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1/23/23
CSE 371
HW2

Problem 1

a)

256×8

Truth Table		8 bits
4 bits a	4 bits b	Out
0x0	0x0	0x0
⋮		⋮
		⋮
0xF	0xF	0xE1

2^8 entries

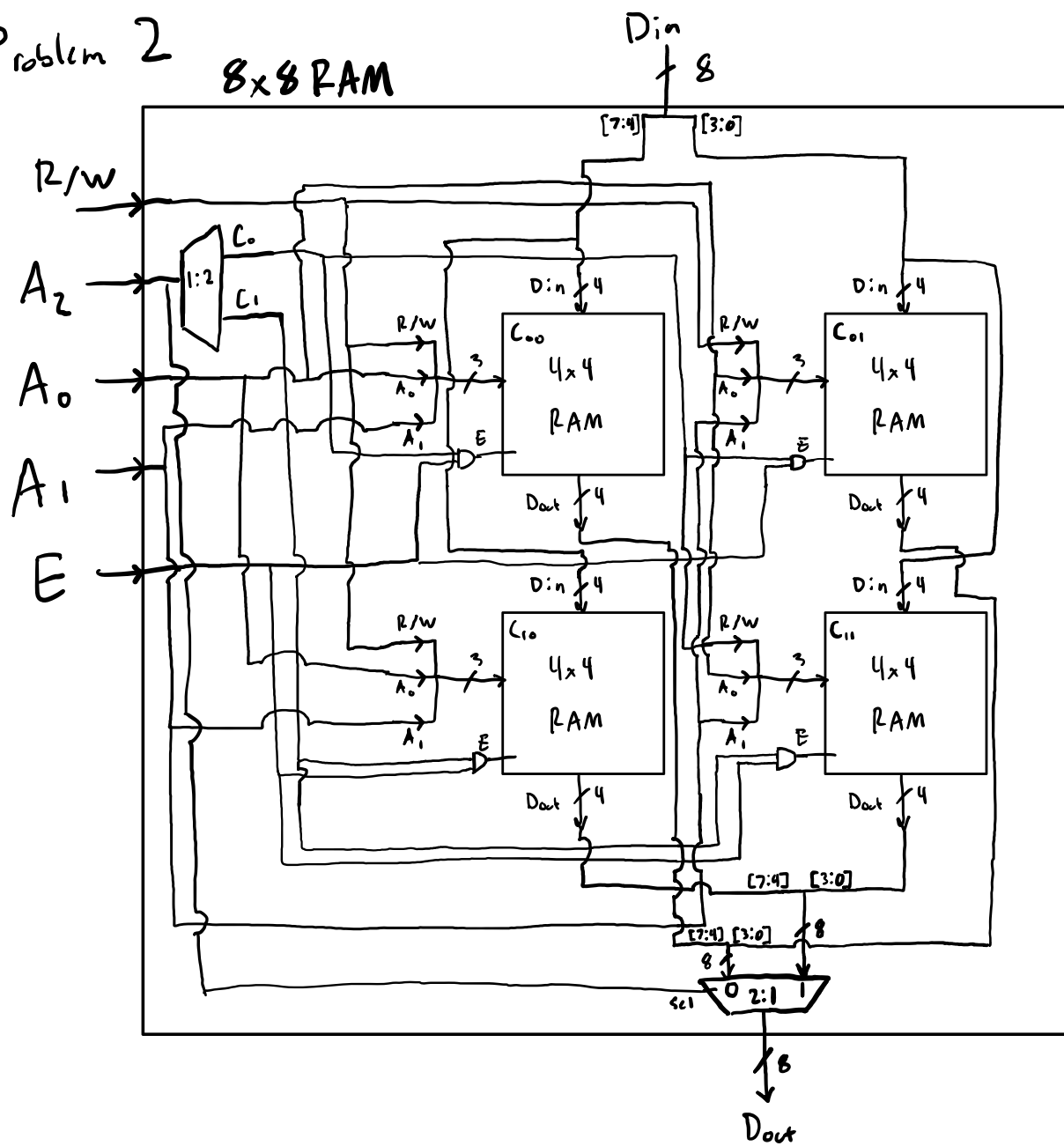
b)

128×4

Truth Table		4 bits
1 bit op	3 bits a	Out
0	0x0	0x0
⋮		⋮
		⋮
1	0x7	0xE

2^7 entries

Problem 2 8x8 RAM



Problem 3

a) 8 chips

$$4 \text{ M;} \times 16$$

$$2^{12} \times 2^4$$

↓

$$2^{16} \text{ bits}$$

$$2^3 \times =$$

$$64 \text{ M;} \text{ bytes} \rightarrow 2^{19} \text{ bits}$$

$$2^{16} \times 2^3$$

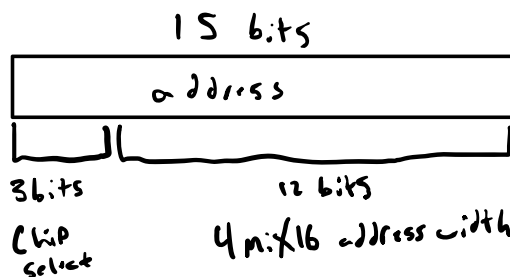
b) 15 bits

$$64 \text{ M;} \text{ bytes}$$

↓

$$2^{15} \rightarrow 32 \text{ M;} \times 16$$

c) 12 bits



d) 3 bits; 3x8 decoder

Problem 4 (see sign_mag_add.sv & sync_rom.sv)

sign_mag_add.sv ALM_s: 5

sync_rom.sv ALM_s: 0

Time Spent : 2 hours

Difficulty: Easy