CST 334: Operating Systems

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# OSTEP Chapter 19: Translation Lookaside Buffer

**Instructions**. Read Chapter 19 of the OSTEP text and answer the following questions by editing [chap19.txt](https://drive.google.com/file/d/1doPBRmlP0N2b3xuyUq3wFB_4eK7si0AL/view?usp=sharing).

1. What’s the purpose of line 11 in Figure 19.1? Is it to a) compute the physical frame number, b) calculate the page size, or c) find the address of a page table entry?
2. Suppose we had a picture just like Figure 19.2, but each page had 32 bytes instead of 16 bytes, while the size of array ‘a’ stayed the same (and still started on byte 4 of virtual page 6). What would the TLB hit rate then be?

0.8

1. Which is normally faster: a) finding the PFN for a VPN in the TLB, or b) finding the PFN for a VPN in the page table?
2. (Yes/No) Does every process have its own translation lookaside buffer?
3. What is the purpose of a translation lookaside buffer? a) to speed up virtual address translation in systems with paging, b) to allow page tables to be shared between processes, or c) to store page information that cannot fit into memory?

**Submission**: Submit your edited chap19.txt on iLearn.

**Grading**: Each problem is worth 10 points.