Week #4: Memory II (Page Tables)
Exam Review Question
CS 241: Fall 2013

These questions are provided to you to help you study material covered in CS 241 that may appear on the final exam. These exact questions may or may not appear on the final exam, but the topics they cover will almost certainly be on the final exam.

1. Consider a 64-bit system that has 16 KB pages. If a single-level page table is used and each PTE is 4 bytes, how large is the page table?

2. Consider the same 64-bit system with 16 KB pages and 4 byte PTEs. Instead of a single-level page table, a multi-level page table is used where each page table fits exactly in one page. How many levels of page tables exist?

3. Consider a system with 40-bit addresses and a two-level page table. Both of the first- and second-level page table indexes are 16-bits. What is the offset of the address **`0x584ace42`**?

4. When executing a program, accessing the memory address **`0x80500ac3`** caused a segmentation fault. Explain the process that the computer used to look up that memory address and when the segmentation fault occurred.

5. Two processes independently access the address **`0x400241`**. When the value of that address is printed out, it was different in each process. Explain how this could happen.