

# Virtual Memory Exam Question Activity

## Problem 5. (10 points):

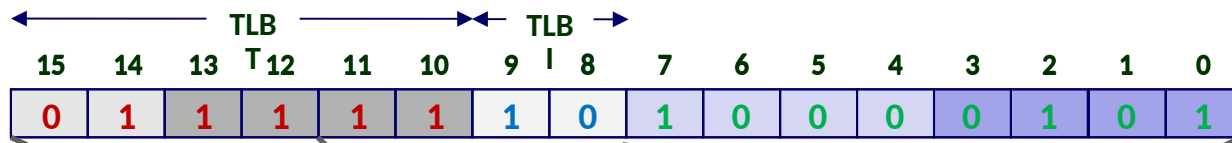
Assume a System that has

1. A two way set associative TLB
2. A TLB with 8 total entries
3.  $2^8$  byte page size
4.  $2^{16}$  bytes of virtual memory
5. one (or more) boats



Hex	Decimal	Binary
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
A	10	1010
B	11	1011
C	12	1100
D	13	1101
E	14	1110
F	15	1111

TLB			
Index	Tag	Frame Number	Valid
0	0x13	0x30	1
	0x34	0x58	0
1	0x1F	0x80	0
	0x2A	0x72	1
2	0x1F	0x95	1
	0x20	0xAA	0
3	0x3F	0x20	1
	0x3E	0xFF	0



A. Use the TLB to fill in the table. Strike out anything that you don't have enough information to fill in.

Virtual Address	Physical Address
0x7E85	0x9585
0xD301	-----
0x4C20	0x3020
0xD040	-----
-----	0x5830

$0x7E85 = 0x0111111010000101$

CI = 0x2

CT = 0x1F

$0x7E85 \rightarrow 0x9585$

Exam: <http://www.cs.cmu.edu/~213/oldexams/exam2b-s11.pdf> (solution)