

Take home exam due Saturday evening 6pm.

Text file at: **2240/7/quiz7.txt**

or

jpg image at: **2240/7/quiz7.jpg**

1. You use the Spim simulator to run a MIPS program with the command below.
At the start of the main function, what will the value in the \$a0 register be?

```
spim -f myprog.s this is a test
```

2. From question #1,
At the start of the main function, what will the value in the \$a1 register be?
Hint: the answer is not a specific number.

3. From question #1,
Near the start of the main function, the following MIPS statement is executed.
What value will be in \$t1? Your answer will be a value, but it may be shown
in several different ways.

```
lb $t1, ($a1)
```

4. Similar to question #3,
Given the following MIPS statement, what value will be in \$t2?

```
lb $t2, 4($a1)
```

5. The following values are memory addresses.
Which are aligned on a 4-byte boundary?

- A. 0x0ff22ff2
- B. 0x70000004
- C. 0x87654321
- D. 0x1234567D
- E. 128552

6. Give two reasons (advantages), that we have covered in class lectures, why memory addresses are often aligned on two, four, or eight byte boundaries. Briefly describe in your own words.

7. How many bytes of memory are used by the following C structure, if you were to use it in a program on Odin?

```
struct Mystruct {
    char c[15];
    int i;
    float f;
    double d;
};
```

8. Apply comments to the following MIPS program code.

```
li    $v0, 14
move  $a0, $s0
la    $a1, buffer
syscall
bltz  $v0, error
bgtz  $v0, top
```

9. What does the code in question #8 do?

10. The MIPS instruction set is considered a load and store architecture. This means that arithmetic and logic instructions...
- A. store their operands in main memory.
 - B. operate only on values in registers.
 - C. operate directly on values stored in the .data segment.
 - D. operate on values anywhere in machine memory.