CSCI 3150 Assignment 4

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1. Calculation

1: Size of virtual address space = first lv. page table entries * second lv. Page table entries * page size

= 4 * 8 * 8 = **256 bytes**

2: Bits of virtual address = **8 bits**

3: Bits reserved for first-level page table index = log2(1st page entry) = log2(4) = **2 bits**

Bits reserved for second-level page table index = log2(2nd page entry) = log2(8) = **3 bits**

Bits reserved for offset = log2(page size) = log2(8) = **3 bits**

2. Address Translation

First level table index (FTI), Second level table index (STI), Offset (OFF)

Virtual Address: 53 = 0011 0101 FTI = 00 (0), STI = 110 (6), OFF: 101 (5)

Virtual address mapped.

Physical address = 5 * 8 + 5 = **45**

Virtual address: 84 = 0101 0100 FTI = 01 (1), STI = 010 (2), OFF: 100 (4)

Virtual address not mapped.

Virtual address: 169 = 1010 1001 FTI = 10 (2), STI = 101 (5), OFF: 001 (1)

Virtual address mapped.

Physical address = 8 * 8 + 1 = **65**

Virtual address: 212 = 1101 0100 FTI = 11 (3), STI = 010 (2), OFF: 100 (4)

Virtual address not mapped.

3. Page Mapping Setup

PT@PFN=10

0	
	0
	1
	2
7	

PT@PFN=11

0	4
	5
	6
	7
7	

PT@PFN=12

0	
	9
7	10