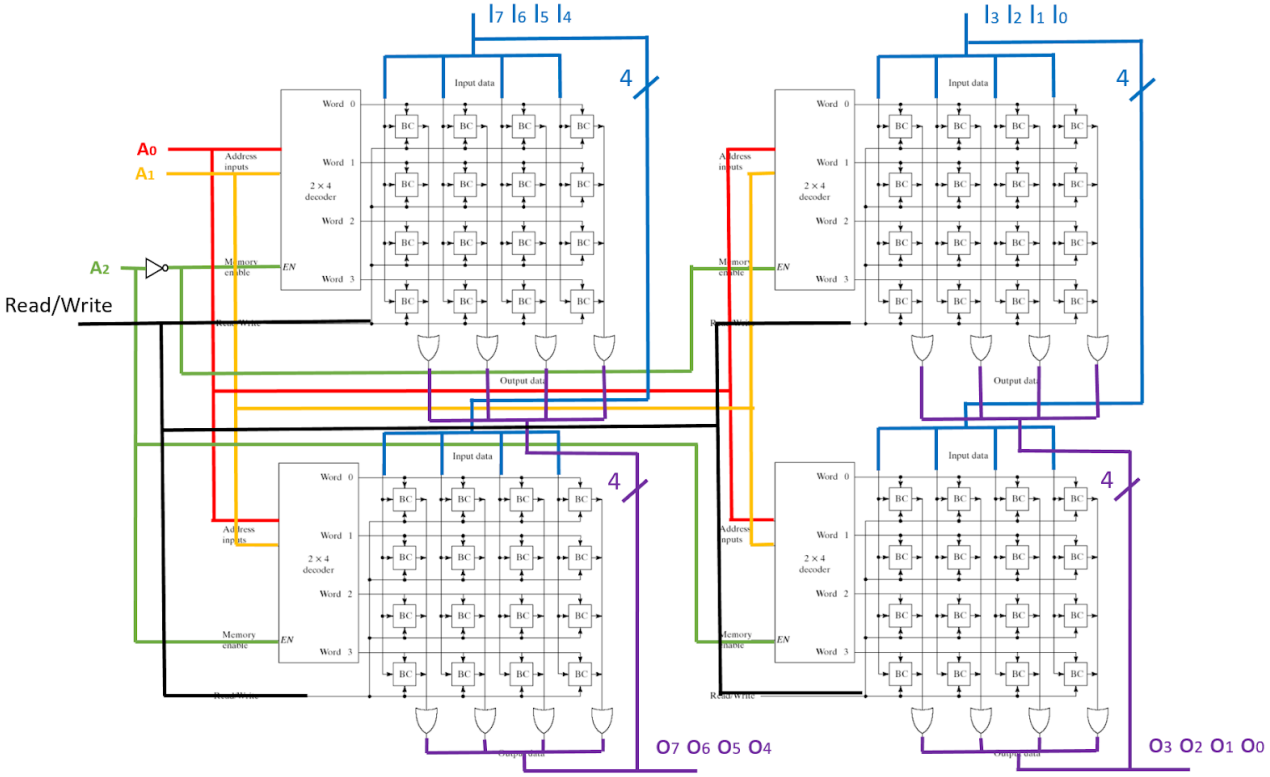
HW7 solution

1. The memory units that follow are specified by the number of words times the number of bits per word. (1) How many address lines and input-output lines are needed in each case? (2) Give the number of bits stored in the memories in each case. (a) 4M x 16 (b) 1G x 8.



2. Enclose the 4x4 RAM of figure below, in a block diagram showing all inputs and outputs. Assuming three-state outputs, construct an 8x8 memory using four 4x4 RAM units. (Hint: Similar to decoder size extension in decoder with enable input)





3. Tabulate the truth table for an 8x4 ROM that implements the Boolean functions.
   (1) A(X, Y, Z) = Σm(1, 3, 5)
   (2) D(X, Y, Z) = Σm(2, 3, 5, 6, 7)

3.

X	Y	Z	A	D
0	0	0	0	0
0	0	1	1	0
0	1	0	0	1
0	1	1	1	1
1	0	0	0	0
1	0	1	1	1
1	1	0	0	1
1	1	1	0	1

