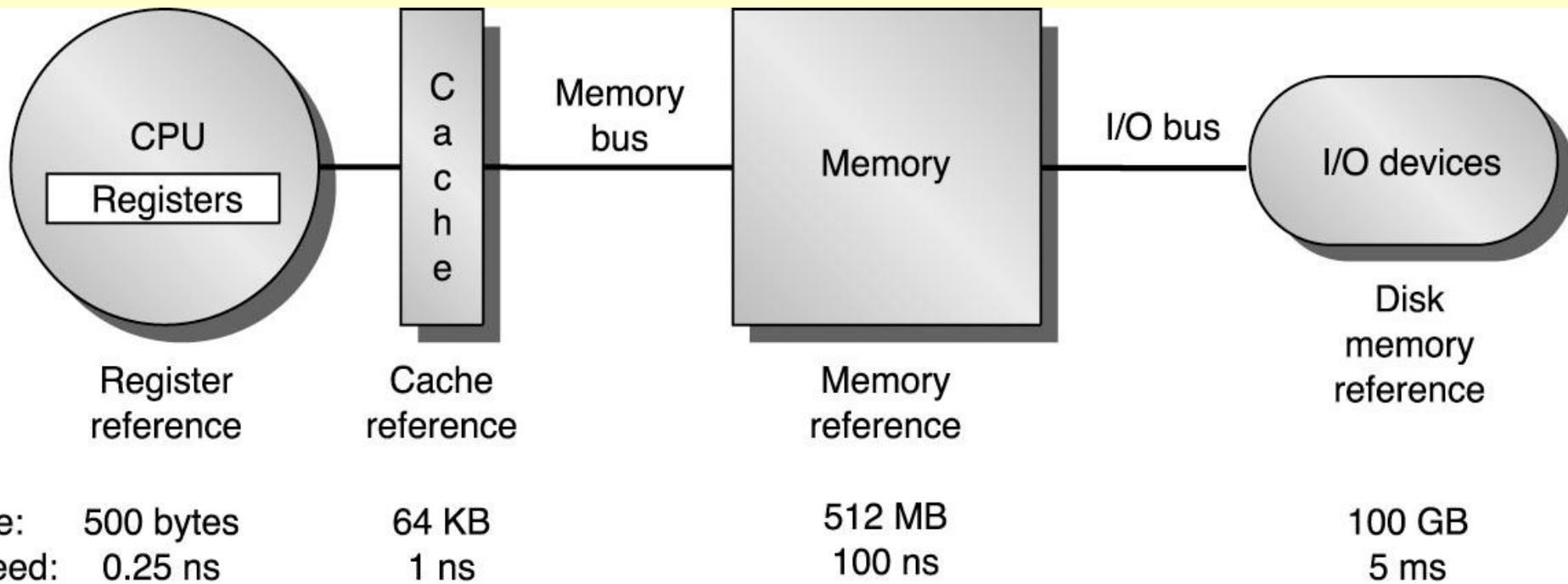


# CAP-372 - Processamento de Alto Desempenho

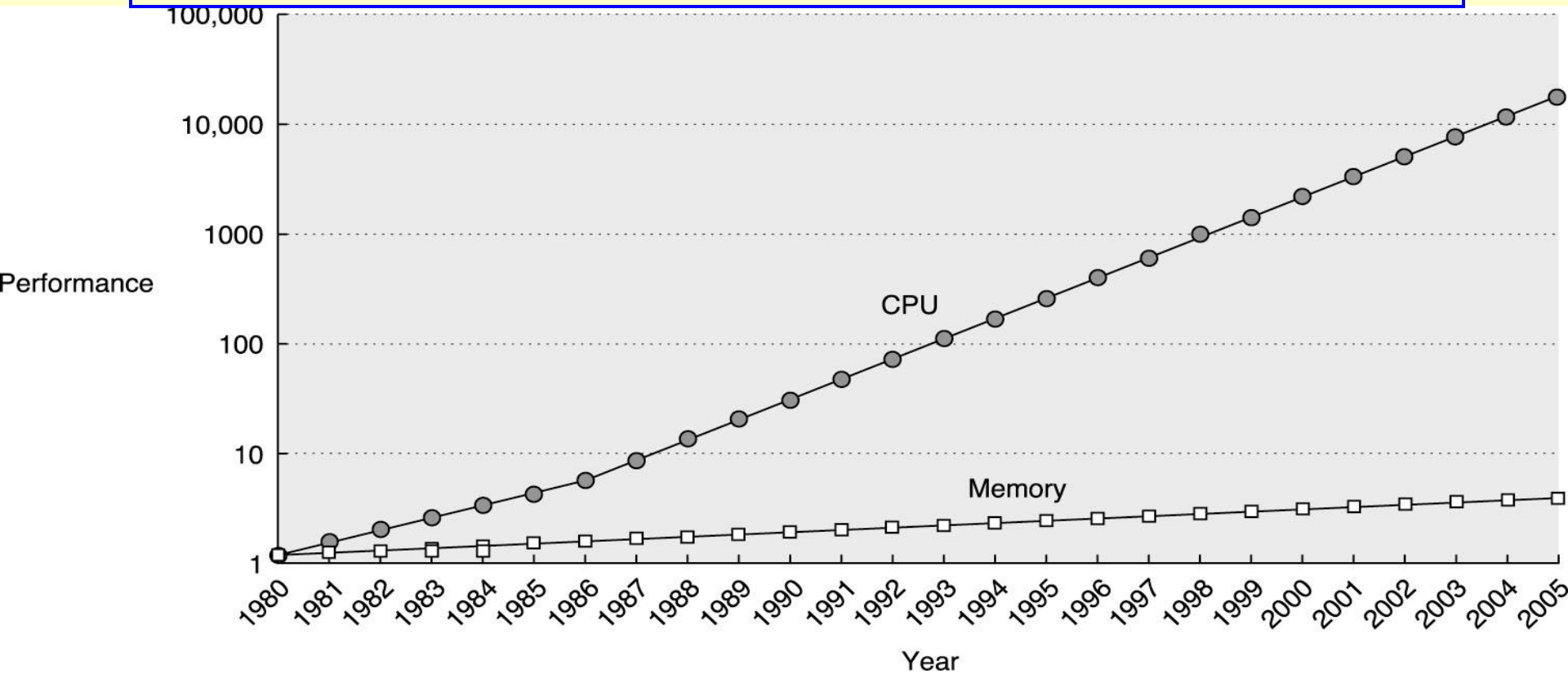
*Figuras selecionadas do livro  
Computer Architecture,  
a Quantitative Approach  
(Hennessy & Patterson)*

# Hierarquia de Memória



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# Evolução de desempenho



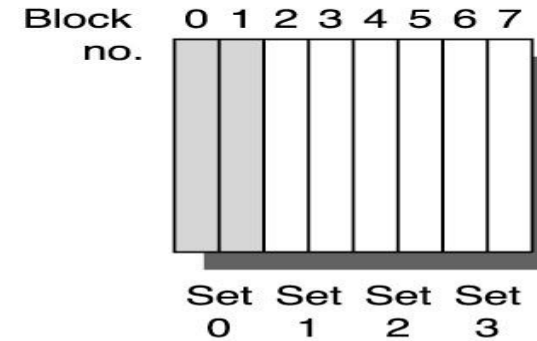
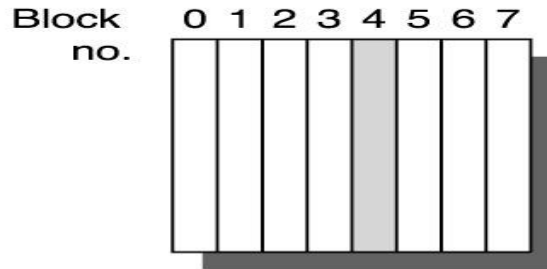
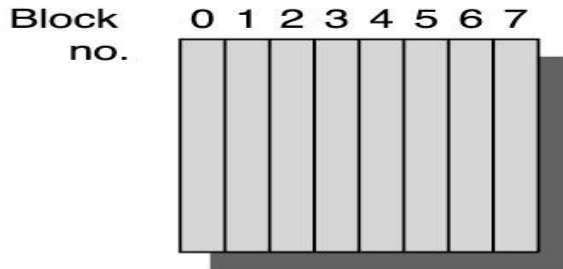
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# Tipos de cache

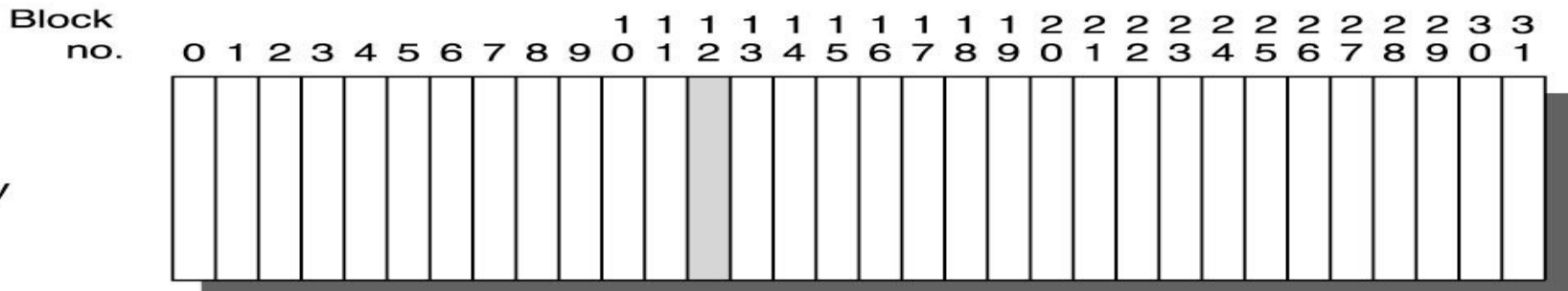
Fully associative:  
block 12 can go  
anywhere

Direct mapped:  
block 12 can go  
only into block 4  
( $12 \bmod 8$ )

Set associative:  
block 12 can go  
anywhere in set 0  
( $12 \bmod 4$ )



Block frame address



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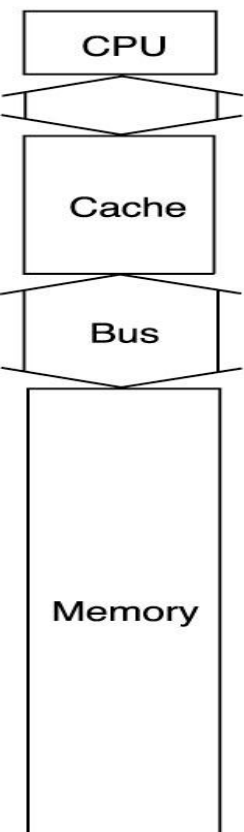
# Cache tag/index

Block address		Block offset
Tag	Index	

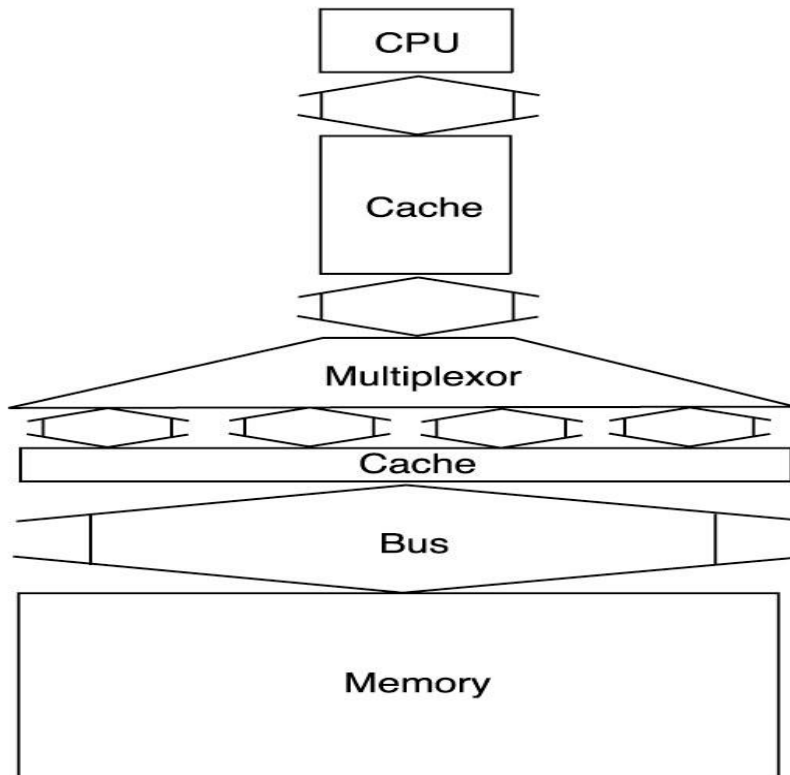
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# Aumentando BW memória

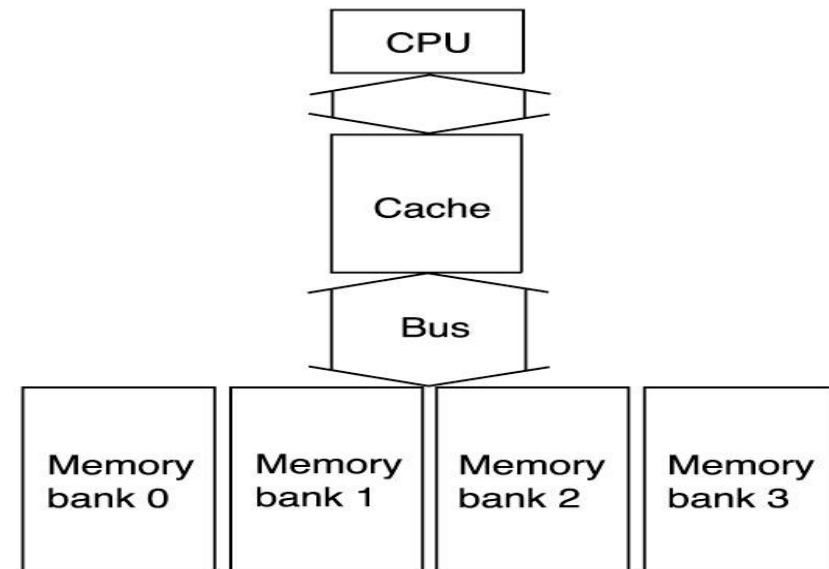
(a) One-word-wide memory organization



(b) Wide memory organization

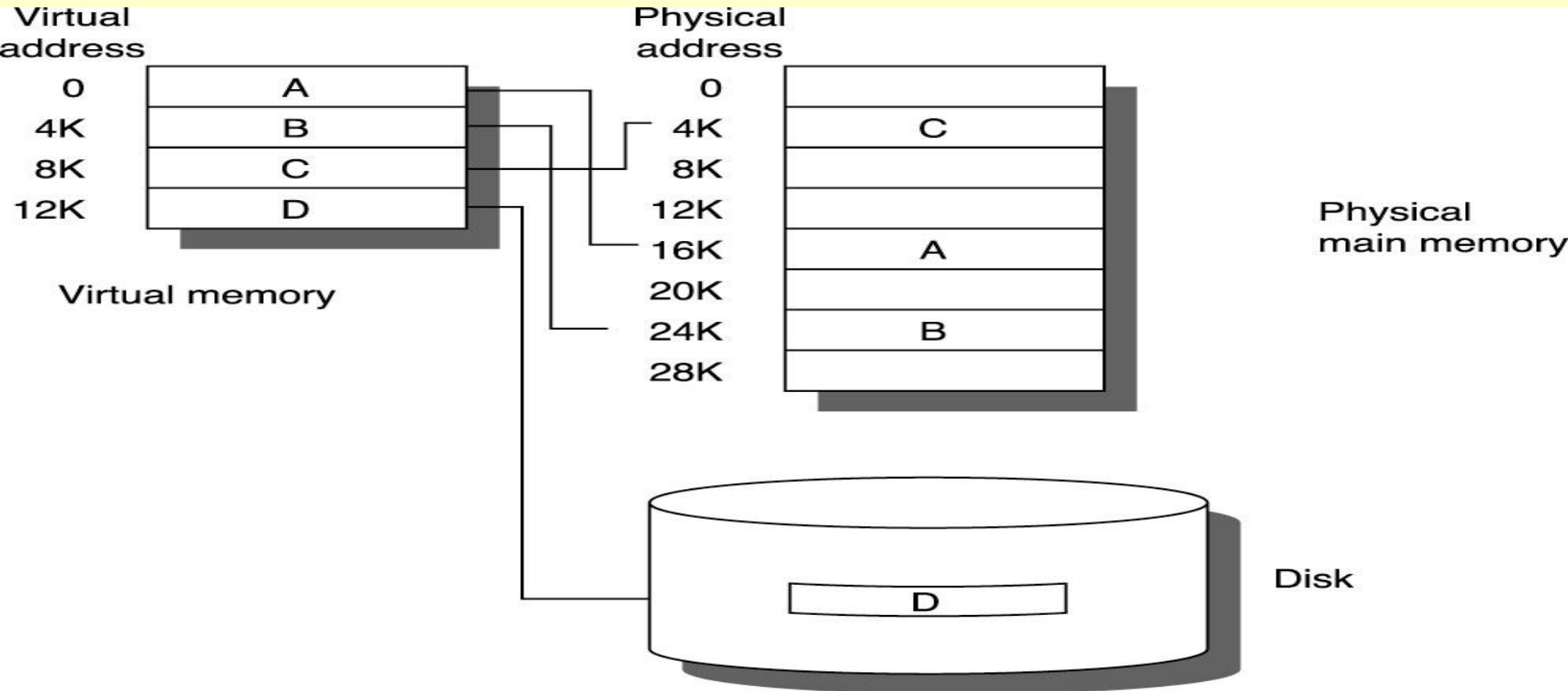


(c) Interleaved memory organization



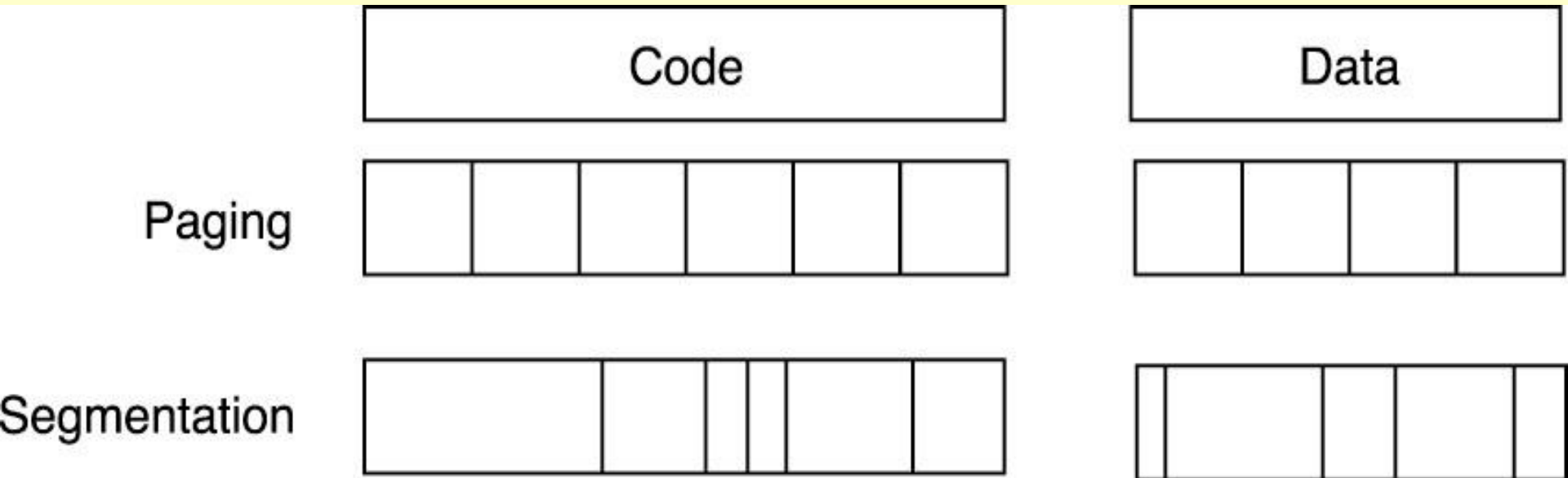
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# Memória virtual



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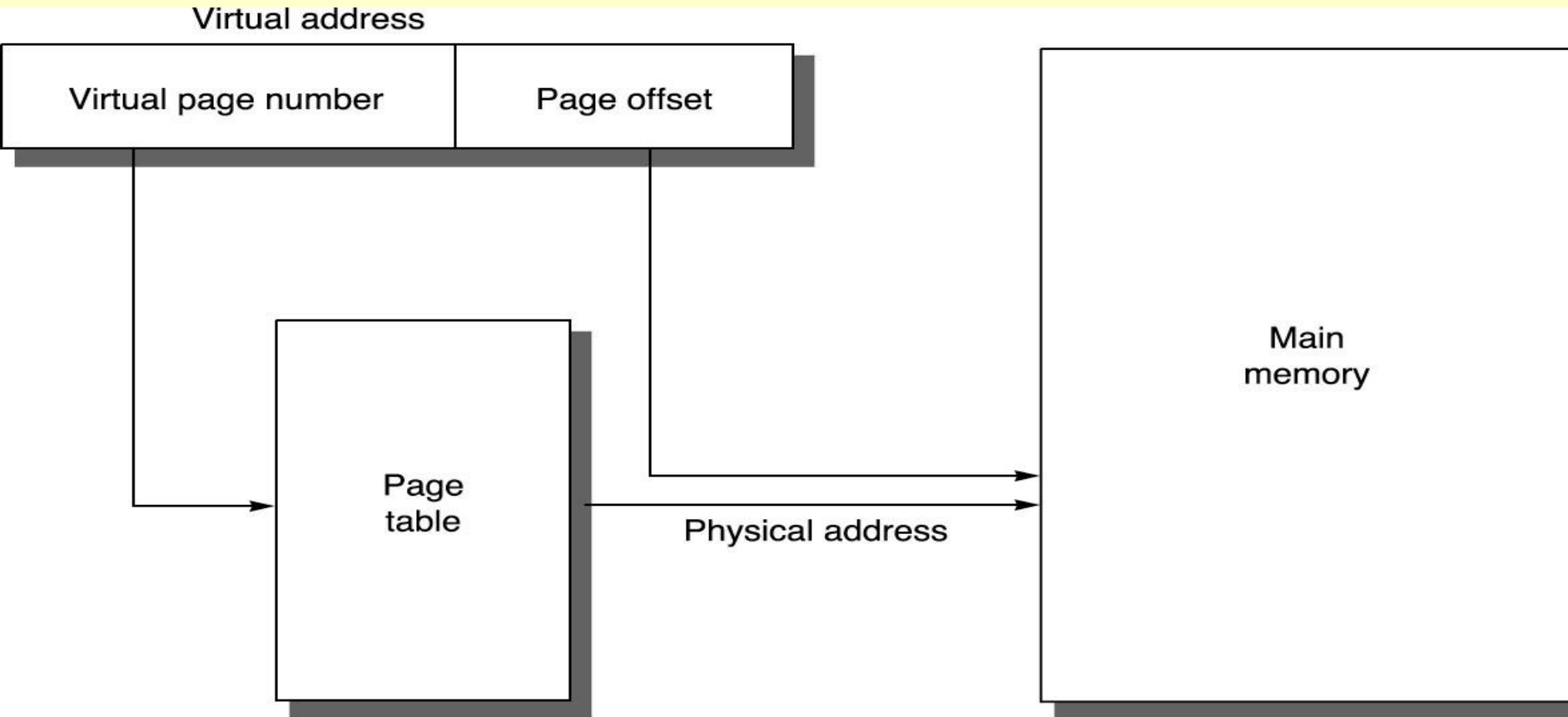
# Paginação x segmentação



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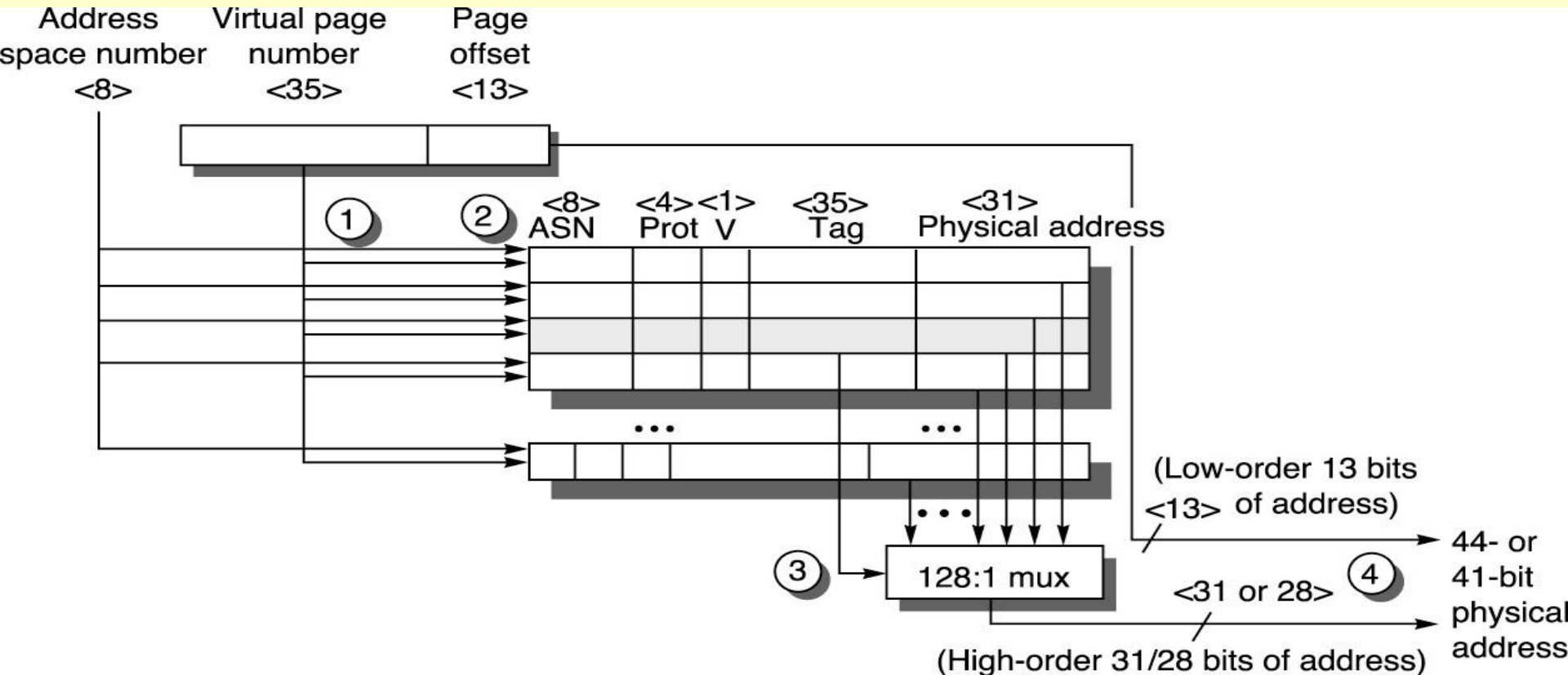


# Tradução de endereços



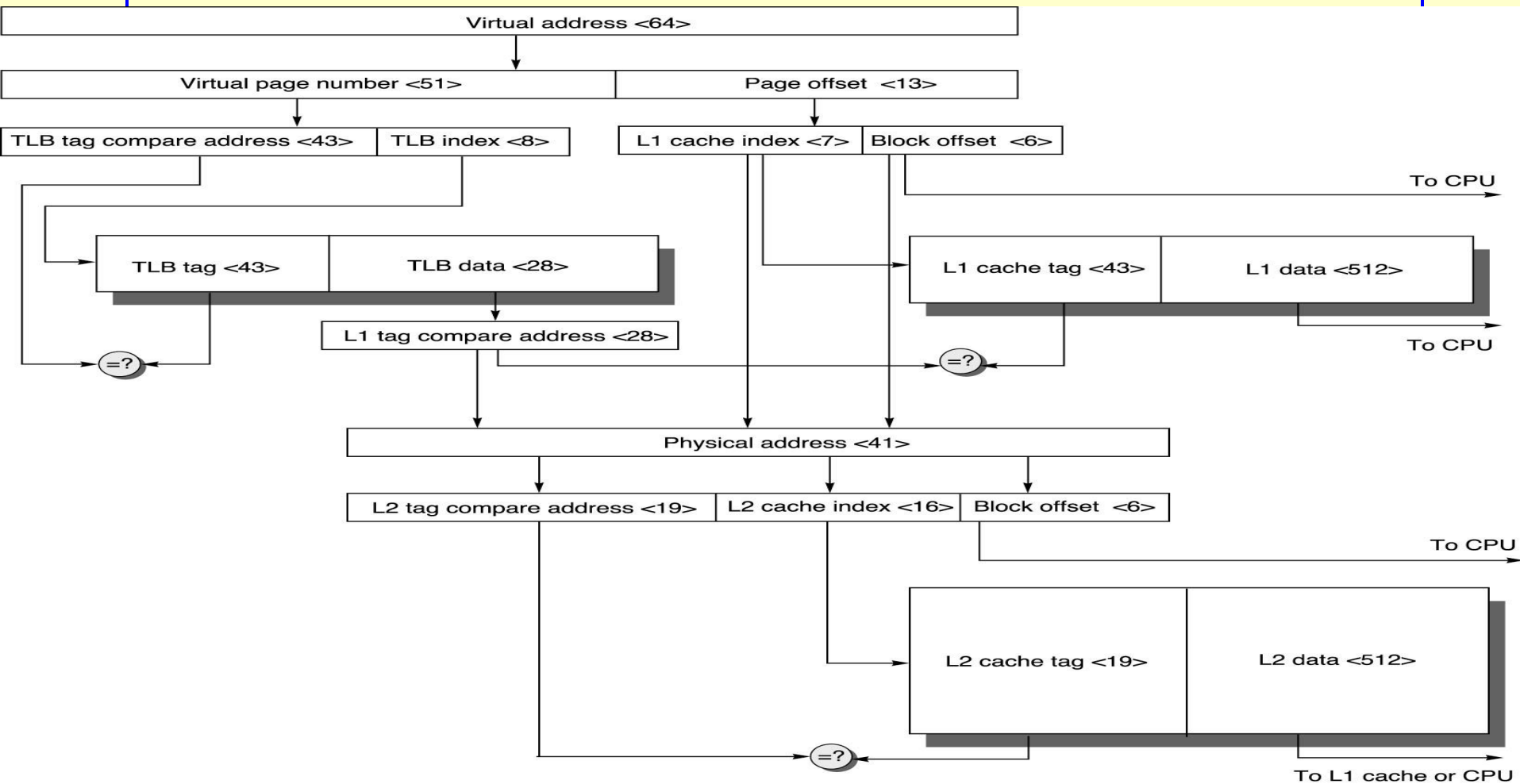
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# TLB - translation lookaside buffer



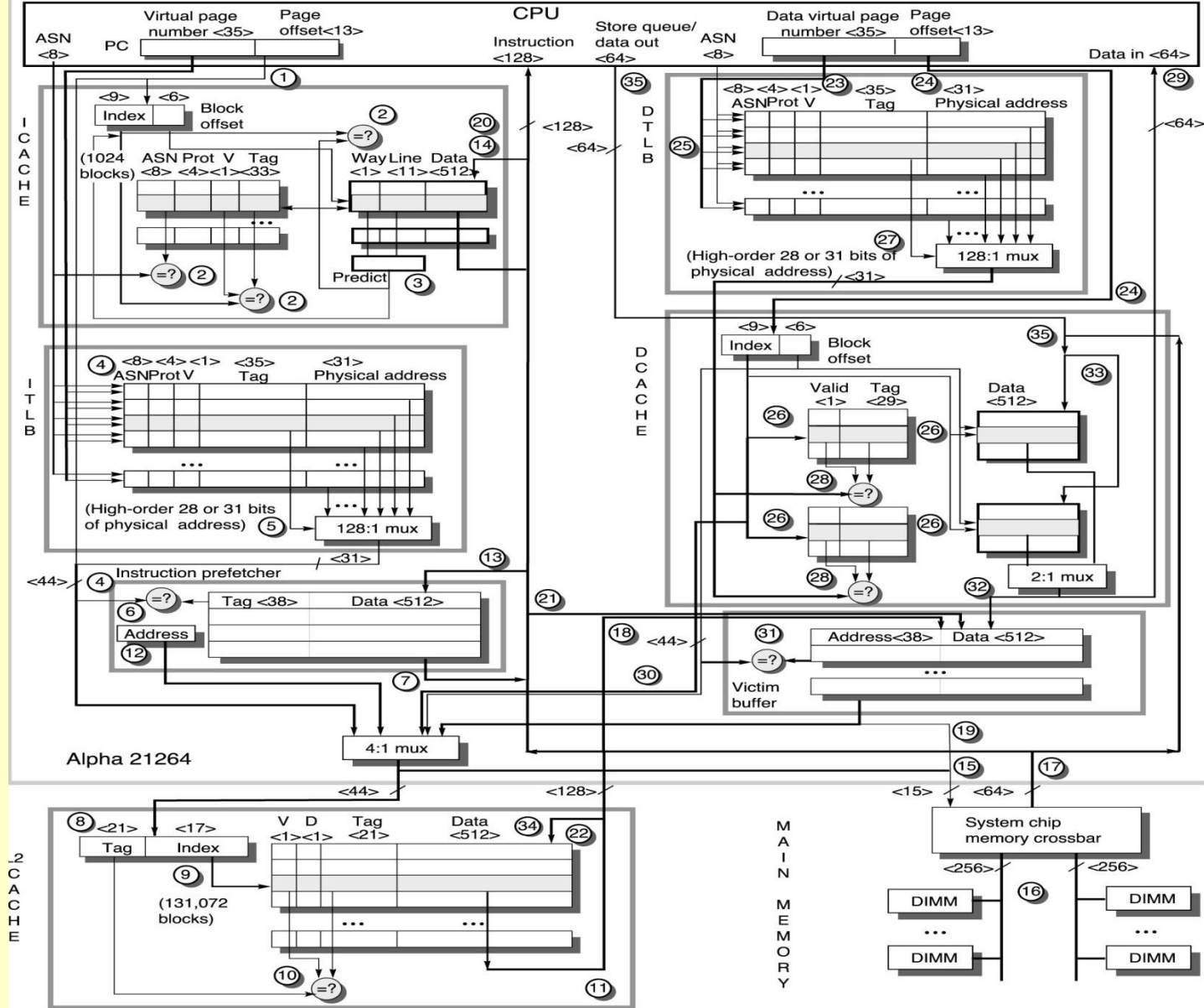
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# TLB hit & cache hit/miss



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# Cache e TLB da Alpha 21264



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