- CPSC 275: Introduction to Computer Systems

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Fall 2025

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Homework 4

NOTE: You are not required to hand in the following exercises, but you are strongly encouraged to complete them to strengthen your understanding of the concepts covered in class.

1. Construct a similar table (Slide 3, Lecture 4) for Java on a typical 64-bit machine. Note that C and Java do not have exactly the same set of primitive data types.

2. Using only bit-level and logical operations, write a C expression that is equivalent to `x == y`. In other words, it will return `1` when `x` and `y` are equal, and `0` otherwise.

3. Write C expressions, in terms of variable `x`, for the following values. Your code should work for any word size $w \geq 8$. For reference, we show the result of evaluating the expressions for `x = 0x87654321`, with $w = 32$.
   A. The least significant byte of `x`, with all other bits set to 0. [`0x00000021`].
   B. All but the least significant byte of `x` complemented, with the least significant byte left unchanged. [`0x789ABC21`].
   C. The least significant byte set to all `1`s, and all other bytes of `x` left unchanged. [`0x876543FF`].

4. As we learned in class, many Internet protocols use big-endian (network byte order). If a little-endian machine (e.g., a Windows desktop) sends `0x3344` over the network, what sequence of bytes will appear on the wire? How would the receiving program correctly interpret the data?

5. Complete the tutorial on the *vi* editor right here.

- **Welcome: Sean**
  - LogOut