

2000 Paper 7 Question 8

Computer System Modelling

What is meant by the term *memoryless* as used in describing a Markov chain? [3 marks]

What limitation does this place on using Markov chains to model real systems? [3 marks]

“As systems become saturated their response time becomes unpredictable.”
Why is this? Illustrate your answer using an M/M/1 queueing system. [10 marks]

Show, by drawing the state transition diagram of a Markov chain, how arrival processes with inter-arrival times that are not exponentially distributed can be modelled. [4 marks]