Concurrent Systems

Why are database transactions necessary? [4 marks]

Describe the ACID properties of transactions. [4 marks]

What are the differences between optimistic and pessimistic mechanisms of concurrency control (with particular reference to the ACID properties)? [4 marks]

What factors determine whether an optimistic or pessimistic concurrency control policy is appropriate for a transaction processing system? [4 marks]

With reference to these factors, state whether an optimistic or pessimistic policy would lead to a more efficient system in the following cases:

(a) a flight booking system

(b) a police criminal record database

(c) a banking transaction processing system

(d) a database maintaining patient records [4 marks]