CSCI 2321 (Computer Design), Spring 2021
Reading Quiz 6

Credit: 10 points.

1 Reading

Be sure you have read, or at least skimmed, Chapter 3 of the textbook.

2 Instructions

Answer the questions below using *only* the course textbook (i.e., no Web searches). Please work independently rather than in groups, and include the Honor Code pledge in what you turn in, either the full pledge or just the word "pledged". (Please put this in the same document as your answers, so I don't overlook it.)

You may write out your answers by hand and scan them, or you may use a word processor or other program, but please submit a PDF or plain text via e-mail to my TMail address. (No links to shared files on Google Drive please.) Please use a subject line that mentions the course and the assignment (e.g., "csci 2321 quiz 6" or "computer design quiz 6").

3 Questions

1. (2.5 points) In lecture I talk about the textbook's discussion of algorithms(?) for multiplication and division but gloss over the fact that numbers can be signed. What does the textbook say about multiplication and division when one or both operands are negative?

2. (2.5 points) In lecture I mention that the IEEE 754 format for floating point has to explicitly provide a special representation for zero. It provides two other special representations. What are they, and how might they arise?

3. (2.5 points) Which can store a larger range of numbers, IEEE 754 single- or IEEE 754 double-precision? Which can store numbers with greater precision? If you had a hypothetical 64-bit floating-point format (details unspecified), how would it compare to double precision on these two measures?

4. (2.5 points) Among the pitfalls and fallacies discussed by the textbook is a discussion of whether anyone but matheticians cares about the details of floating point arithmetic. What historical incident does it cite to say this isn't true?