1999 Paper 8 Question 1

Distributed Systems

A distributed database is modelled as distributed persistent objects. Each transaction is submitted to a single node which assumes the role of coordinator, responsible for managing and committing the transaction.

(*a*) Outline how each of the following approaches to concurrency control is implemented for distributed objects:

(*i*) strict two-phase locking [4 marks]

(*ii*) strict timestamp ordering [4 marks]

(*iii*) optimistic concurrency control [4 marks]

(*b*) Explain how atomic commitment of transactions is achieved in a system employing *one* of the above methods of concurrency control. [8 marks]