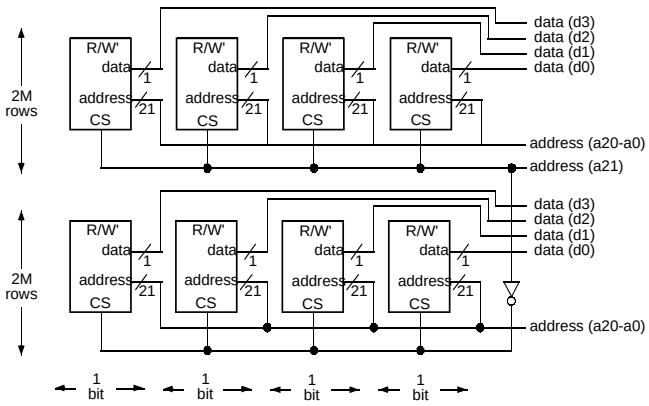
Homework #3 — Due 10/12/98

1. Draw a simplified block diagram for a 4M x 4 bit memory system using 2M x 1 bit memory chips



Homework #3 — Due 10/12/98 (cont.)

2. For each …, (i) give a sequence of instructions…, and (ii) translate… into binary… Assume that variables a, b, c, d, and e correspond to memory locations 20, 21, 22, 23, and 24, respectively, and that locations 25 and higher can be used for storage of temporary results.

a. a = a + b – c

LOAD	20	100 10100
ADD	21	000 10101
SUB	22	001 10110
STORE	20	101 10100

b. a = bc – ab

LOAD	20	100 10100
MPY	21	010 10101
STORE	25	101 11001
LOAD	21	100 10101
MPY	22	010 10110
SUB	25	001 11001
STORE	20	101 10100

Homework #3 — Due 10/12/98 (cont.)

4. Write assembly language code for the statement “a = (d+c) – a”, in the 0-, 1-, and 2-operand instruction formats, assuming:

   variable *a* is stored at address 20,
   b is at 21, *c* is at 22, *d* is at 23,
   and addresses 25–29 can be used for temporary storage of intermediate results.

   Do not destroy the values in variables b, c, or d.

0-operand	1-operand	2-operand
PUSH 23	LOAD 23	MOVE 25,23
PUSH 22	ADD 22	ADD 25,22
ADD	SUB 20	SUB 25,20
PUSH 20	STORE 20	MOVE 20,25
SUB		
POP 20		