Homework 1

Revision **0**

Instructions

*Note: Late HW is **not** accepted! Put your **"last name, first name," the course number (3744), and the HW number** in the **top right hand corner** of the first page of **all** HW assignments. Also for **all** homework, use file name **`HWx.pdf`**, where x is replaced by the homework number, e.g., **`HW3.pdf for homework 3`**. Do **NOT** put your social security number or your UF ID number on your HW. Include **all** program listings (if any), i.e., list files. When possible, **verify** your program solutions with the simulator.*

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1. What is 1010 1111 in decimal if the number of bits is 8 and the format is 1's complement?
2. What is 1010 1111 in decimal if the number of bits is 8 and the format is 2's complement?
3. What is 1010 1111 in decimal if the number of bits is 8 and the format is sign magnitude?
4. What is 1010 1111 in decimal if the number of bits is 8 and the format is unsigned binary?
5. What is 79 decimal expressed as a BCD number?
6. What is the unsigned binary number 1010 1010 1010.1010 in decimal?
7. What is 6052 decimal expressed as a hex number?
8. What is 6052 decimal expressed as a binary number?
9. What is 6052 decimal expressed as an octal number?
10. What are the hex values of the ASCII code "Dr. Schwartz"? Note: Only code what is inside the quotes.
11. How many possible combinations are there in 4 bits? 7 bits? 10 bits?
12. What are the largest possible unsigned binary numbers for the bit lengths given in #11?
13. Give two examples of adding unsigned 8-bit numbers that result in a carry.
14. Give an example of adding two signed 8-bit numbers that result in an overflow.
15. Give an example of subtracting two signed 8-bit numbers that result in an overflow.
16. Repeat problems 13-15 above assuming that you have 16 bit numbers.
17. Name and describe four specialized internal function units in the Atmel XMEGA? For example SRAM – volatile memory, used to store temporary variables during run time. Tell me about four others.

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