

1993 Paper 10 Question 12

Proving Programs Correct

Explain the difference between partial and total correctness and give examples to illustrate the difference. [4 marks]

Does the usual FOR-rule for partial correctness work for total correctness? Justify your answer. [4 marks]

Does the usual WHILE-rule for partial correctness work for total correctness? Justify your answer. [4 marks]

Explain why it is necessary to assume that expressions are free of *side effects* for the Assignment Axiom to be sound. [4 marks]

Explain how arrays can be reasoned about using Hoare logic and discuss some of the pitfalls of naïve approaches. [4 marks]