Lecture 8

Friday, September 18, 2015   10:00 AM

The SCRAM
- 8-bit data/arithmetics
- 4 bit address/memory
- AC accumulator register - 8
- PC program counter - 4
- Instruction format
  - 16 bytes of memory
  - Every byte in memory is either treated as data or as memory

7	6	5	4	3	2	1	0

Operators
LDA ADD
JMP SUB

Address	Instruction	Effect
0	LDA 4	AC <- M[4]
1	Add 5	AC <- AC + M[5]
2	STA 5	M[4] <- AC
3	JMP 0	PC <- 0
4	DAT	0,1,2,3,4... 255,0
5		1

Encoding	
0001	0100
0101	0101
0011	0100
0111	0000
0000	0000
0000	0001

Continually adding w.e. is in 5 To w.e. is in 4
Only 0-3 are executed, the rest is just data

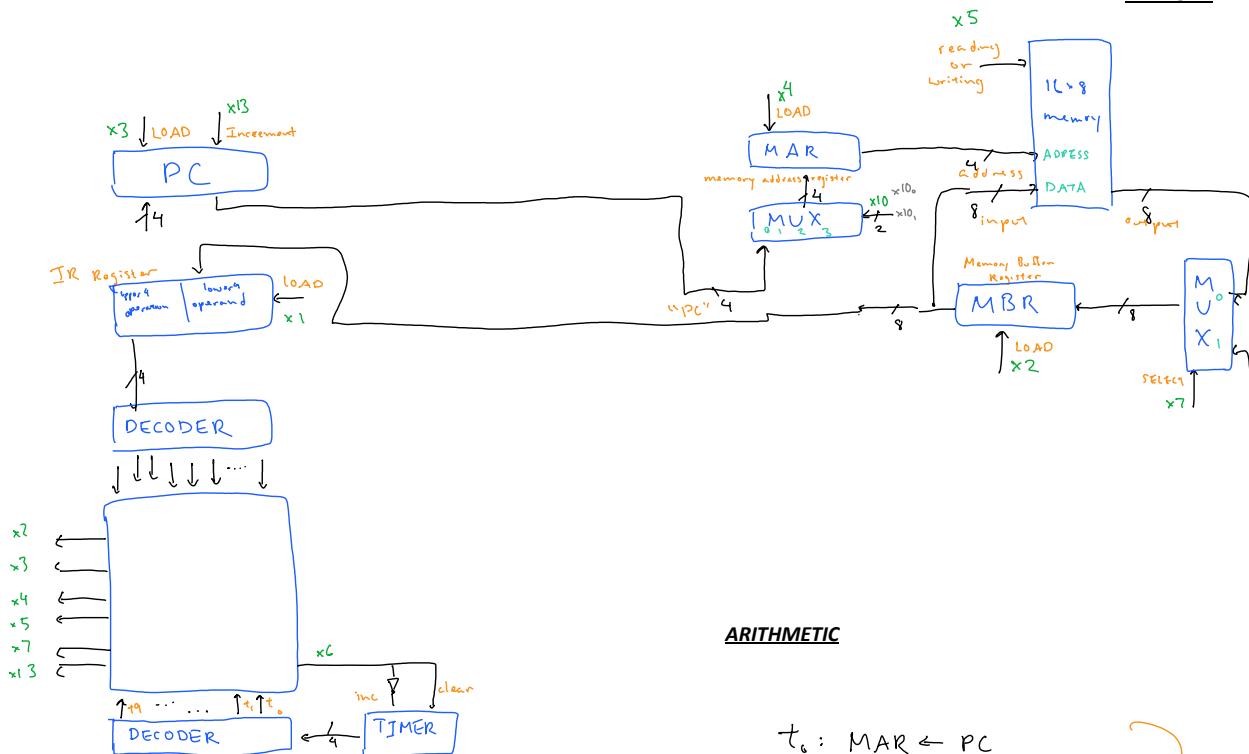An assembler takes instructions and changes them
to the encoding bit pattern

SUDO instruction
        DAT, puts 1 in

DAT put 0
DAT put 1

How the program gets initilazed

INSTRUCTION DECODING

MEMORY

ARITHMETIC

$t_0:$ MAR $\leftarrow$ PC

$t_1:$ MBR $\leftarrow$ M,   PC $\leftarrow$ PC+1

fetch cycle

$t_2: \quad IR \longleftarrow MBR$

$\times 1$

$t_2: \quad IR \longleftarrow MBR$

$\times 1$