

2004 Paper 8 Question 13

Specification and Verification I

- (a) Describe how to use Floyd–Hoare logic to specify that a program sorts an array A so that $A(0), A(1), \dots, A(N)$ are in ascending order. [8 marks]
- (b) What is VDM notation? Use the sorting example to show how it can shorten specifications. Does the VDM specification of sorting have the same meaning as the Floyd–Hoare specification you gave in answer to part (a)? [6 marks]
- (c) Describe the concept of weakest preconditions and weakest liberal preconditions. How do they relate to Floyd–Hoare specifications? [6 marks]