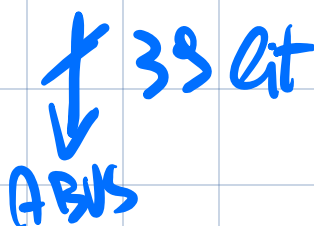


CACHE REALE

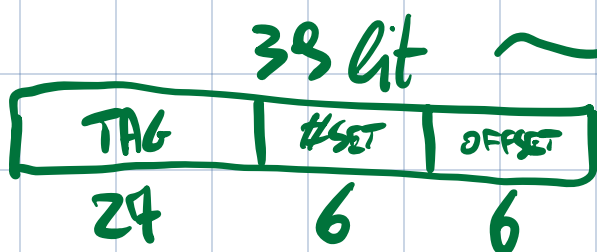
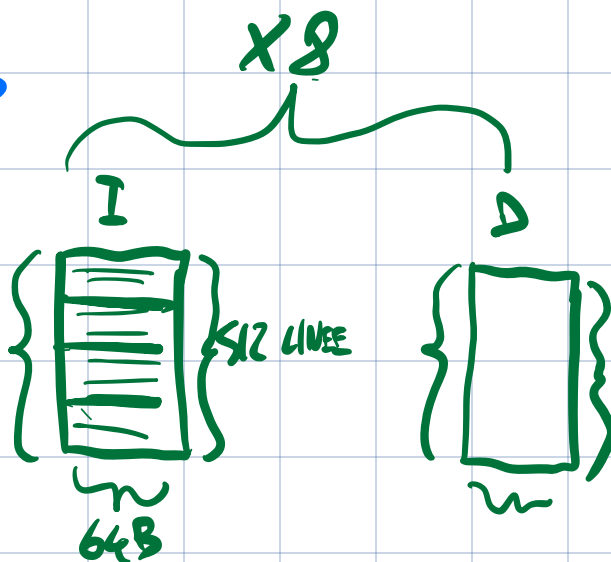


• L1: 32 KB PER CORE

L. ISTR + L. DATO 64 SET

S.A. $K=8$

LINEE DA 64 B

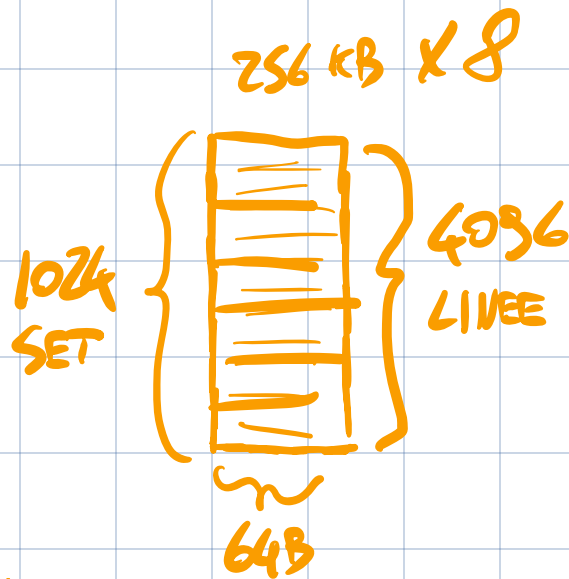


USATI SOLO 36 bit
PERCHÉ 16 GB DI RAM

L2: 256 KB PER CORE

S.A. $K=4$

LINEE DA 64B



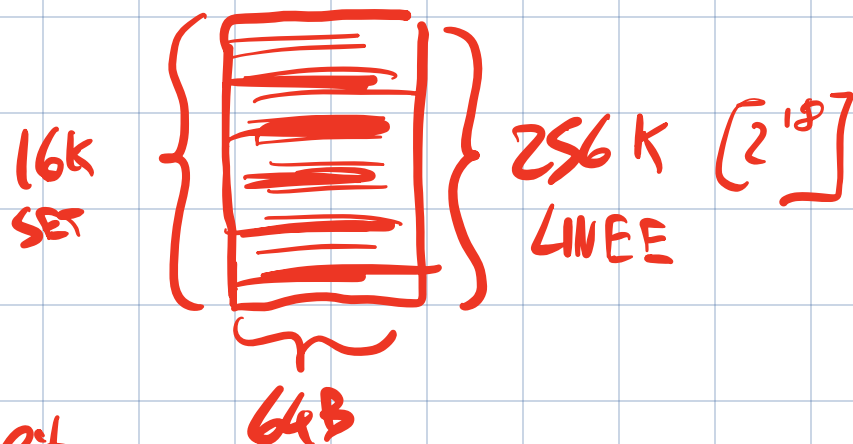
39 bit



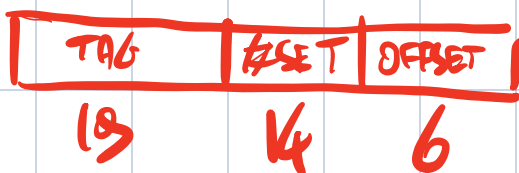
L3: 16MB [UNKA]

S.A. $K=16$

LINEE: 64B



39 bit



ESERCIZIO 1

$$t_{\text{CACHE}} = 2 \text{ ns}$$

$$t_{\text{MEM}} = 100 \text{ ns}$$

$$\text{HIT RATE} = 0,9 = h [90\%]$$

TEMPO MEDIO DI MEM?

$$\begin{aligned} t_{\text{MEDIO}} &= t_{\text{CACHE}} \cdot h + t_{\text{MEM}} (1-h) \\ &= 2 \text{ ns} \cdot 0,9 + 100 \text{ ns} \cdot 0,1 = \\ &= 1,8 \text{ ns} + 10 \text{ ns} = 11,8 \text{ ns} \end{aligned}$$

ESERCIZIO 2

CPI = 10 CLK SE NO STALLO (INCLUSO FETCH)

MEMORIA : 200 CLK

HIT RATE: 0,95

ISTRUZ. CHE ACCEDONO IN MEM: 20%

WRITE BACK

CPI EFFETTIVO MEDIO

$$\begin{aligned} \text{CPI}_{\text{MEDIO}} &= 10 + 200 \cdot 0,2 \cdot (1-0,95) = \\ &= 10 + 2 = 12 \text{ CLK} \end{aligned}$$