

1997 Paper 4 Question 3

Further Modula-3

Describe the use of generic interfaces and implementations in Modula-3. [8 marks]

Why do generic modules have interfaces as parameters rather than types? [2 marks]

A Modula-3 library is required to model a set of values of some (generic) type. For illustration, a set could be modelled as an opaque object with methods to initialise it as an empty set, to insert a value of the element type, to test a value for membership in the set and to form a new set as the union with another set.

Write a generic interface for this set type. [5 marks]

Sketch an implementation including a concrete revelation of the type and signatures of the default methods but omitting their actual code. Indicate the kinds of constraints that might be imposed when instantiating the module. [5 marks]