

Name: \_\_\_\_\_

**ECE 3055 Homework 3 - Due Date: Wednesday, April 4**

Assume a 16-entry direct-mapped TLB is used in a system with 16-bit virtual byte addresses, 12-bit physical byte addresses, and 256 byte pages. For the sequence of virtual addresses shown below, state whether each address causes a TLB hit or miss and show the physical address generated. Portions of the initial contents of the TLB and full 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

Address	Hit/Miss	Physical Address
0102	<u>m</u>	<u>F02</u>
00FF	<u>m</u>	<u>2FF</u>
0013	<u>H</u>	<u>213</u>
22CE	<u>M</u>	<u>ACE</u>
23A3	<u>H</u>	<u>EA3</u>
2115	<u>M</u>	<u>C15</u>
2266	<u>H</u>	<u>AGG</u>

**TLB Initial Contents**

Block	Tag	Data
0	2	8
1	2	C
2	0	5
3	2	E

**TLB Final Contents**

Block	Tag	Data
0	<u>0</u>	<u>2</u>
1	<del>2</del>	<del>C</del>
2	<u>2</u>	<u>A</u>
3	<u>2</u>	<u>E</u>

**Page Table Initial Contents**

Virtual Page #	Data
00	2
01	F
02	5
03	3
...	
20	8
21	C
22	A
23	E