

1998 Paper 9 Question 13

Types

What is meant by the terms *safety* and *type soundness* in connection with programming languages and their type systems? [2 marks]

Explain how a naïve combination of ML-style polymorphism and references results in an unsound type system. Your account should include the axioms and rules of the type system, but need not give a formal definition of the operational semantics. [15 marks]

State, without proof, how the rule for typing **let**-expressions can be restricted to restore type soundness. [3 marks]