

Assignment 3 - Number Systems and Logical Operators

due Friday, October 4

Question 1

Convert the following decimal numbers to binary and hexadecimal. Express the hexadecimal numbers as C constants (use a '0x' prefix).

1. 8
2. 7
3. 16
4. 15
5. 256
6. 255
7. 237

Question 2

Convert the following binary numbers to hexadecimal and decimal.

1. 1011
2. 1011 1011
3. 1000 0000
4. 11 1100
5. 0011 1100

Question 3

Convert the following hexadecimal numbers to binary and decimal.

1. 0x0e
2. 0xe
3. 0xAA

4. 0xFA
5. 0x40
6. 0x18

Question 4

Write a function called `printbin` that prints the binary value of an integer whose value can be assumed to be less than 32768. This function should take one integer argument and not return a value. *Hint: use a loop which computes the values of powers of 2 starting at 16384 and going down to 1. Use the conversion algorithm described in the class notes.*

Question 5

What are the values of the following expressions? Give your answer in hex (hexadecimal) notation.

1. (0xaa & 0x0f)
2. (0x3c & 0xf0) | (0x3c \& 0x0f)
3. 3 * (0xf0 && 0x0f)
4. (0x3c ^ 0xff) + (1 < 3)
5. ~ (128 | ' ')
6. 128 || (' ' == 0x20)