Taller de Lectocomprensión y Traducción en Inglés

PRACTICA PARA EL EXAMEN FINAL LIBRE - B

WRITE POLICY

Before a block **that** is resident in the cache can be replaced, it is necessary to consider whether **it** has been altered in the cache but not in main memory. If it has not, then the old block in the cache may be overwritten. If it has, that means that at least one write operation has been performed on a word in that slot of the cache, and main memory must be updated accordingly. A variety of write policies, with performance and economic trade-offs, are possible. There are two problems to contend with. First, more than one device may have access to main memory. For example, an I/O module may be able to read/write directly to memory. If a word has been altered only in the cache, then the corresponding memory word is invalid. Further, if the I/O device has altered main memory, then the cache word is invalid. A more complex problem occurs when multiple CPUs are attached to the same bus and each CPU has **its** own local cache. Then, if a word is altered in one cache, it could conceivably invalidate a word in other caches.

The simplest technique is called *write through*. Using **this technique**, all write operations are made to main memory as well as to the cache, ensuring that main memory is always valid. Any other CPU-cache module can monitor traffic to main memory to maintain consistency with its own cache. The main disadvantage of this technique is that **it** generates substantial memory traffic and may create a bottleneck. An alternative technique, known as *write back*, minimizes memory write. With write back, updates are made only in the cache.

Glosario: **write policy**: norma de escritura

1. Trascriba a qué refieren las siguientes palabras subrayadas en el texto.

a. **that** _____

b. **it** _____

c. **its** _____

d. **this technique** _____

e. **it** _____

2. Lea el texto con atención y responda las siguientes preguntas en español.

a. ¿Qué hay que hacer antes de reemplazar un bloque que ha sido modificado sólo en la memoria caché y no en la memoria principal?

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b. ¿Cuándo puede el cambio de una palabra en una memoria caché invalidar palabras en otras?

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c. ¿Cuál es la diferencia entre las técnicas "*write through*" y "*write back*" y por qué la primera de ellas puede ocasionar un "cuello de botella"?

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3. Traduzca los siguientes grupos nominales:

a. variety of write policies: _____

b. all write operations: _____

c. a more complex problem: _____

d. any other CPU-cache module: _____

e. the main disadvantage of this technique: _____

4. Traduzca el siguiente texto.

Write Policy (Continued)

When an update occurs, an UPDATE bit associated with the slot is set. Then, when a block is replaced, it is written back to main memory if and only if the UPDATE bit is set. The problem with the write back technique is that portions of main memory are invalid, and hence accesses by I/O can be allowed only through the cache.

In a bus organization in which more than one device (typically a processor) has a cache and main memory is shared, a new problem is introduced. If data in one cache is altered, this invalidates not only the corresponding word in main memory, but also that same word in other caches. Even if a write-through policy is used, the other caches may contain invalid data. A system that prevents this problem is said to maintain cache coherency. Cache coherency is an active field of research, and it is likely that simpler and more effective ways of ensuring consistency will be developed in the next years.