

COE 205-02 : Computer Organization & Assembly Language
 Quiz1 on Data Representation
 Wednesday, September 20, 2006

SOLUTION

1) (2 pts) What is the signed decimal representation of the following signed binary numbers?

a) 10110110

Answer = $-128+32+16+4+2 = -74$

b) 11001100

Answer = $-128+64+8+4 = -52$

2) (4 pts) What are the unsigned and signed decimal values of the following hex numbers?

a) 8A1F

unsigned value = $8*16^3+10*16^2+16+15 = 35359$

signed value = $35359 - 2^{16} = -30177$

b) C1B3

unsigned value = $12*16^3+16^2+11*16+3 = 49587$

signed value = $49587 - 2^{16} = -15949$

3) (4 pts) Carry the following additions. Indicate whether there is a carry or overflow?

a)
$$\begin{array}{r} \text{1111} \\ 11010010 \text{ (binary)} \\ + 10111101 \text{ (binary)} \\ \hline 10001111 \\ \text{Carry} = 1 \\ \text{Overflow} = 0 \end{array}$$

No overflow because operands and result are negative

b)
$$\begin{array}{r} \text{1 11} \\ A1CF \text{ (hexadecimal)} \\ + B2D3 \text{ (hexadecimal)} \\ \hline 54A2 \\ \text{Carry} = 1 \\ \text{Overflow} = 1 \end{array}$$

Yes, there is an overflow because operands are negative, but result is > 0