Chapter Exam

Chapter 3 Arithmetic for Computers

2013/04/30

1. The following table shows pairs of decimal numbers.

	A	B
	0	128

(1) Assume A and B are signed 8-bit decimal integers. Calculate A + B. Is there overflow, underflow, or neither? Why? **(10%)**

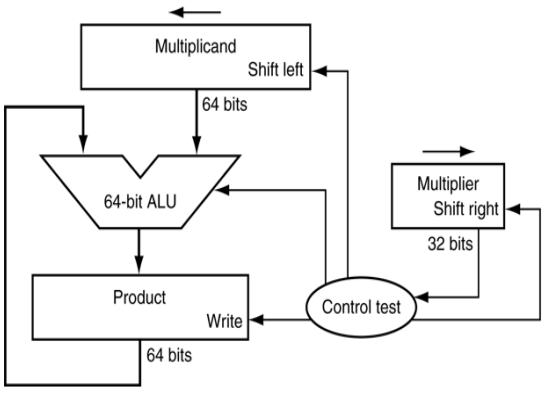
(2) Assume A and B are signed 8-bit decimal integers. Calculate A - B. Is there overflow, underflow, or neither? Why? **(10%)**

2. The following is a c code.

```
float exam (float x){
    return ((3/10)*(x - 2));
}
```

What is the return value of **exam(3)** due to the above code?
(You don't need to write the reason) **(5 Points)**

3. Using a 4-bit version of the multiply algorithm t, let's calculate decimal number **2 * 3**
Complete the contents of each register on each step list on the following table.
(Plaese write down the answers on your answer sheet) (20 Points)



Step	Action	Multiplier	Multiplicand	Product
0	Initial values	0011	0000 0010	0000 0000
1	Prod = Prod + Mcand			
	Lshift Mcand			
	Rshift Mplier			(7)
2	Prod = Prod + Mcand			
	Lshift Mcand			
	Rshift Mplier	(1)	(4)	(8)
3	No operation			
	Lshift Mcand			
	Rshift Mplier	(2)	(5)	(9)
4	No operation			
	Lshift Mcand			
	Rshift Mplier	(3)	(6)	(10)

4. What "**decimal number"** does the following bit pattern represent: **0x34B60000** If it is a floating-point number using the IEEE 754 standard(32 bit)? **(25 Points)**

5. What decimal number does the bit pattern represent if it is a floating-point number? Use the IEEE 754 standard(32 bit).

The following table shows decimal numbers

a.	-161.25
b.	118.75
c.	3.14

Write down the binary representation of the decimal number, assuming the IEEE 754 single precision format. **(a.10% b.10% c.30%)**