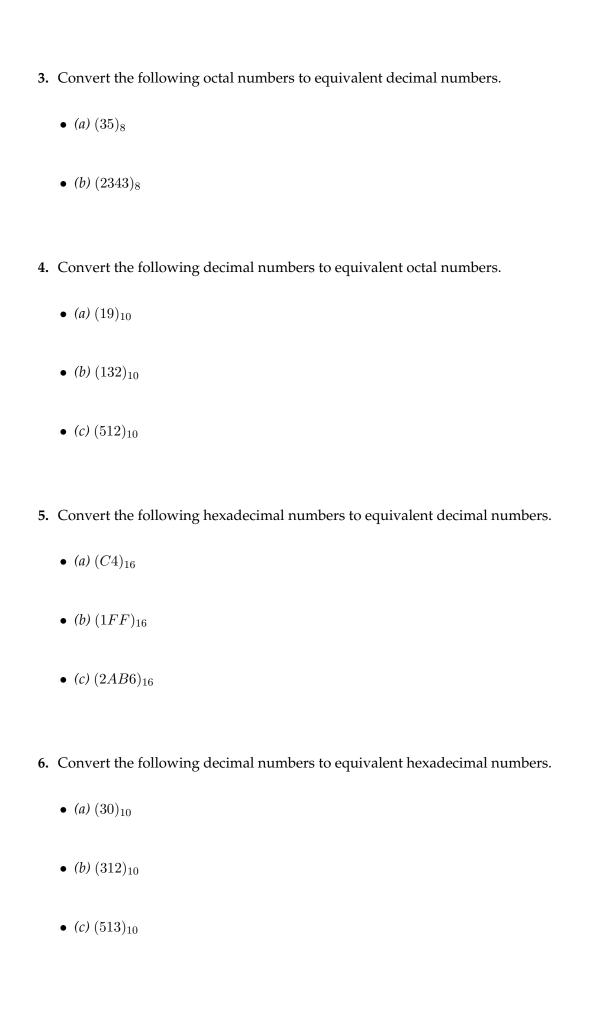
CS150 - Computer Organization and Architecture Homework #1 - Spring 2016

Due on or before Monday, February 1 at 14:20 PDT

In all of the exercises in this assignment, please clearly indicate your answer and show your work for full credit.
1. Convert the following binary numbers to equivalent decimal numbers.
• (a) (00001101) ₂
• <i>(b)</i> (00010001) ₂
• (c) (01101101) ₂
• (d) (11011101) ₂
• (e) (11111111) ₂
• (f) (11100.011) ₂
2. Convert the following decimal numbers to equivalent binary numbers.
• (a) $(67)_{10}$
• (b) (54) ₁₀
• (c) (255) ₁₀
• (d) (256) ₁₀
• (e) (2416) ₁₀
• (f) (4095) ₁₀



- 7. Convert the following binary numbers to equivalent octal numbers.
 - (a) $(11101)_2$
 - (b) (101101101)₂
 - (c) (10110101)₂
- **8.** Convert the following binary numbers to equivalent hexadecimal numbers.
 - (a) $(101010)_2$
 - (b) (111100110)₂
 - (c) (11010101)₂
- **9.** Miscellaneous Perform the following base conversions.
 - (a) $(341)_5 = (?)_{10}$
 - (b) $(76)_{10} = (?)_7$
 - (c) $(1101001)_2 = (?)_4$
 - (d) $(BFE)_{16} = (?)_{12}$
 - (e) $(2112)_3 = (?)_8$
 - (f) $(7AD)_{16} = (?)_{10}$
 - (g) $(6101)_7 = (?)_{10}$

10. Perform the following **unsigned binary** arithmetic.

- a. 01010111
 - + 00110011
 - -----

- b. 00100110
 - + 01001111
 - -----

- c. 01010011
 - + 10111011
 - -----

- d. 01011100
 - + 00011111

- e. 10011011
 - 00111011
 - _____
- f. 01011001
 - 00011111
 - -----

11. Perform the following **octal** arithmetic.

- a. 424
- + 163

- b. 5112
 - + 1346
 - ____

12. Perform the following **hexadecimal** arithmetic.

- a. A4
 - + 27
 - __

- b. 7F3
 - + 41D
 - ___

- c. 806
 - 4B
 - ---

- d. 56C
 - 1FF
 - ---