

Quiz 1

BASICS OF COMPUTING
(CSCE 101, SPRING 2007)
URL: <http://my.unl.edu>
30th January, 2007

(20 points)

Name :
Course No : **CSCE105**

1 True/False (1 point each)

- 1 Byte = 8 bits, 1 KB = 1000 bytes. **True / False**
- The unsigned binary number 11 is equal to the unsigned binary number 00000011. **True / False**
- The maximum number we can represent in binary using 6 bits is 32. **True / False**
- ABBACADABBA is a valid Hexadecimal number. **True / False**
- The two's complement number 100 is the same as 0100. **True / False**

2 Application

- Imagine you will be asked to perform the binary addition of two numbers in the set of integers from -3 up to positive 4 (for example, $-3 + -3$ would be one of the possible additions), without knowing beforehand what numbers you will be adding:
 - (1 point) Which of the following number systems would you choose to represent the numbers? [**Two's complement / unsigned binary / Excess Notation**]
Why?
 - (2 points) What is the minimum length bit pattern necessary to represent the numbers? _____
Why?
 - (2 points) Perform the binary addition $-2 + 3$ using your representation.

7. (2 points) Represent the **base-10** number 1011010 in:

(a) **Binary:**

(b) **Hexadecimal:**

8. (2 points) Represent the **unsigned binary** number 1.011 in:

(a) **Base-10:**

(b) **8-bit Floating Point format:**

9. (4 points) How many bytes are necessary to represent a 200×400 pixel image where:
Show your work!

(a) Each pixel is either black/white?

(b) Each pixel is RGB?

10. (2 points) Perform the following unsigned binary additions:

$$(a) \begin{array}{r} 01011 \\ +10001 \\ \hline \end{array}$$

$$(b) \begin{array}{r} 111100 \\ +100111 \\ \hline \end{array}$$