2004 Paper 3 Question 5

Operating Systems II

(*a*) What problem do real-time scheduling algorithms try to solve?   [2 marks]

(*b*) Describe one *static priority* and one *dynamic priority* real-time scheduling algorithm. You should discuss the issue of admission control, and comment on the data structures that an implementation would need to maintain and on how these would be used to make scheduling decisions.   [8 marks]

(*c*) A designer of a real-time system wishes to have concurrently executing tasks share a data structure protected by a mutual exclusion lock.

    (*i*) What scheduling problem could arise here?   [2 marks]

    (*ii*) How could this problem be overcome?   [2 marks]

(*d*) The designer also wishes the real-time system to use demand paged virtual memory for efficiency. What problems could arise here, and how could they be overcome?   [6 marks]