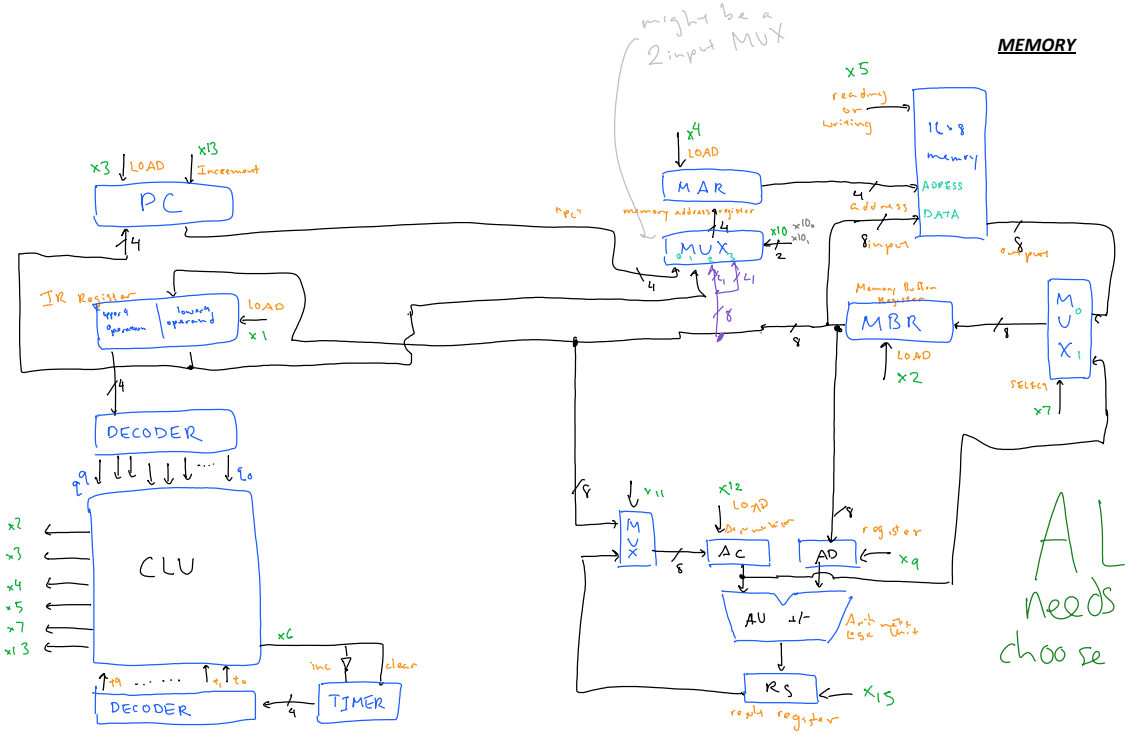
Lecture 9

Monday, September 21, 2015 10:02 AM



ALU needs input to choose ADD from SUBTRACT

ALU - has no sense of time, RS introduces a buffer of time, to prevent a sum from happening 3 times

ARITHMETIC

One of the instructions

SMP > 1011 PC ← X

⇒ q_7 is high

Micro Program for JUMP

t_3 q_7 : PC ← lower half of IR (register)
Set x3 t_0 1

t_4 q_7 : reset timer
x6 t_0 1

> Do this after every instruction

t_0 : MAR ← PC
x10 x4

t_1 : MBR ← M, PC ← PC+1
x2 x7 x5 x13

t_2 : IR ← MBR
x1

> Fetch cycle — grabs the next instruction

LDA x (takes us to address x and puts it in the accumulator)
AC ← M[x]

$q_1 t_3$: MAR ← IR (lower)
x10-01 t_4=1

$q_1 t_4$: MBR ← M
x7=0 x5=1 x2=1

$q_1 t_5$: AC ← MBR
x11=0 x9=1

$q_1 t_6$: reset timer

ADD > AC ← AC + M[x] 0101

$q_5 t_3$: MAR ← IR (lower)
$q_5 t_4$: MBR ← M
$q_5 t_5$: AU ← MBR
$q_5 t_6$: RS ← ALU
$q_5 t_7$: AC ← RS
$q_5 t_8$: reset timer

x9=1
x15=1
x11=1 x12=1