

Homework #3 for ECE 496  
Computer Arithmetic (Chapter 3)  
Hardcopy is due in class on Tuesday, February 19, 2013

- 1) [5] Patterson & Hennessy 3.3.1
- 2) [10] P&H 3.4.1a
- 3) [10] P&H 3.7.5a
- 4) [10] Show the step-by-step result of multiplying 6F and 2D using Booth's algorithm. Assume they are 8-bit two's-complement integers, stored in hexadecimal format.
- 5) [10] Show how a computer would add 7.25 and 20.5 using IEEE 754 single-precision floating point format. Show all of the steps, including alignment and normalization.
- 6) [15] Show how a computer would multiply 3.75 and 12.5 using IEEE 754 single-precision floating point format. Show all of the steps, including alignment and normalization.
- 7) [15] Write a program in a HLL (C, C++, or Java) that exposes the computer hardware's finite amount of precision. Explain how this program exposes the lack of precision. If you cannot figure out how to expose the lack of precision, then explain how you think the compiler is out-smarting you. In either case, please submit the code in hardcopy (it should be short!), not electronically. Please also submit the program output; if the output isn't what you were hoping for, show both the "ideal" and actual outputs.