CSCI 330 Spring 1999

Quiz 9

Assigned Tuesday 99/2/16

This exercise about typing (in functional languages) is a slight modification of Exercise 2.2 in: Paulson, L.C. *ML for the Working Programmer*. Cambridge, UK: Cambridge University Press, 1996.

> A LISP Hacker says: "Since the integers are a subset of the real numbers, the distinction between them is wholly artificial–foisted on us by hardware designers. ML should simply provide numbers, as LISP does, and automatically use integers or reals as appropriate."

Providing only numbers (without distinguishing integers from reals) simplifies the language and eliminates overloading of arithmetic operators. However, there are problems with the LISP approach; mention one. **Answer** (from Paulson himself):

1. Confuses (exact) integers with (inexact) reals;
2. type conversions at run time may be unpredictable;
3. probably less efficient at run time.