

COMP 222 Spring 2016 Quiz #1 Record answers on Scantron.

1. Express the unsigned binary number 1111000 as a series of powers of 2 (each 1 represents a power of 2).
 - A. $2^6 + 2^5 + 2^4 + 2^3 \leftarrow 64 + 32 + 16 + 8 = 120$
 - B. $2^7 + 2^6 + 2^5 + 2^4$
 - C. $2^6 + 2^3$
 - D. $2^7 + 2^4$
2. Re-express 1111000 using the +/- shortcut discussed in class.
 - A. $2^7 - 1$
 - B. $2^6 - 1$
 - C. $2^7 - 2^3 \leftarrow 128 - 8 = 120$
 - D. $2^6 - 2^3$
3. Convert 1111000 to octal.
 - A. 1320
 - B. 170 $\leftarrow (1)(111)(000) = 170_8$
 - C. 78
 - D. 150
4. Convert 1111000 to hex.
 - A. F0
 - B. 78 $\leftarrow (111)(1000) = 78_{16}$ (groups of 4 starting on the right)
 - C. 70
 - D. F8
5. Convert the unsigned hex number FE4A to binary.
 - A. 1010010011101111
 - B. 1111111110001010
 - C. 0111011101001010
 - D. 111111001001010 $\leftarrow (1111)(1110)(0100)(1010)$
6. Convert FE4A to octal (hint: convert to binary first).
 - A. 1514410
 - B. 77112
 - C. 177112 $\leftarrow 111111001001010 = 1(111)(111)(001)(001)(010) = 177112$ (groups of 3 from right)
 - D. 7642
7. How would you convert 32_{13} (base 13) to decimal (base 10)?
 - A. $3 \times 13^1 + 2 \times 13^0 \leftarrow$ positions represent powers of the base, digits represent coefficients
 - B. $3 \times 16^2 + 2 \times 16^1$
 - C. $13 \times 3^1 + 13 \times 2^0$
 - D. $3 \times 13^2 + 2 \times 13^1$
8. Suppose x is a 4 digit base 10 number (like 1234 or 5465). Which expression checks that the first digit equals the last digit? Note: “%” represents the integer remainder operation mod or modulo, and “/” represents
 - A. $x \% 1000 == x / 10$
 - B. $x \% 10 == x \% 1000$
 - C. $x / 10 == x / 1000$
 - D. $x \% 10 == x / 1000 \leftarrow$ Examples:

$5465 \% 10 = 5, 5465 / 1000 = 5$
 $1234 \% 10 = 4, 1234 / 1000 = 1$