Assignment #3

data representation and number conversions

Section 1)

Q1) Convert decimal [161] to Binary and hexidecimal (unsigned integers for this section)

a) Converting to Binary using successive divide by 2

	Q	R
161/2	80	1
80/2	40	0
40/2	20	0
20/2	10	0
10/2	5	0
5/2	2	1
2/2	1	0
1/2	0	1

Binary = 1 0 1 0 0 0 0 1

8 Bits = 1 Byte

B) Converting to hexidecimal

Successive divide by 16

	Q	R
161/16	10	1
10/16	0	10

hexidecimal = 0 X a 1

Q2) Convert Binary [1000010011001010] to decimal and hexidecimal

Binary to decimal

a) 1 0 0 0 0 1 0 0 1 1 0 0 1 0 1 0

2^{15} 2^{10} 2^7 2^6 2^3 2^1

$2^{15} + 2^{10} + 2^7 + 2^6 + 2^3 + 2^1$

$32,768 + 1024 + 128 + 64 + 8 + 2 =$ **33994** decimal #

B) Convert to hexidecimal

[1 0 0 0 0 1 0 0 1 1 0 0 1 0 1 0]

8 4 C a

0x 84Ca hexidecimal #