LSU EE 2720-2 Homework 1 Due: 21 September 2011

Problem 1: Perform each of the conversions below.

Convert 812_{10} to Hexadecimal, Binary, and Octal the smart way. The smart way is to convert it to hexadecimal first. From there it is a simple matter to convert the hex to binary and then the binary to octal.

Convert 812_{16} to decimal.

Convert 812_{10} to BCD, Excess-3, and 2421 encoding.

Convert -812_{10} to 12-bit: signed magnitude, 2's complement, and 1's complement representations.

Convert the 8-bit quantity `10100101` to decimal assuming it is: binary unsigned, 2's complement signed, 1's complement signed, and BCD unsigned. If the quantity `10100101` is not a valid number in any of these representation, then use "not valid" as your answer instead of the decimal number.

Problem 2: Perform the arithmetic indicated below.

- Show the answers in the same representation as the operands (binary, BCD, etc) and also in decimal.
- Show your work.
- Indicate whether there was overflow.

For the problems below do the arithmetic in the indicated representation.

Add the following two 8-bit unsigned binary integers:
`01110010 + 10010011`.

Add the following two 9-bit unsigned binary integers (leading zeros omitted):
`1110010 + 10010011`.

Add the following two 8-bit unsigned BCD integers:
`01110010 + 10010011`.

Add the following two 8-bit 2's complement integers:
`01110010 + 10010011`.

Add the following two 9-bit 2's complement integers (leading zeros—and only zeros—omitted):
`1110010 + 10010011`.

Add the following two 8-bit 1's complement integers:
`01110010 + 10010011`.

For the problems below, do the arithmetic in any form you like, but show the result in the indicated representation.

Add the following 24-bit ASCII encoded decimal numbers given in hexadecimal:
`0x203337 + 0x203535`.

Add the following 32-bit ASCII encoded numbers in English given in hexadecimal:
`0x20204f4e45 + 0x202054574f`.