

1994 Paper 9 Question 7

Algebraic Manipulation

Explain how polynomials can be represented within an algebra system using (a) recursive, and (b) distributed data structures.

For each, illustrate your answer by showing what structure will be generated for the polynomial $a_1 a_2 \dots a_{10} (1 + x + \dots + x^{10})$ first when the 11 variables a_1, \dots, a_{10} and x are sorted in alphabetic order, and then when they are kept in inverse alphabetic order. [16 marks]

Does the ordering used make any difference to the amount of space consumed? [4 marks]