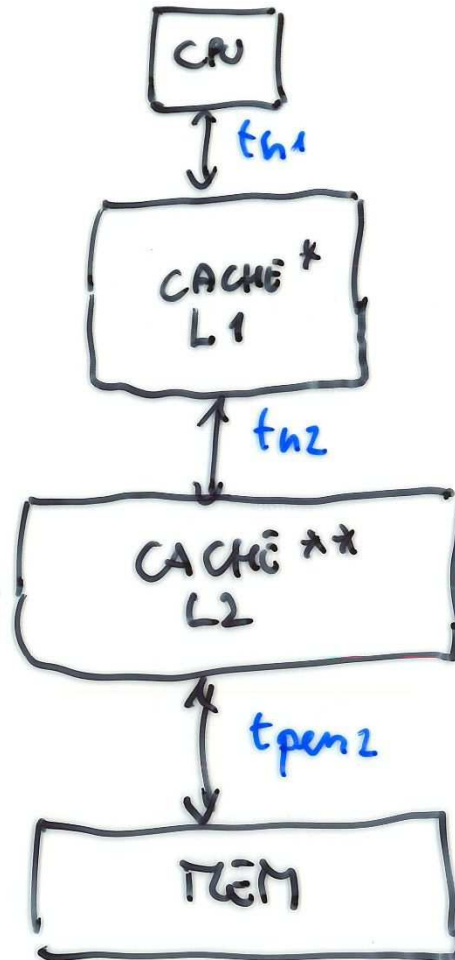


Compito del 04-12-2007 - esercizio 2 svolgimento (1/3)

CASO 1

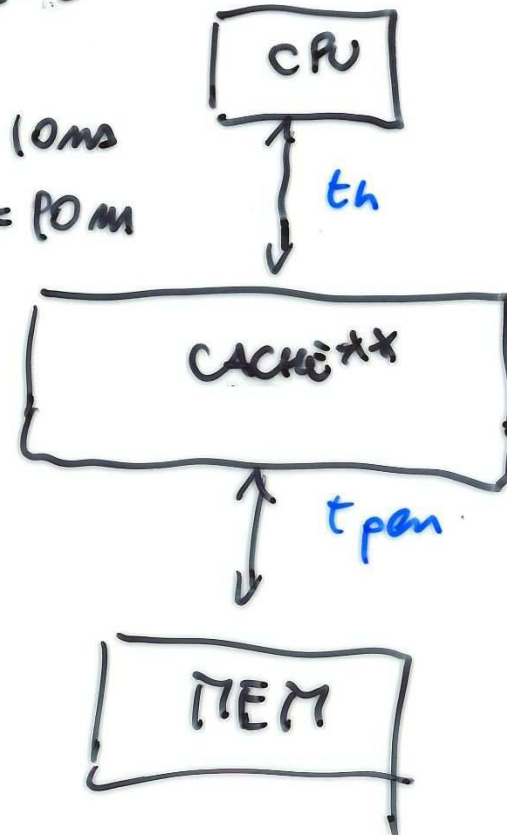
$A = 2$
 $B = 64B$
 $C = 256B$
 $P_{WH} = WB$
 $P_{RU} = LRU$
 $t_{h1} = 2ms$

$A = 1$
 $B = 64B$
 $C = 2048B$
 $t_{h2} = 8ms$
 $t_{pen2} = 90ms$
 $P_{R2} = LRU$



CASO 2

$t_h = 10ms$
 $t_{pen} = 90ms$



Compito del 04-12-2007 - esercizio 2 svolgimento (2/3)

X $X_B = X/64$ $X_T = X_B/2$ $X_S = X_B \% 2$ $1/M$ $S = \frac{C}{AB} = \frac{256}{2 \cdot 64} = 2$ X_S VIA0 VIA1 L1

X	$X_B = X/64$	$X_T = X_B/2$	$X_S = X_B \% 2$	$1/M$	S	X_S	VIA0	VIA1	L1
22	0	0	0	0	0	0	0	0	
71	1	0	1	1	0	1	0	0	
65	1	0	1	1	0	1	0	0	
90	1	0	1	1	0	1	0	0	
143	2	1	0	0	0	0	0	0	
81	1	0	1	1	0	1	0	0	
54	0	0	0	1	0	0	0	0	
133	2	1	0	1	0	0	0	0	
61	0	0	0	1	0	0	0	0	
190	2	1	0	1	0	0	0	0	
10	0	0	0	1	0	0	0	0	
12	0	0	0	1	0	0	0	0	
16	0	0	0	1	0	0	0	0	
15	0	0	0	1	0	0	0	0	
98	1	0	1	1	0	1	0	0	
75	1	0	1	1	0	1	0	0	
64	1	0	1	1	0	1	0	0	
259	4	2	0	0	0	0	0	0	
130	2	1	0	0	0	0	0	0	
62	1	0	1	1	0	1	0	0	
70	1	0	1	1	0	1	0	0	
25	0	0	0	0	0	0	0	0	

1 BIT SOLO PER LRU:
 SIGNIFICATO:
 0 → VIA LRU È LA 0
 1 → " " " 1

$N_{MISS} = 6$
 $N_{HIT} = 22 - 6 = 16$
 $m_1 = \frac{N_{MISS}}{N_{HIT}} = \frac{6}{22}$

$X_T = 1, X_S = 0 \rightarrow X_B = X_T \cdot S + X_S = 2$
 $X_T = 0, X_S = 0 \rightarrow X_B = 0$
 $X_T = 2, X_S = 0 \rightarrow X_B = 2$

$S = \frac{C}{AB} = \frac{2048}{1 \cdot 64} = \frac{2^8}{2^6} = 2^2 = 4$

$N_{MISS2} = 4$
 $N_{HIT2} = 6 - 4 = 2$
 $m_2 = \frac{N_{MISS2}}{N_{HIT2}} = \frac{4}{2} = 2$

$AMAT = GER = t_{h1} + r_{pen1} \cdot m_1 = t_{h1} + m_1 \cdot (t_{h2} + r_{pen2} \cdot m_2) \approx 20.54 \text{ ns}$

L1: 25 L2: 22 32 SET

Compito del 04-12-2007 - esercizio 2 svolgimento (3/3)

x	$x_1 = x/64$	$x_2 = x/32$	$x_3 = x/16$	$x_4 = x/8$	TAG
22	0	0	0	0	0
71	1	0	1	0	0
65	1	0	1	1	0
90	1	0	1	1	0
163	2	0	2	0	0
81	1	0	1	1	0
57	0	0	0	1	0
133	2	0	2	1	0
61	0	0	0	1	0
190	2	0	2	1	0
10	0	0	0	1	0
12	0	0	0	1	0
10	0	0	0	1	0
15	0	0	0	1	0
18	1	0	1	1	0
75	1	0	1	1	0
64	1	0	1	1	0
159	2	0	2	1	0
130	2	0	2	1	0
67	1	0	1	1	0
70	1	0	1	1	0
15	0	0	0	1	0

$$N_{miss} = 4$$

$$N_{hit} = 22 - 4 = 18$$

$$m = \frac{N_{miss}}{N_{acc}} = \frac{4}{22}$$

$$\Delta t_{AT} = t_h + m \cdot T_{pen} \approx 26.36$$

$\begin{matrix} 1 & 1 \\ 10 & 4/22 & 40 \end{matrix}$

$$\text{con } t_h = 8$$

$$\Delta t_{AT}' = \Delta t_{AT} - 2 \approx 24.36$$