COA

Chapter 04: |Cache Memory – Hit Ratio

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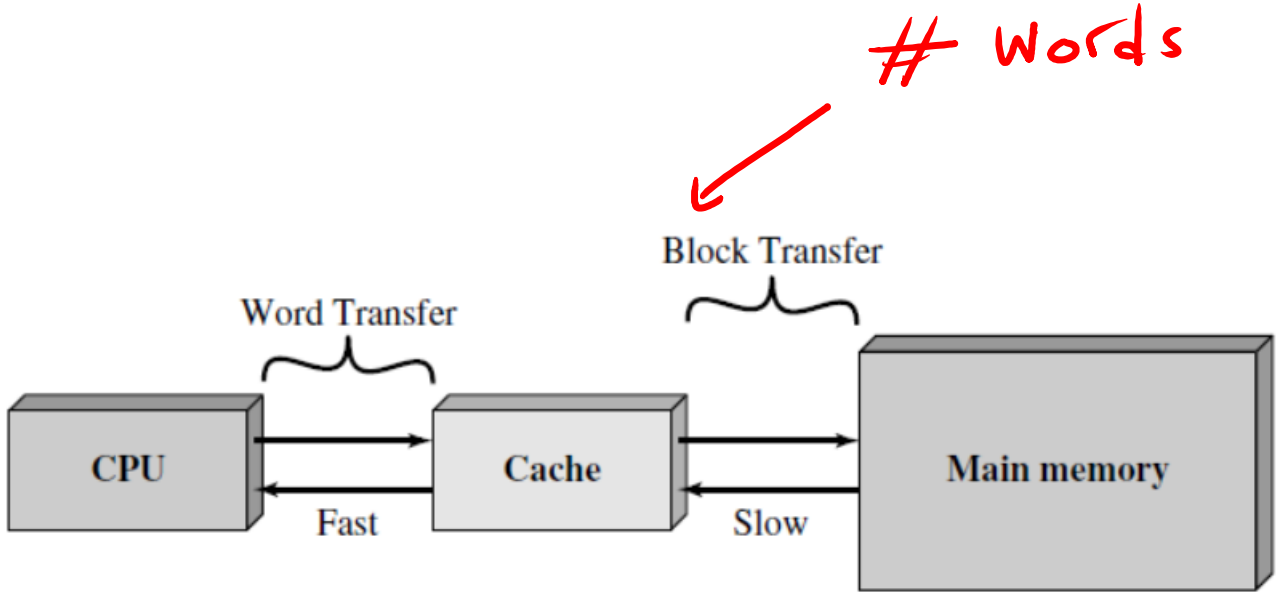
AGENDA

- Hit Ratio

Hit Ratio

- If the **accessed word** is found in the **faster memory**, that is defined as a **hit**.
- H is defined as the **fraction of all memory accesses** that are **found** in the **faster** memory
- A **miss** occurs if the accessed word is **not found** in the faster memory

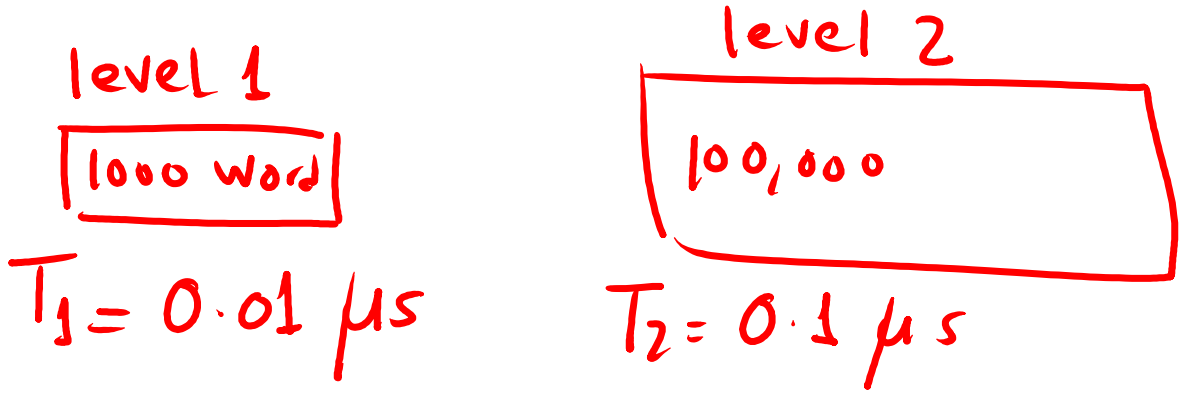
Hit Ratio


words
Block Transfer
Word Transfer
CPU
Cache
Main memory
Fast
Slow

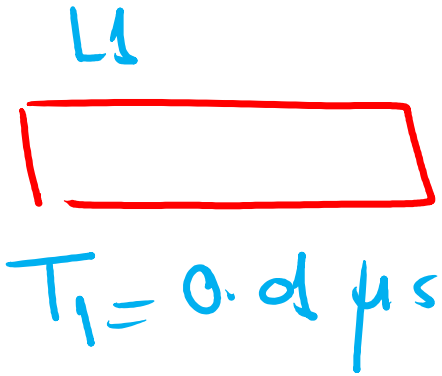
Example

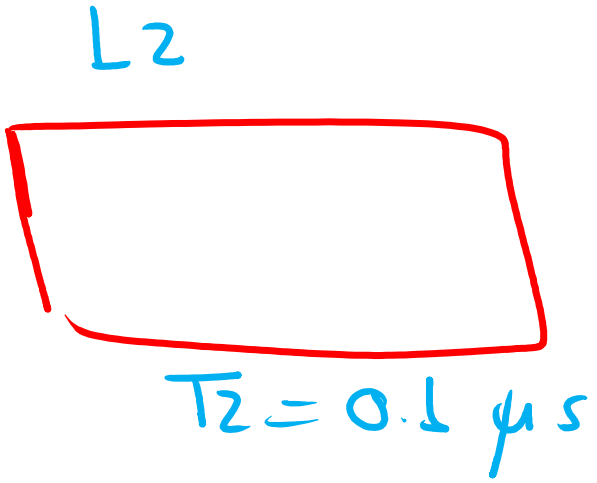
- Suppose that the processor has access to **two levels of memory**. **Level 1** contains 1000 words and has an access time of $0.01\ \mu s$; **level 2** contains 100,000 words and has an access time of $0.1\ \mu s$. Assume that **if a word** to be accessed is **in level 1**, then the processor accesses it **directly**. If it is in **level 2**, then the word is **first transferred to level 1** and then accessed by the processor

Hit ratio



Example





effective access time $= h(T_1) + (1-h)(T_1 + T_2)$

$= T_1 + T_2 - hT_2$