

Score: _____

Name: _____

ECE 3055 Quiz 8 – October 22, 2008

Assume a 16-entry direct-mapped TLB is used in a system with 40-bit virtual byte addresses, 32-bit physical memory byte addresses, and 4K byte pages. For the sequence of virtual addresses shown below in hex, state whether each address causes a TLB hit or miss and show the physical address generated. The TLB is initially empty after power on and the initial contents of the page table are given. Assume all listed page table entries are valid. Show the final contents of the TLB after this sequence of addresses is accessed.

Virtual address sequence

<i>Address</i>	<i>Hit/Miss</i>	<i>Physical Address</i>
000000175	M	72000175
0000030BF2	M	C00003F2
000003B1D4	M	300001D4
0000001013	M	20000013
00000000C2	M	720000C2
0000030151	M	C0000151

TLB Initial Contents

TLB Final Contents

<i>Block</i>	<i>Valid</i>	<i>Tag</i>	<i>Data</i>	<i>Block</i>	<i>Valid</i>	<i>Tag</i>	<i>Data</i>
0	0	X	0 20 0 30 X	0	1	000003	C0000
1	0	X	X	1	1	00000B	20000
2	0	X	X	2	0	X	X
3	0	X	X	3	1	000003	30000

Page Table Initial Contents

<i>Virtual Page #</i>	<i>Data</i>
0000000	72000
0000001	20000
0000002	F0000
0000003	D2000
...	...
0000030	C0000
0000031	F0000
0000032	55000
0000033	30000