

Homework 3

Due Date: March 26

All written homeworks are due at the beginning of class on the due date. There is no provision for homework turned in late. Partial credit will be given for work shown. Points are scaled relative to the “time” value given in the book (the number in square brackets next to the problem). If your homework is longer than one page, please staple or paper-clip the pages together. Also, please do not hand in paper with fringes. Be as neat as possible; if I can’t read it, it’s wrong.

It is not guaranteed that all problems will be graded. We will either cover answers in class and/or a solution sheet will be posted.

At the end of your homework, please write and sign the Honor Code pledge:

I have abided by the Wheaton College Honor Code in this work.

Do text problems:

3.2¹, 3.4, 3.7, 3.20, 3.21, 3.22, 3.23, 3.29

In addition:

1. [5] What binary number does $9FFE\ FFB_{16}$ represent? What decimal integer does it represent? Show your work. ²
2. [5] What decimal number does the following two’s complement binary number represent? Show your work. ³
 $1111\ 1111\ 1111\ 1111\ 1111\ 1110\ 1111\ 1110_2$
3. [5] What decimal number does the following two’s complement binary number represent? Show your work.
 $0000\ 0000\ 0001\ 1111\ 0111\ 1111\ 1111\ 0111_2$
4. [10] Show the stages and the final result of multiplying -13 by 8 using Booth’s algorithm. Assume a 5-bit machine.
5. [10] Show the stages and the final result(s) of dividing 17 by -6 using the algorithm(s) shown in class. Assume a 5-bit machine. Remember that two’s complement can not be used in division operations.

¹Some textbooks have a typo. The problem should read: $5ED4 - 07A4$

²Remember there’s a quick way to do this and a very tedious way.

³Same with this one!