**Name:** **Id#**

# ICS 233, Term 142

## Computer Architecture & Assembly Language

### Quiz# 3

Date: Tuesday, March 17, 2015

**Q1.** Assuming that functions F and G receive two arguments in $a0 and $a1 and return their results in $v0, implement the function F given below saving needed registers on the stack. Save changed registers according to the assumed programming convention.

```
int F(int a, int b) {
        return  a+G(b, G(a, b));
}
```

.

**Q2.** Given that **Multiplicand=1010** and **Multiplier=0111,** using the **refined signed multiplication** hardware, show the **signed** multiplication of **Multiplicand** by **Multiplier**. The result of the multiplication should be an 8 bit **signed** number in HI and LO registers. Show the steps of your work.

| **Iteration** | | **Multiplicand** | **Sign** | **Product = HI,LO** |
|---|---|---|---|---|
| 0 | | | | |
| 1 | | | | |
| | | | | |
| 2 | | | | |
| | | | | |
| 3 | | | | |
| | | | | |
| 4 | | | | |
| | | | | |

**Q3.** Given that **Dividend=1011** and **Divisor=0011**, Using the **refined unsigned division** hardware, show the **unsigned** division of **Dividend** by **Divisor**. The result of division should be stored in the Remainder and Quotient registers. Show the steps of your work.

| **Iteration** | | **Remainder (HI)** | **Quotient (LO)** | **Divisor** | **Difference** |
|---|---|---|---|---|---|
| 0 | | | | | |
| 1 | | | | | |
| | | | | | |
| 2 | | | | | |
| | | | | | |
| 3 | | | | | |
| | | | | | |
| 4 | | | | | |
| | | | | | |