Tutorial 1 Solutions

Soln 1 :
From 1's complement

a) 61
b) -119

From 2's complement

a) -71
b) -7

From Sign Magnitude

a) 58
b) -(2^31 - 35)

Soln 2 :

a) 00100001
b) 10001011
c) 11101100
d) 11111110

Soln 3 :
0 to 4,294,967,295 (2^32 - 1) unsigned) binary number and -2,147,483,648 (-2^31) through 2,147,483,647 (2^31 - 1) Two's complement.

When constant value can not be represented as a 16 bit two's complement number then it is translated to both X and ori. X represents load upper immediate(LUI).

Soln 4 $t1=1 $t2=0

Soln 5 (b) #Load 2147483647 into $s1

```
LUI $s0, 32767
ORI $s1, $s0, 65535
ADDI $s2, $s1, 1
```

(c) Add a positive and a negative number.
(d) When Most Significant BIT(MSB) of both the Integers is 1 and MSB of Result is 0 or vice versa
(e) addu ,addiu or subu

Soln 6 fffffff0

Soln 7

Soln 8 lb performs sign extension.The lb instruction loads the byte from memory into the

low order eight bits of the register. These are bits 0-7 of the register whereas lbu instruction fills bits 8-31 of the register with zeros

Soln 9 Exponent : 8 bits , Fraction : 23 bits

01000001 00100000 00101000 11110110
11000000 00000111 10101110 00010100
10111111 00011001 10011001 10011010

Soln 10 3.526483E-38
-1.08468374E-29