

1997 Paper 2 Question 7

Regular Languages and Finite Automata

Janet and John have been asked to produce a formal design for a piece of sequential hardware. Janet starts her design by setting up a regular grammar that characterises the behaviour needed, while John starts with a regular expression. When they have each separately finished that part of their design they decide that they should check to see whether the languages described by their two formalisms are the same.

Explain how (in a systematic way) they can do this. Standard results that they rely on should be stated explicitly and precisely, and comments about the expected costs of performing the comparison may be useful. [20 marks]