

## Chapter 5 - Memory - Review Test

1

8 points

Given the following information:

There are 256 possible tags

There are 128 Cache blocks

How many bits for the Tag?	<input type="text"/>
How many bits are needed to reference a Cache block?	<input type="text"/>
How many bits are needed for the Block Offset?	<input type="text"/>
How many bytes in the block	<input type="text"/>

2

8 points

Tag is 10 bits how many different tags will there be?	<input type="text"/>
Index is 12 bits how many different cache blocks are there?	<input type="text"/>
How many bits wide will the offset be?	<input type="text"/>
Given the above information what is <b>DATA</b> block size (in BITS)?	<input type="text"/>

3

12 points

The memory address is 68CD51F1

Given Cache **Block** size (in bytes) is

32768

The **Offset** width (in bits) is

Given The **Tag** width (in bits) is

8

What is the **Cache Index** size in bits

How many Blocks are there in the Cache?

What is the **TAG** for this instruction?

What is the **INDEX** for this instruction?

What is the byte **Offset** of the block

4

25 points

PC	Tag	Index	Address (Jersey #)	Value
0	Mavericks	000	32	Shayne Whittington
1	Jazz	010	42	James Palmer Jr.
2	Hawks	010	26	Max Heidegger
3	Heat	101	21	Dewayne Dedmon
4	Jazz	010	10	Joey Hauser
5	Heat	001	9	Dru Smith
6	Magic	101	5	Paolo Banchero
7	Heat	000	64	Justin Tillman
8	76ers	110	70	Jon Teske
9	Hawks	011	19	Joel Ayayi

After 10 Instruction Fetches what will the Cache look like? Proper case the Hit and Miss field.

Tag	Index	Address (Jersey #)	State <u>Miss</u> or <u>Hit</u>
<input type="text"/>	000	<input type="text"/>	<input type="text"/>
<input type="text"/>	001	<input type="text"/>	<input type="text"/>
<input type="text"/>	010	<input type="text"/>	<input type="text"/>
<input type="text"/>	011	<input type="text"/>	<input type="text"/>
<input type="text"/>	100	<input type="text"/>	<input type="text"/>
<input type="text"/>	101	<input type="text"/>	<input type="text"/>
<input type="text"/>	110	<input type="text"/>	<input type="text"/>

	111		

5

14 points

Given: The **cache** contains 128 blocks each with **524288** bytes

What is the size (in bits) of the Tag

Given: this memory address.    **0111 1000 0011 0101 1100 1010 1100 1011**

What is the **Tag** reference?

What is the **Cache Index** reference?

What is the **Offset**?

What is the address in hex (all caps)

How many bits wide is the Block Offset

How many bits are needed for the Cache reference?

Given a <b>cache</b> with 128 blocks. How many bits are needed for the Cache Index reference?	7
Given each <b>block</b> is 524288 bytes. How many bits are needed for the <b>offset</b> in the block?	19
What is the Tag size in bits	<input type="text"/>
What is the <b>DATA</b> size of one block in <b>bits</b> ? No commas	<input type="text"/>
How many total <b>bits</b> are needed for one block? No commas	<input type="text"/>
For the full cache (all blocks all tags...), how many bits are needed? (no commas)	<input type="text"/>