2003 Paper 2 Question 6

Computer Perspectives

You start using a new computer, which has an implementation of ML. You write a new ML program which is intended to produce a result of type `int`, i.e. an integer. You run it, and see on your screen (which we assume works properly) the following response:

$$1.99 \ : \ \ int$$

Discuss the following as possible reasons for the response:

(*a*) your program is faulty;

(*b*) the computer's calculation with real numbers is inaccurate;

(*c*) the ML implementation is faulty;

(*d*) ML is a badly designed language.

As part of your answer, discuss the assertion that "a type system is a way of ensuring that every program does what it was supposed to do".

[20 marks]