

2004 Paper 12 Question 4

Distributed Systems

- (a) Define strong and weak consistency. [2 marks]
- (b) A process group manages a set of widely distributed replicas. The group is open and unstructured; that is, external processes may invoke any group member for reading or writing.
- (i) Discuss how the replicas can be kept strongly consistent in the presence of concurrent invocations and failures. [12 marks]
- (ii) Would it be more appropriate to use a structured group (with a single co-ordinator) to manage the replicas? Justify your answer. [6 marks]

Your solution should discuss the *selection and use* of algorithms and protocols. It is not necessary to specify them in great detail.