

Signature _____

Name _____

cs30x _____

Student ID _____

Score: _____

Quiz 2
CSE 30
Winter 2006

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

```
char JohnnyCash[] = "Personal Jesus";  
double mint = 4.20;
```

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

a) set 0xCAFEBABE, %o1
 sll %o1, 16, %o1

Value in %o1 at this point is **0x**_____

b) set 0xCAFEBABE, %o1
 set 0xA5A5A5A5, %o2
 xor %o1, %o2, %o1

Value in %o1 at this point is **0x**_____

c) set 0xCAFEBABE, %o1
 set 0xA5A5A5A5, %o2
 and %o1, %o2, %o1

Value in %o1 at this point is **0x**_____

#3. Write the `save` SPARC instruction to allocate 3 shorts 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.**

C	SPARC assembly
<pre>x = 7219;</pre>	<pre>/* x is mapped to %13 */</pre>
<pre>while (x >= 219) {</pre>	<pre>/* a is mapped to %16 */</pre>
<pre> a = x - 391;</pre>	
<pre> --x;</pre>	
<pre>}</pre>	

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

C	SPARC assembly
<pre>x = x / 4909;</pre>	<pre>/* x is mapped to %14 */</pre>

Now optimize your answer to eliminate any delay slots:

Optimized version of above SPARC assembly