

Signature \_\_\_\_\_

Name \_\_\_\_\_

cs30x \_\_\_\_\_

Student ID \_\_\_\_\_

Score: \_\_\_\_\_

**Quiz 2**  
**CSE 30**  
**Fall 2006**

#1. a) Write the SPARC assembly instructions to define the following **global** variables in the **data** segment:

```
char Wolfmother[] = "Mind's Eye";  
float root_beer = 8.05;
```

#2. What is the value (**in hex**) of %o1 after each set of instructions:

a)        set  0xCAFEBAFE, %o1  
          sra  %o1, 12, %o1

Value in %o1 at this point is **0x**\_\_\_\_\_

b)        set  0xCAFEBAFE, %o1  
          set  0x5A5A5A5A, %o2  
          xor  %o1, %o2, %o1

Value in %o1 at this point is **0x**\_\_\_\_\_

c)        set  0xCAFEBAFE, %o1  
          set  0x5A5A5A5A, %o2  
          and  %o1, %o2, %o1

Value in %o1 at this point is **0x**\_\_\_\_\_

#3. Write the `save` SPARC instruction to allocate 4 doubles as local variables on the stack.

save  %sp, \_\_\_\_\_, %sp

(over)

**#4.** Write the equivalent **unoptimized** SPARC assembly language instructions to perform the following C code fragment. **Use the loop construct specified in class/Notes.**

<b>C</b>	<b>SPARC assembly</b>
<pre>a = -9129;</pre>	<pre>/* x is mapped to %10 */</pre>
<pre>while ( a &lt; 129 ) {</pre>	<pre>/* a is mapped to %11 */</pre>
<pre>    x = 391 + a;</pre>	
<pre>    a++;</pre>	
<pre>}</pre>	

**#5.** Write the equivalent **unoptimized** SPARC assembly language instructions to perform the following C code fragment.

<b>C</b>	<b>SPARC assembly</b>
<pre>x = x / 9876;</pre>	<pre>/* x is mapped to %12 */</pre>

Now optimize your answer to eliminate any delay slots:

**Optimized version of above SPARC assembly**